FINAL

ENVIRONMENTAL ASSESSMENT

FINAL REGULATORY IMPACT REVIEW

AND

FINAL REGULATORY FLEXIBILITY ACT ANALYSIS

FOR A

FINAL RULE

TO AUTHORIZE GREEN-STICK GEAR AND REQUIRE SEA TURTLE CONTROL DEVICE

September 2008

United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Sustainable Fisheries
Highly Migratory Species (HMS) Management Division
1315 East-West Highway
Silver Spring, Maryland 20910

Final Rule to Authorize Green-stick and Require Sea Turtle Control Device

Framework Adjustment to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan

Actions: This action authorizes green-stick fishing gear for harvest of Atlantic tunas, including bluefin tuna, in the Atlantic tunas General, Highly Migratory Species (HMS) Charter/Headboat (CHB), and Atlantic Tunas Longline categories and requires a sea turtle control device in pelagic and bottom longline fisheries. The purpose of this final rule is to ensure fishermen harvest Atlantic tunas within quotas, size limits, or other established limitations and to distinguish green-stick fishing gear from current definitions of other authorized gear types. Also, the purpose of this action is to increase post-release survival of sea turtles and increase safety at sea for fishermen when handling sea turtles caught or entangled in longline fishing gear.

Type of Statement: Final Rule Documents: Environmental Assessment, Final Regulatory Flexibility Analysis, and Regulatory Impact Review

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Abstract:

To increase fishery operational flexibility, this action authorizes green-stick fishing gear for harvest of Atlantic tunas, including bluefin tuna, in the Atlantic Tunas General, HMS CHB, and Atlantic Tunas Longline permit categories. Public requests for authorization of the fishing gears led NMFS to analyze and consider authorizing their use. NMFS subsequently analyzed these requests and determined that use of green-stick gear allows

efficient harvest of Atlantic tunas with low bycatch and bycatch mortality. However, based on public comment and other considerations, NMFS has decided to maintain the status quo regarding authorized harpoon use at this time. The purpose of this final rule is to ensure fishermen harvest Atlantic tunas within quotas, size limits, or other established limitations and to distinguish green-stick fishing gear from current definitions of other authorized gear types. To increase post-release survival of sea turtles consistent with the bycatch mitigation measures required under the 2004 Biological Opinion for the Atlantic pelagic longline fishery (July 6, 2004; 69 FR 40736) and to increase safety at sea for fishermen when handling sea turtles caught or entangled in longline fishing gear, this action requires a sea turtle control device in pelagic and bottom longline fisheries. Impacts resulting from these actions are not expected to be significant.

FINDING OF NO SIGNIFICANT ENVIRONMENTAL IMPACT
FINAL RULE TO AUTHORIZE GREEN-STICK GEAR AND REQUIRE SEA TURTLE CONTROL DEVICE

National Marine Fisheries Service
August 2008

The Highly Migratory Species (HMS) Management Division of the Office of Sustainable Fisheries submits the attached Environmental Assessment (EA) for Secretarial review under the procedures of the Magnuson-Stevens Fishery Conservation and Management Act. The final rule authorizes green-stick gear for harvest of Atlantic tunas, including bluefin tuna (BFT), in the Atlantic Tunas General, HMS Charter/Headboat (CHB), and Atlantic Tunas Longline categories and requires a sea turtle control device in pelagic and bottom longline fisheries. The purpose of this final action is to ensure fishermen harvest Atlantic tunas within quotas, size limits, or other established limitations and to distinguish green-stick fishing gear from current definitions of other authorized gear types. NMFS intends with this final rule to allow harvest of Atlantic tunas with a gear that is generally efficient in harvesting target species and low in bycatch and bycatch mortality. Also, the purpose is to increase post-release survival of sea turtles and increase safety at sea for fishermen when handling sea turtles caught or entangled in longline fishing gear. This EA was developed as an integrated document that includes a Regulatory Impact Review (RIR) and Final Regulatory Flexibility Analysis (FRFA). Copies of the final rule and the EA and RIR are available from NMFS at the following addresses:

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This EA considers information contained in the Final Environmental Impact Statement (FEIS) associated with the 2006 Consolidated HMS Fishery Management Plan (Consolidated

HMS FMP) and the 2007 Fishing Year Atlantic BFT Quota Specifications and Effort Controls EA. All of the information used is herein incorporated by reference.

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 under NEPA. In addition, the Council on Environmental Quality (CEQ) regulations at 40 C.F.R. 1508.27 indicate 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 CEQ's "context" and "intensity" criteria. The findings below are specific to the selection of EA alternatives A2, A3, A4, B1, and C2 for the final rule.

These include:

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

No. In regard to fishing gear authorization, target species that may be affected by this action include Atlantic bigeye, albacore, yellowfin (YFT), and skipjack (collectively referred to as BAYS tunas) tunas and BFT. Fishing activity for Atlantic tunas with green-stick gear has been occurring since at least the mid-1990s. Therefore, it is not expected that authorization of the gear through this action will result in a rapid or large increase in harvest that could jeopardize the sustainability of Atlantic tunas. Fishermen using green-stick gear will continue to be bound by regulations including retention limits, size limits, restricted fishing days, target catch requirements for Atlantic Tunas Longline category, closed areas if certain gears are onboard, and overall quota restrictions that are currently in effect for all permit categories. YFT tuna are the Atlantic tunas primarily targeted by green-stick gear fishermen. According to the most recent International Commission for the Conservation of Atlantic Tunas (ICCAT) stock assessment, YFT are experiencing fishing mortality that may be above or below the fishing mortality estimate at maximum sustainable yield (MSY) and no harvest quota has been established by ICCAT. BFT are overfished with overfishing occurring; however, the United States harvest of BFT has been below the ICCAT established U.S. total allowable catch (TAC), adjusted as necessary for underharvests or overharvests, since 2004. Therefore, if an increase in BFT landings were to occur, repeated quota underharvests in recent years indicate that room exists within the U.S. BFT quota allocation to allow for some additional landings. During the years since green-stick gear use began (at least the mid-1990s) which are covered by the ICCAT BFT stock assessment, fishing with green-stick gear occurred under existing gear authorizations and definitions and contributed to the landings. ICCAT recommended a western Atlantic BFT TAC (2,100 mt) consistent with advice from the ICCAT Standing Committee on Research and Statistics (SCRS) to allow for gains in spawning stock biomass. The United States closely monitors landings of BFT and can and will take action to prevent the United States from exceeding its ICCAT established TAC. Information on green-stick fishing gear catches indicates that bycatch post-release mortality rates are lower for green-stick gear than for some other gears

utilized in the Atlantic tuna fisheries. It should be noted that the BFT longline fishery will remain authorized as incidental only and that under no circumstances may BFT be targeted in the Gulf of Mexico.

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

No. Information on green-stick fishing gear catches indicates that bycatch is low. Also, bycatch and bycatch mortality of non-target species caught on green-stick gear appear lower compared to other fishing gears such as pelagic longline (PLL)(due to the longline not being tended as quickly as green-stick gear) or rod and reel (due to long fight times). Green-stick gear has been used in the Atlantic tuna fishery since at least the mid-1990s, and NMFS is unaware of negative impacts to non-target species occurring during this time.

PLL interactions with leatherback and loggerhead sea turtles, and mortalities resulting from such interactions, have been reduced substantially since 2002 as a result of regulatory requirements; however, the need continues to reduce sea turtle mortalities by increasing the ability of fishermen to remove fishing hooks and entangling fishing line. The action to require a sea turtle control device onboard Atlantic PLL and bottom longline (BLL) vessels will ensure that fishermen have equipment onboard needed to better control large sea turtles not boated and more effectively remove fishing gear, thus reducing post-release mortality rates of sea turtles and promoting their long term recovery and sustainability.

3. Can the action reasonably be expected to cause 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 alternatives considered for the Atlantic tuna fisheries involve specifically authorizing fishing gears that are not considered to have a negative impact on ocean and coastal habitats and/or EFH. Atlantic tunas occupy pelagic oceanic environments. The action involves trolling fishing line and hooks at the water's surface and as such poses no threat or impact on the EFH of HMS or other species because, after initial disturbance by the movement of a tended fishing line and hooks through it, the water's surface returns to its previous state.

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

No. The action will not have a substantial adverse impact on public health and safety because nothing in this action will increase the risks already inherent in the fishing profession. The action to require sea turtle control devices on Atlantic PLL and BLL vessels may have the benefit of improving safety-at-sea for fishermen by enabling them to better control large sea turtles not boated while entangling fishing gear is removed.

5. Can the action be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

No. Endangered or threatened species, marine mammals, or critical habitat of these species are not expected to be adversely affected. There is no evidence of interactions between green-stick gear users targeting Atlantic tunas and threatened or endangered sea turtles, marine

mammals, or other protected resources. Green-stick gear does not typically pose a risk of interaction with listed sea turtle species because they do not feed while swimming at a speed fast enough to keep up with the trolled baits. The gear is tended as it is fished and can be monitored and maneuvered to avoid any interactions should they become imminent.

The 2004 BiOp on the Atlantic PLL fishery requires bycatch mitigation gear on Atlantic PLL vessels. NMFS published a final rule (February 7, 2007; 72 FR 5633) which implemented handling, release, and disentanglement requirements for sea turtles and other non-target species caught in the commercial shark BLL fishery. This action to require a sea turtle control device on Atlantic PLL and BLL vessels is consistent with the 2004 BiOp and shark BLL rulemaking (February 7, 2007; 72 FR 5633) requirements and will ensure that fishermen have equipment onboard needed to better control large sea turtles not boated and more effectively remove fishing gear, thus potentially reducing post-release mortality rates of sea turtles and promoting their long term recovery and sustainability.

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. Authorization of green-stick gear for Atlantic tunas is not expected to result in a large increase in Atlantic tuna landings as these fishing gears have been used for years in Atlantic tuna fisheries under existing gear authorizations and definitions. Existing regulations such as retention limits, size limits, restricted fishing days, closed areas for certain gears, and others will continue in effect.

The action to require sea turtle control devices on Atlantic PLL and BLL vessels as provided for by the 2004 BiOp on the Atlantic PLL fishery has the purpose of further reducing post-release mortality rates of sea turtles and promoting their long term recovery and sustainability.

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

No. There are no significant natural or physical environmental effects. Thus, there are no significant social or economic impacts interrelated with significant natural or physical environmental effects.

8. Are the effects on the quality of the human environment likely to be highly controversial?

No. The effects on the quality of the human environment are not likely to be highly controversial. Green-stick gear that is to be specifically authorized now as a separate gear type has been and is currently used in Atlantic tuna fisheries under existing gear authorizations and definitions. The intent of the action is to refine the gear definition and gears allowed in Atlantic Tunas General, HMS CHB, and Atlantic Tunas Longline categories to better suit the methods and locations that fishermen want to use green-stick gear. Public comment received during public information meetings, a South Atlantic Fishery Management Council meeting, and HMS Advisory Panel meetings indicate that the effects on the quality of the human environment are not highly controversial.

The action to require sea turtle control devices on Atlantic PLL and BLL vessels as provided for by the 2004 BiOp on the Atlantic PLL fishery is a non-highly controversial addition to the already required group of gears for sea turtle bycatch mitigation.

9. Can the action reasonably be 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 action does not apply to any of the unique areas listed because no unique areas are present in the affected area of oceanic offshore waters. The subject gears are not expected to interact with any ecologically critical areas or historic or cultural resources within the action area.

10. Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No. The action is not likely to be highly uncertain or involve unique or unknown risks because the Atlantic tuna fisheries affected by this action are well known and have been monitored for years. Regulations have been established to control harvest levels and collect landings information which aids in monitoring. Sea turtle mitigation measures were established and have been implemented according to the 2004 Biological Opinion (BiOp) and the fishery participants affected by these requirements are also well known.

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

The action to authorize fishing gear is related to previous actions to authorize gears in the Atlantic tuna fishery; however, the cumulative impacts are not expected to be significant. The purpose of the action is to ensure fishermen harvest Atlantic tunas within quotas, size limits, or other established limitations and to distinguish green-stick fishing gear from current definitions of other authorized gear types. Regulations such as retention limits, size limits, restricted fishing days, closed areas for some gears, and others remain in affect to achieve overall fishery management goals. Additionally, these fishing gears have been used for years in Atlantic tuna fisheries under existing gear authorizations and definitions. Any future domestic actions taken in regard to the BFT fishery would remain within the scope of ICCAT recommendations in accordance with ATCA.

Likewise, the action is consistent with the current BiOp issued under the Endangered Species Act. The action to require sea turtle control devices on Atlantic PLL and BLL vessels as provided for by the 2004 BiOp on the Atlantic PLL fishery is related to the already established sea turtle bycatch mitigation measures; however, the cumulative impacts are not expected to be significant. The ecological impacts are anticipated to be positive from this action as use of sea turtle control devices better allows for removal of hooks and entangling fishing gear from sea turtles, which results in improved post-release survival. Sea turtle control devices have been recommended to fishermen as part of the group of sea turtle bycatch mitigation gears since the requirement's implementation in 2004; therefore, some vessels already possess sea turtle control devices. Options are provided for purchase or building sea turtle control devices according to specifications at low cost; therefore, the economic impacts are anticipated to be minor.

12. Is the 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.

The action will not adversely affect any of the locations listed because the action area is the coastal and open ocean environment (Atlantic Ocean and Gulf of Mexico) and none of the aforementioned sites are present in the action area.

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

No. The action will authorize fishing gear for harvesting Atlantic tunas and require sea turtle control devices aboard Atlantic PLL and BLL vessels. This action does not in any way have a capacity to introduce or spread non-indigenous species.

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

No. This action does not obligate the agency to take similar or related actions in the future or otherwise influence or preclude future decisions. The action authorizes fishing gear for harvesting Atlantic tunas and requires a sea turtle control device aboard Atlantic PLL and BLL vessels.

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

No. NMFS has determined that this action will 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 were sent to the relevant states asking for their concurrence and at this time, NMFS has received letters of concurrence from the following states: CT, DE, NJ, LA, NH, NC, FL, MS, and RI. NMFS has not yet received letters of concurrence from ME, PA, NY, MD, VA, SC, GA, AL, TX, PR, and USVI and, therefore, NMFS presumes concurrence with the consistency determination.

16. Can the action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

No. The action will ensure fishermen harvest Atlantic tunas within quotas, size limits, or other established limitations and to distinguish green-stick fishing gear from current definitions of other authorized gear types. As discussed in the responses to questions 1, 2, 5, 11, and others, the action is not expected to result in cumulative adverse effects that will have a substantial effect on target or non-target species. Fishermen will continue to be bound by regulations such as retention limits, size limits, restricted fishing days, closed areas for some gears, and other regulations that are currently in place. Green-stick gear is an efficient gear with low bycatch rates and has been used for years in Atlantic tuna fisheries under existing gear authorizations and definitions. This action is consistent with the ongoing implementation of a rebuilding plan for western Atlantic BFT and the objectives of the Consolidated HMS FMP.

The action will also require sea turtle control devices aboard Atlantic PLL and BLL vessels to better enable fisherman to remove fishing hooks and entangling fishing gear safely. This action will reduce post-release mortality of sea turtles caught as bycatch in the PLL and BLL fisheries.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting EA prepared for a rule to authorize green-stick gear for harvest of Atlantic tunas, including BFT, and require additional sea turtle control devices in PLL and BLL fisheries, it is hereby determined that this action will not significantly impact the quality of the human environment as described above and in the supporting EA. NMFS has selected the alternatives A2, A3, A4, B1, and C2 for implementation. All beneficial and adverse impacts of the action 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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SEP 5 2008
Date

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1.0 PURPOSE AND NEED FOR ACTION

The National Marine Fisheries Service (NMFS) authorizes green-stick gear for harvest of Atlantic tunas, including bluefin tuna (BFT) (*Thunnus thynnus*), in the Atlantic Tunas General, Highly Migratory Species (HMS) Charter/Headboat (CHB), and Atlantic Tunas Longline categories and requires possession and use of a sea turtle control device in pelagic longline (PLL) and bottom longline (BLL) fisheries. Public requests for authorization of fishing gears led NMFS to analyze and consider green-stick gear and harpoon use in Atlantic tuna fisheries. NMFS subsequently has analyzed these requests and determined that the authorization of green-stick as a separate gear will allow efficient harvest of Atlantic tunas with low bycatch and bycatch mortality, but has reconsidered the originally proposed authorization of harpoon use by HMS CHBs and has decided to maintain the status quo at this time. The purpose of this rulemaking is to ensure fishermen harvest Atlantic tunas within quotas, size limits, or other established limitations and to distinguish green-stick fishing gear from current definitions of other authorized gear types. This rulemaking is also conducted to achieve and maintain low post-release mortality of sea turtles thus maintaining consistency with the 2004 Biological Opinion (BiOp) for the PLL fishery and to increase safety at sea for fishermen when handling sea turtles caught or entangled in longline fishing gear.

1.1. Management History

Atlantic HMS are managed under the dual authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and the Atlantic Tunas Convention Act (ATCA). Under the Magnuson-Stevens Act, NMFS must, consistent with the National Standards, manage fisheries to maintain optimum yield by rebuilding overfished fisheries and preventing overfishing. Under ATCA, NMFS is authorized to promulgate regulations, as may be necessary and appropriate, to implement the recommendations from the International Commission for the Conservation of Atlantic Tunas (ICCAT). Additionally, any management measures must also be consistent with other domestic laws including, but not limited to, the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), and the Coastal Zone Management Act (CZMA).

In 2006, the management of Atlantic tunas, swordfish, sharks, and billfish was consolidated into one comprehensive FMP called the Consolidated HMS FMP (NMFS 2006). Prior to that, HMS management was separated into two FMPs, the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks (and its 2003 amendment) and the 1988 Atlantic Billfish FMP (and its 1999 amendment). A detailed management history for Atlantic HMS species is provided in Chapter 3 of the 2006 Consolidated HMS FMP (NMFS 2006) and is not repeated here.

Green-stick gear (Figure 1) is a fishing gear generally used for tuna fishing in the mid-Atlantic and New England regions of the United States and several areas worldwide and consists of a mainline suspended above the water with hooks on leaders or gangions trolled from a long fiberglass or bamboo pole. Baits used with green-stick gear may be artificial or natural. Under existing regulations, green-stick gear is not specifically authorized, but may be used according to

two different configurations: as a longline (with a mainline and 3 or more hooks) (Figure 1) and as handgear (with a mainline and 2 or fewer hooks)(Figure 2).

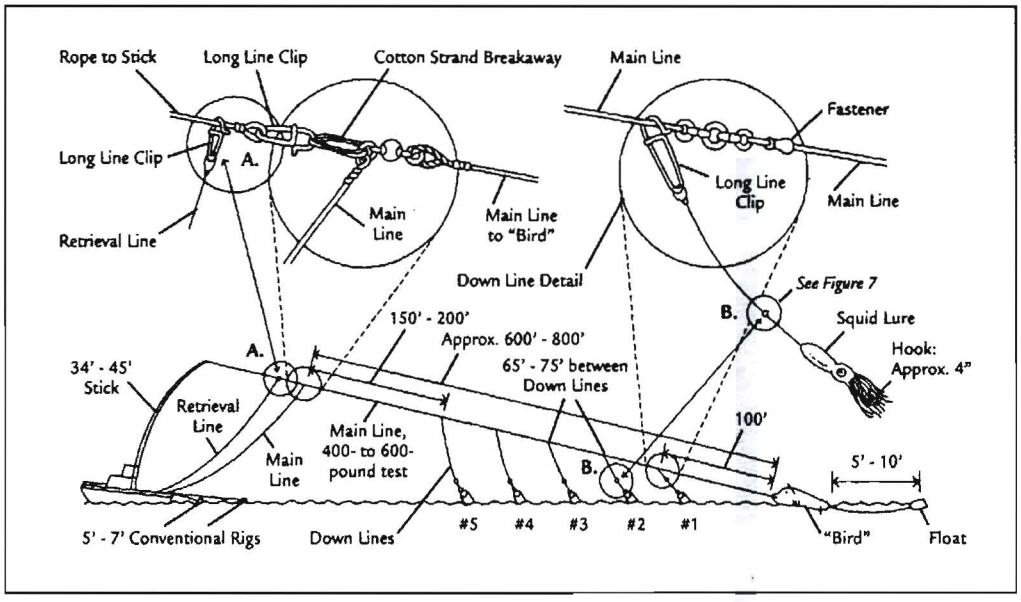

Figure 1 A diagram of green-stick fishing gear. Source: Wescott (1996)

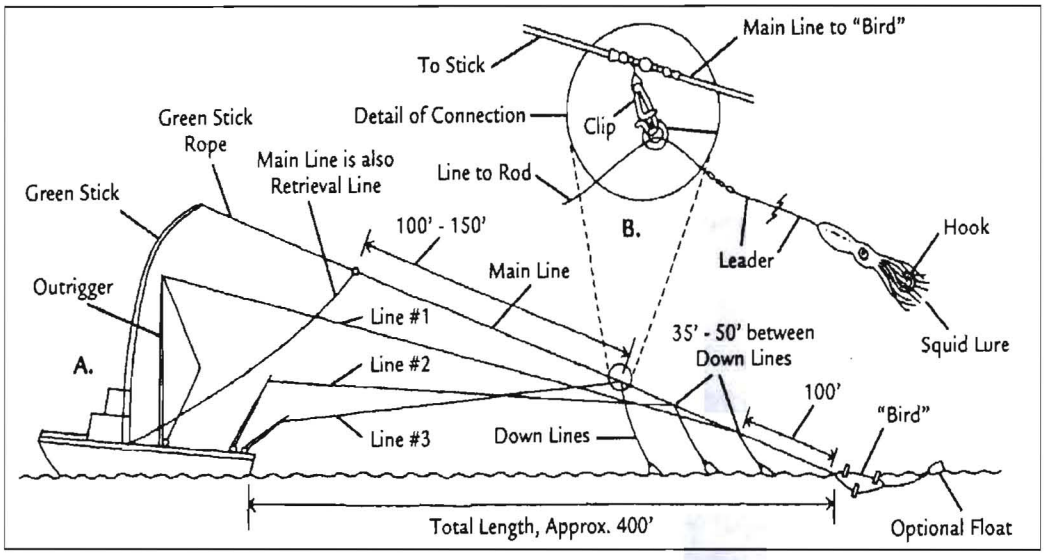

Figure 2 A diagram of a gear configuration using rod and reel that meets the HMS handgear definition. Source: Wescott (1996)

Green-stick gear has been used in the Atlantic commercial and recreational bigeye (BET) (*Thunnus obesus*), albacore (ALB) (*Thunnus alalunga*), yellowfin (YFT) (*Thunnus albacares*), skipjack (SKJ) (*Katsuwonus pelamis*) (collectively referred to as BAYS tunas), and BFT

fisheries since the mid-1990s (Wescott 1996), but it was not originally included as a separate gear on the list of authorized HMS fishery gears in the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks (May 28, 1999; 64 FR 29090). Logbook records show that commercial catches of BAYS and BFT with green-stick gear continued in the Atlantic Tunas General, Atlantic Tunas Longline, and the HMS CHB categories and were classified either as "handgear" catches in the Atlantic Tunas General and HMS CHB categories or as "longline" catches in the Atlantic Tunas Longline category, depending on the configuration. In recent years, public comments indicate that green-stick gear use, under current regulations, does not well suit the fishing methods and locations preferred by fishermen wanting to use the gear.

In order to address these public comments, NMFS considered an alternative in the Draft Consolidated HMS FMP to authorize green-stick gear for harvest of BAYS tunas. Sparse data on green-stick gear use that was available for the Draft Consolidated HMS FMP indicated that YFT dominated green-stick gear landings with BFT and BET making up a small portion of the catch. During public comment on the Draft Consolidated HMS FMP, comment was received expressing interest in using the gear to target other species such as BFT and dolphin (*Coryphaena hippurus*).

NMFS had, and continues to have, concern about the health of BFT stocks as they are severely overfished with overfishing occurring. Because of the lack of detailed information about the effects of the gear use at that time, NMFS was concerned at that time about the potential for increased effort that might occur, and the potential for such an increase in effort and interest in targeting BFT to negatively affect BFT stocks. Therefore, NMFS did not authorize green-stick gear as a separate gear in the Final Consolidated HMS FMP.

Instead, at that time in the Consolidated HMS FMP, NMFS clarified how green-stick gear could continue to be used in a limited way as long as the green-stick gear use met the definition of "longline" (three or more hooks are attached by leaders or gangions to a mainline) or "handgear" (two hooks or fewer). Subsequently, HMS Advisory Panel (AP) and public comments continued to indicate that green-stick gear possession and use as allowed under these definitions and the permit categories above did not well suit the fishing methods and locations preferred by fishermen wanting to use the gear. In these categories, green-stick gear has been fished historically with up to 10 hooks or gangions. Under the current definitions, green-stick gear with three or more hooks or gangions attached to a mainline is considered longline gear; however, longline is not an authorized gear for Atlantic Tunas General or HMS CHB category permitted vessels. Also under current regulations regarding Atlantic Tunas Longline permitted vessels, green-stick gear with three or more hooks attached to a mainline, which meets the definition of longline, may not be possessed in PLL or BLL closed areas.

Following publication of the Consolidated HMS FMP, NMFS continued to look for additional data to characterize the green-stick gear fishery and collected anecdotal information from the public about the green-stick gear fishery. Additional data on green-stick gear fishing not included in the Consolidated HMS FMP was obtained from NMFS Coastal Logbooks. These data also showed that YFT dominated the green-stick gear catch and that BET and BFT were the second and third largest green-stick gear catch by weight from 1999-2007. The Coastal Logbooks also showed that green-stick gear has a low bycatch rate and that the gear has been

used over a long period of time. These data confirm anecdotal information received from fishermen about the dominant species caught and bycatch rate of the green-stick gear fishery. They also indicate that fishing pressure on BFT stocks has occurred with green-stick gear since at least 1999 and these landings have been recorded and included in the overall U.S. BFT catch data reported to ICCAT, even if it has been difficult to specifically identify these landings by gear. While there is a possibility that effort in the BFT fishery may increase if green-stick gear is authorized for harvest, the information above indicates that green-stick gear effort has developed to its current level over a period of several years. Due to the capital investments involved in rigging a vessel to use green-stick gear that are described below, along with the harvest monitoring and size and retention limit capabilities available to NMFS to limit harvest of BFT as needed, NMFS anticipates that any increases in effort in the green-stick fishery for BFT will be minor and/or that such minor effort increases will not significantly impact BFT stocks.

NMFS assessed available information on past and present use of green-stick and harpoon gear in Atlantic tuna fisheries as a baseline for analyzing the anticipated effects of these gears. NMFS intends with this action to allow harvest of Atlantic tunas with a gear that is generally efficient in harvesting target species and, at the same time, is low in bycatch and bycatch mortality. Allowing gears with these characteristics may have benefits to target and non-target species over gear with higher bycatch and bycatch mortality levels. Since 2004, U.S. BFT landings have been well within the U.S. quota allocation. Authorization of green-stick gear in this action is anticipated to result in only minor increases in BFT landings. If such increases were to occur, repeated quota under-harvests in recent years indicate that room exists within the U.S. BFT quota allocation to allow for some additional landings. Additionally, the 2006 ICCAT Recommendation regarding western Atlantic BFT included a provision for a Contracting Party to transfer up to 15% of its TAC to other Contracting Parties. There is continued interest among ICCAT contracting parties for unharvested western Atlantic BFT quota, and this has the potential to result in requests for transfer of TAC and/or reallocation of the Western Atlantic TAC at ICCAT to other member nations in the future. To the extent that the U.S. fishery is able to fill the U.S. BFT quota, the United States would increase the likelihood of maintaining its allocation.

Therefore, NMFS proposes to authorize, via regulation, green-stick gear in the Atlantic tunas fishery (to include BFT) after considering 1) the additional data on the green-stick gear fishery which confirmed that YFT dominate the catch; 2) that BET and BFT have been landed with this gear over the period 1999-2007; 3) that large increases in effort or landings of BFT in the green-stick gear fishery are unlikely; and 4) that bycatch rates in the green-stick fishery are low.

Harpoon gear, defined at 50 CFR 600.10, means fishing gear consisting of a pointed dart or iron attached to the end of a line several hundred feet in length, the other end of which is attached to a floatation deice. Harpoon gear is attached to a pole or stick that is propelled only by hand, and not by mechanical means. Harpoon use is currently authorized only for Atlantic Tunas General and Harpoon category vessels. HMS CHB vessels may currently fish under the Atlantic Tunas General category regulations and may fill the daily retention limit for either the Atlantic Tunas General or the HMS Angling category. As stated above, NMFS received a public request to authorize harpoon for use by HMS CHB permitted vessels. Harpoon gear is a selective gear that is used to capture only one large pelagic fish (primarily BFT but also

swordfish) at a time. Authorization of harpoon use by HMS CHB vessels would be consistent with a NMFS action taken in the 1999 FMP, which expanded the list of authorized gears for HMS CHB permitted vessels to include bandit gear as part of an effort to achieve consistency in HMS regulations. It also would provide consistency in the regulations regarding authorized handgear used historically for commercial harvest of BFT, and would increase opportunities for commercial handgear fishermen to attain the BFT Atlantic Tunas General category quota. However, based in part on public comment, NMFS has reconsidered the proposed action to authorize an additional directed fishing gear type for BFT in the HMS CHB category at this time. After consideration of recent HMS AP discussion and public comment on the proposed action, NMFS believes that harpoon use by HMS CHB vessels could result in increased discard mortality of BFT over the discard mortality that occurs with gear currently authorized for HMS CHB use or with green-stick gear. Based on the relative lack of public support, and the concerns raised by NMFS and the public, including bycatch, enforcement, safety, and BFT stock status generally, NMFS has decided, at this time, to maintain the status quo regarding authorized harpoon use, i.e., authorized harpoon use by the Atlantic Tunas General and Atlantic Tunas Harpoon permit categories only.

The 2004 BiOp for the PLL fishery found that the long-term continued operation of the Atlantic PLL fishery as proposed was likely to jeopardize the continued existence of leatherback sea turtles (*Dermochelys coriacea*), a species listed as endangered under the ESA. Reasonable and prudent alternatives (RPA) under section 7 of the ESA (50 CFR §402.02) were developed and implemented to avoid jeopardy by: 1) reducing post-release mortality of leatherbacks, 2) improving monitoring of the effects of the fishery, 3) confirming the effectiveness of the hook and bait combinations, and 4) taking management action to avoid long-term elevations in leatherback takes or mortality. The RPA included several measures to accomplish these goals, one of which was to require the use of gear removal measures to maximize post-release survival. The final rule implementing sea turtle bycatch and bycatch mortality mitigation measures for the PLL fishery provided for additional rulemaking and non-regulatory actions, as necessary, to implement any other management measures required under the BiOp (July 6, 2004; 69 FR 40736). Sea turtle control device development resulted from the need to better control sea turtles caught during research which validated the sea turtle bycatch mitigation measures. Sea turtle control devices are currently recommended in Atlantic PLL and BLL fisheries. Further testing, observation, and reports from field observations compiled by NMFS at the Southeast Fisheries Science Center (SEFSC) indicate that a sea turtle control device should be required because the devices improve fishermen's ability to remove hooks and entangling fishing gear from sea turtles which, in turn, improves post-release survival rates. Therefore, based on the information compiled by NMFS at the SEFSC, NMFS' preferred alternative includes requiring the possession and use of one sea turtle control device on board PLL and BLL vessels.

2.0 SUMMARY OF THE ALTERNATIVES

In undertaking a detailed examination and analysis of the Atlantic tunas fishery and the potential impacts of the actions to authorize green-stick and harpoon gear in the Atlantic tunas fishery and require a sea turtle control device in the PLL and BLL fisheries, NMFS considered several different aspects of the fisheries that led NMFS to develop alternatives that provide a

reasonable and legitimate range for the agency to consider. The agency chose to analyze and consider the permit categories under which green-stick and harpoon gear should be authorized. Additionally, due to the requirements of the 2004 BiOp, the agency chose to analyze and consider the PLL and BLL fisheries under which the sea turtle bycatch mitigation measures apply.

This section provides a summary and a brief description of the alternatives considered in this rulemaking. The ecological, economic, and social impacts of these alternatives are discussed in later chapters. The description below identifies the alternatives that are preferred for the final rulemaking. The No Action alternatives address the impacts if no regulatory changes are implemented.

Alternative A1: (No action/status quo) Maintain existing gear definitions and authorizations for harvesting Atlantic tunas.

This alternative would maintain existing regulations for harvesting Atlantic tunas, thereby allowing green-stick gear use only as allowed under the definitions and regulations for longline or handgear based on the gear configuration. This alternative would continue to consider green-stick gear (Figure 1) with a mainline and 3 or more hooks as a longline. If the gear is configured with a mainline and 2 or fewer hooks, it would continue to be considered as hand gear (Figure 2).

Alternative A2: Authorize green-stick gear for harvest of Atlantic tunas by Atlantic Tunas General category permitted vessels. (Preferred Alternative)

This preferred alternative will authorize persons fishing from Atlantic Tunas General category permitted vessels to harvest Atlantic tunas, including BFT, with green-stick gear. Green-stick gear will be defined as "an actively trolled mainline attached to a vessel and elevated or suspended above the surface of the water with no more than 10 hooks or gangions attached to the mainline. The suspended line, attached gangions and/or hooks, and catch may be retrieved collectively by hand or mechanical means. Green-stick does not constitute a pelagic longline or a bottom longline as defined in this EA or as described at § 635.21(c) or § 635.21(d), respectively." Distinguishing characteristics separate the gears, as green-stick gear is actively trolled and does not have floats capable of supporting the mainline as with pelagic longline nor weights and/or anchors capable of maintaining contact between the mainline and the ocean bottom as with bottom longline. The intent of this action is to refine the gear definition and gears allowed for Atlantic Tunas General Category to better suit the methods that fishermen want to use with green-stick gear. This intent will be accomplished by allowing commercial tuna handgear fishermen using green-stick gear to increase the number of hooks on their gear from two hooks to no more than 10 hooks. The primarily impacted fishing entities under this alternative will be Atlantic Tunas General category permit holders who are currently restricted to the handgear limit of two hooks or less per line.

Alternative A3: Authorize green-stick gear for harvest of Atlantic tunas by HMS Charter/Headboat permitted vessels. (Preferred Alternative)

This preferred alternative will authorize persons fishing from HMS CHB permitted vessels to harvest Atlantic tunas, including BFT, with green-stick gear. Green-stick gear will be defined as in Alternative A2 above and similarly, for purposes of this preferred alternative, green-stick gear as defined does not constitute a pelagic longline as described at §635.21 (c) or bottom longline as described at §635.21 (d). Distinguishing characteristics for green-stick gear under this Alternative A3 are the same as under Alternative A2 above. The intent of this action is the same as the intent of Alternative A2, but for HMS CHB permitted vessels. This alternative will also allow for-hire HMS CHB trips to use green-stick gear. Current regulations allow the sale of Atlantic tunas caught on HMS CHB permitted vessels regardless of whether the vessel is for-hire or not. The primarily impacted fishing entities under this alternative will be HMS CHB permit holders who are currently restricted to the handgear limit of two hooks or less per line when a mainline is part of the gear as is the case with green-stick gear. A for-hire trip means a recreational fishing trip taken by a vessel with an HMS CHB permit during which paying passenger(s) are aboard; or, for uninspected vessels, trips during which there are more than three persons aboard, including operator and crew; or, for vessels that have been issued a Certificate of Inspection by the U.S. Coast Guard to carry passengers for hire, trips during which there are more persons aboard than the number of crew specified on the vessel's Certificate of Inspection.

Alternative A4: *Authorize green-stick gear for harvest of Atlantic BAYS tunas, and BFT within existing target catch requirements, by Atlantic Tunas Longline category permitted vessels. (Preferred Alternative)*

This preferred alternative will authorize persons fishing from Atlantic Tunas Longline category permitted vessels to harvest Atlantic BAYS tunas, and BFT within existing target catch requirements, with green-stick gear. This alternative will maintain the current management measures that only allow BFT harvest incidentally to other fishing, if the appropriate level of target catch is retained (2,000 lbs for one BFT; 6,000 lbs for 2 BFT; 30,000 lbs for 3 BFT). Green-stick gear will be defined as in Alternative A2 above (including limiting the number of hooks to no more than 10). For purposes of this preferred alternative, green-stick gear as defined does not constitute pelagic longline as described at §635.21 (c) or bottom longline as described at §635.21 (d). Three distinguishing characteristics separate green-stick gear from PLL or BLL gears, as green-stick gear is actively trolled, does not have floats capable of supporting the mainline, or weights and/or anchors capable of maintaining contact between the mainline and the ocean bottom. The intent of this alternative will be to distinguish green-stick gear from current definitions of existing authorized gear types such as longline. This preferred alternative will allow green-stick gear to be used by Atlantic Tunas Longline permitted vessels at times and in places including, but not limited to times and areas closed to longline fishing if the requirements for removal of any one of the elements of a pelagic longline listed at §635.21 (c) or (d) are met.

Atlantic Tunas Longline category permitted vessels are currently allowed to possess onboard and/or use only 18/0 or larger circle hooks with an offset not to exceed 10° and/or 16/0 or larger non-offset circle hooks. This regulation was developed to reduce post-release hooking mortality (PRM) of sea turtles with the added benefit of reducing PRM of Atlantic billfish, other bycatch species, and regulatory discards. As green-stick fishing gear is actively trolled and the baits are fished at or above the surface of the water, circle hooks used with green-stick gear are not as effective in hooking fish because the line and hook cannot be slowly and steadily pulled

through the mouth to lodge in the fish's jaw. Instead, fish are hooked when the fish actively strikes the bait. As a result of this active strike, J-hooks are less likely to be ingested. Ingestion of hooks by fish has been related to the practice of dropping baits back to the fish, thereby allowing the fish more time to swallow a bait. Dropping baits back to a fish is not practiced with green-stick gear because the action of the bait that lures a fish to strike is caused by tension on the mainline, the flex of the fiberglass pole, and the forward movement of the vessel while actively trolling. The fish strike occurs when the baits are actively trolled at or above the surface of the water. Also, the size of the mainline and haul-back gear, which is often power operated, does not facilitate effective and timely drop-back of the bait as is possible with a rod and reel. Because J-hooks are more effective than circle hooks when fished with green-stick gear and J-hooks are not expected to result in high PRM rates, this preferred alternative will allow Atlantic Tunas Longline permitted vessels to possess no more than 20 J-hooks if green-stick gear is onboard. Onboard Atlantic Tunas Longline permitted vessels, J-hooks will only be allowed for use with green-stick gear. The primarily impacted fishing entities will be Atlantic Tunas Longline category permit holders who are currently restricted to fishing green-stick gear outside of PLL and BLL closed areas and using only circle hooks.

Alternative B1: *(No action/status quo) Maintain existing gear authorizations for harvesting Atlantic BFT by HMS CHB permitted vessels (Preferred Alternative).*

This alternative will maintain existing regulations for authorized gears used to harvest Atlantic tunas by HMS CHB permitted vessels. Harpoon or harpoon gear, as defined at 50 U.S.C. §600.10, means fishing gear consisting of a pointed dart or iron attached to the end of a line several hundred feet in length, the other end of which is attached to a floatation device. Harpoon gear is attached to a pole or stick that is propelled only by hand, and not by mechanical means. Harpoon gear is authorized only for vessels holding an Atlantic Tunas General or Harpoon category permit (both commercial permits).

Alternative B2: Authorize harpoon for Atlantic tunas fishing by HMS CHB permitted vessels.

This alternative would authorize harpoon gear for the commercial harvest of Atlantic tunas, including BFT, for HMS CHB permitted vessels. This alternative was preferred in the Draft EA, but, based on public comment and other considerations, it is not preferred in the Final EA. While fishing under the rules that apply when filling the Atlantic Tunas General category BFT retention limit, HMS CHB vessels would be able to use harpoon gear to fish for and retain BFT greater than 73 inches curved fork length.

Alternative B2a: Authorize harpoon for Atlantic tunas fishing by HMS CHB permitted vessels on all trips.

This alternative would allow use of harpoon gear on all HMS CHB trips, including those taken with paying passengers, i.e., a for-hire trip (as described in Section 2.0), and non-for-hire trips, such as trips with captain and crew only. Atlantic tunas may be sold from HMS CHB permitted vessels regardless of their for hire status.

Alternative B2b: Authorize harpoon for Atlantic tunas fishing by HMS CHB permitted vessels on non-for-hire trips only.

This alternative would allow use of harpoon gear on HMS CHB non-for-hire trips only. This alternative was the preferred alternative within Alternative B2 in the Draft EA, but, based on public comment and other considerations, it is not preferred in the Final EA.

Alternative C1: (No action/status quo) Maintain existing sea turtle bycatch mitigation regulations for pelagic and bottom longline fisheries.

This alternative would maintain existing regulations requiring the possession and use of sea turtle bycatch mitigation gear. A number of sea turtle dehooking and handling devices are currently required to be possessed and used aboard PLL and BLL vessels in accordance with the 2004 BiOp for the PLL fishery and the 2003 BiOp for the BLL fishery. Currently, the turtle tether is recommended for possession and use as part of the sea turtle bycatch mitigation measures. Existing sea turtle mitigation regulations are necessary to avoid the likelihood of jeopardizing the continued existence of leatherback sea turtles, thereby allowing the continued prosecution of the HMS PLL fishery. They are also necessary to reduce hooking mortality of loggerhead sea turtles (*Caretta caretta*) in the BLL fishery.

Alternative C2: Require possession and use of a sea turtle control device as an addition to the already existing requirements for sea turtle bycatch mitigation gear. (Preferred Alternative)

This preferred alternative will require possession and use of a sea turtle control device as an addition to the already existing sea turtle bycatch mitigation gear requirements. The sea turtle control devices that will be approved to meet the requirement, whether purchased or constructed, are the turtle tether and T&G ninja sticks (T&G ninja sticks is named for the two fishermen that designed the gear). Design specifications for the turtle tether and T&G ninja sticks as well as instructions for use are found in Appendix 1 of this document. The final rule implementing sea turtle bycatch and bycatch mortality mitigation measures for the PLL fishery provided for additional rulemaking and non-regulatory actions, as necessary, to implement any other management measures that are required under the 2004 BiOp (July 6, 2004; 69 FR 40736) for the PLL fishery.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The primarily affected environment of this action is the principal target species which are Atlantic tunas. Non-target species also occur in the affected environment; however, because green-stick and harpoon gear have low bycatch rates, as further described in Chapter 4, the gears are not expected to interact with non-target species, thus non-target species will not be affected. Additionally, there is little information or evidence of interactions between green-stick or harpoon gear and threatened or endangered sea turtles, marine mammals, or other protected resources as further developed in Chapter 4, thus the gears are not expected to interact with these

resources and these resources will not be affected. The consideration of additional sea turtle bycatch mitigation gear would involve reduction in effects that have previously been considered.

Detailed descriptions of the life histories and population status of the species managed by NMFS are presented in Section 3.2 of the 2006 Stock Assessment and Fishery Evaluation (SAFE) Report Final, which is incorporated in the Consolidated HMS FMP (NMFS 2006), and are not repeated here. Atlantic tunas are the target species and are considered part of the affected environment for this action. For Atlantic tunas, the baseline information presented in the 2006 SAFE Report Final is updated in the following sections of this document. Detailed information on catch and bycatch of HMS by fishery are provided in Sections 3.4 and 3.8, respectively, of the 2006 SAFE Report in the Consolidated HMS FMP, and are not repeated here. Detailed information regarding the economic status of HMS fisheries, including recreational fisheries, can be found in Section 3.5, and is not repeated here.

3.1. Status of the Stocks

Detailed information on the stock status of Atlantic tunas that updates the 2006 SAFE Report Final, which is incorporated in the Consolidated HMS FMP (NMFS 2006), can be found in Table 1 below. For additional information on Atlantic tunas and other HMS species, please see the 2006 SAFE Report Final.

Table 1 Stock assessment summary table. Source: SCRS 2007.

Species	Current Relative Biomass Level	Minimum Stock Size Threshold	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook
West Atlantic Bluefin Tuna	SSB_{04}/SSB_{MSY} = 0.41 SSB_{04}/SSB_{75} = 0.18	*$0.86SSB_{MSY}$*	F_{04}/F_{MSY} = 1.7 (if low recruitment) F_{04}/F_{MSY} = 3.1 (if high recruitment)	F_{year}/F_{MSY} = 1.00	Overfished; overfishing is occurring.
East Atlantic Bluefin Tuna	SSB_{04}/SSB_{74} = 0.48	*Not estimated*	F_{04}/F_{max} = 3.4	*Not estimated*	Overfished; overfishing is occurring.
Atlantic Bigeye Tuna	B_{06}/B_{MSY} = 0.92 (0.85-1.07)	*$0.6B_{MSY}$ (age 2+)*	F_{05}/F_{MSY} = 0.87 (0.70-1.24)	F_{year}/F_{MSY} = 1.00	Rebuilding; overfishing not occurring.
Atlantic Yellowfin Tuna	B_{01}/B_{MSY} = 0.73 - 1.10	*$0.5B_{MSY}$ (age 2+)*	F_{01}/F_{MSY} = 0.87-1.46	F_{year}/F_{MSY} = 1.00	Approaching an overfished condition.
North Atlantic Albacore Tuna	B_{05}/B_{MSY} = 0.81 (0.68-0.97)	*$0.7B_{MSY}$*	F_{05}/F_{MSY} = 1.5 (1.3-1.7)	F_{year}/F_{MSY} = 1.00	Overfished; overfishing is occurring.

Species	Current Relative Biomass Level	Minimum Stock Size Threshold	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook
South Atlantic Albacore Tuna	B_{05}/B_{MSY} = 0.91 (0.71-1.16)	*Not estimated*	F_{05}/F_{MSY} = 0.63 (0.47-0.9)	*Not estimated*	Overfished; overfishing not occurring.
West Atlantic Skipjack Tuna	*Unknown*	*Unknown*	*Unknown*	F_{year}/F_{MSY} = 1.00	Unknown

3.1.1. Bluefin Tuna

The SCRS completed the stock assessment for both Atlantic BFT management units (western Atlantic and eastern Atlantic/Mediterranean) in 2006 and provided additional comment on the stock outlook during their 2007 meeting, in advance of the next assessment in 2008. A summary of the SCRS' evaluation of the state of the western Atlantic BFT stock is available in Table 2.

Table 2 Summary table for the status of western Atlantic bluefin tuna. Source: SCRS 2007.

Current (2006) Catch (including discards)	1,929 t[4]
Short-term Sustainable Yield	~2,300 t
Maximum Sustainable Yield (MSY|R[1,2])	3,200 (3,000-3,400)[2]
Relative Stock Biomass	
SSB_{2004}/SSB_{1975}	0.18
$SSB_{2004}/SSB_{MSY|R}$	0.41 (0.29-0.54)[2]
Relative Fishing Mortality[3]	
$F_{2004}/F_{MSY|R}$	1.7
$F_{2004}/F_{0.1}$	3.1
F_{2004}/F_{max}	1.7
Management Measures:	TAC of 2,100 t from 2007 including dead discards [Rec. 06-06]. TAC of 2,700 t from 2003 including dead discards [Rec. 02-07]. 30 kg (115 cm FL) minimum size with 8% tolerance [Rec. 98-07]. No directed fisheries in Gulf of Mexico [Rec. 98-07].

1 MSY calculated conditional that recruitment remains at recent (1976-2001) levels.
2 Median and approximate 80% confidence interval from bootstrapping from the assessment.
3 F_{2004} is taken to be the geometric mean of the estimates for 2001-2003.
4 Estimates for 2006 are preliminary.

The 2006 assessment is consistent with previous analyses in that spawning stock biomass (SSB) declined rapidly in the early 1970s followed by a more gradual decline in SSB through the early 1990s to about 21% of the 1975 level. During the period of 1994-1998, it appears that SSB recovered somewhat to about 28% of the 1975 level in 1998. However, the 2006 assessment indicates gradual declines since then to about 19% of the 1975 level by the year 2004). Conversely, after the large decline in recruitment in the early 1970s, recruitment since then has

varied from year to year without trend. See (Figure 3). While the large decline in SSB since the early 1970s is clear from the assessment, the potential for rebuilding is less clear. The 1994 year class (recruitment in 1995) continues to be estimated as a relatively strong one, although it is still much less than the recruitment that occurred in the early 1970s. The SCRS remained uncertain as to the causes of the relatively poor recruitment since 1976 and, therefore, is less certain about the outlook for recruitment in the future.

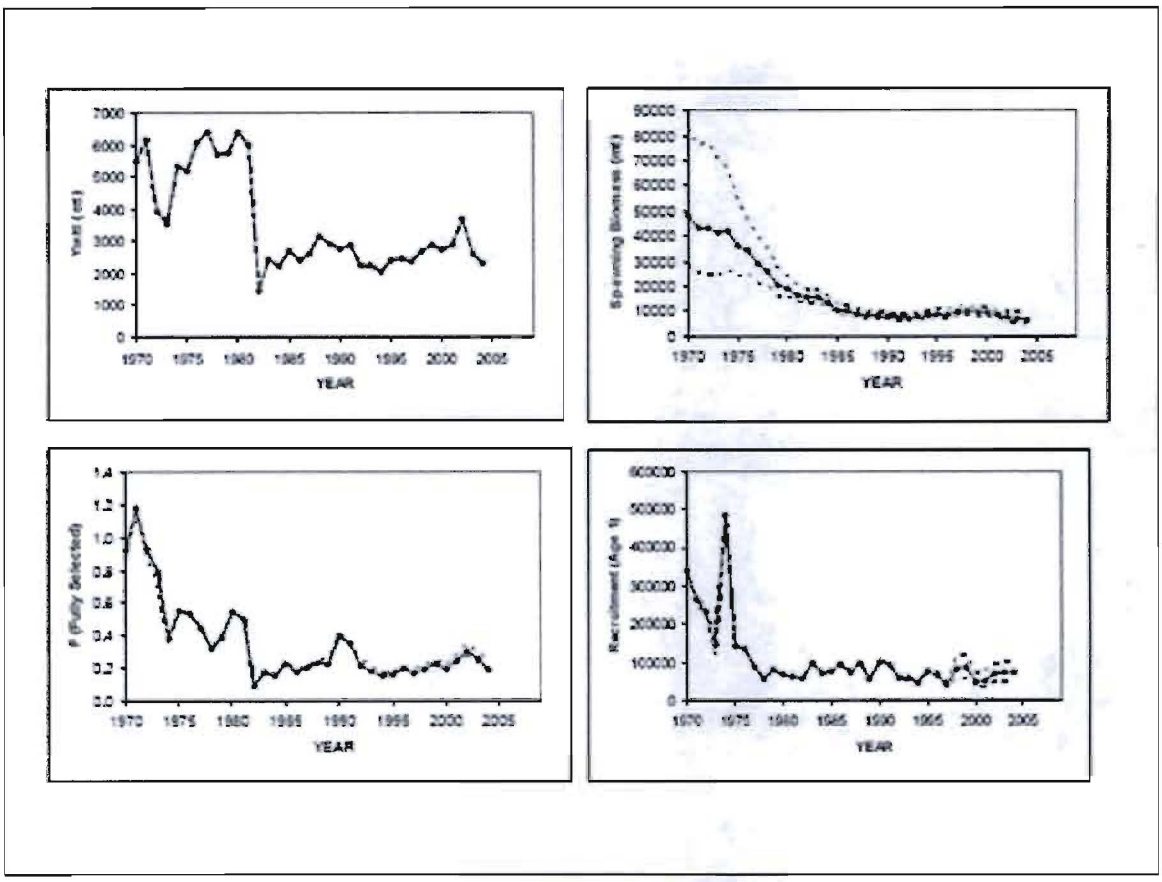

Figure 3 Median estimates of bluefin tuna yield, spawning biomass, fishing mortality and recruitment for the base VPA model. The 80% confidence intervals are indicated with dotted lines. Source: SCRS 2007.

Also, note that the 2006 assessment incorporated data through 2004, since 2005 data were not fully available. Therefore, projections were made using preliminary catches for 2005. These data indicate that in 2005 about one third of the Total Allowable Catch (TAC) was not taken, which is by far the largest shortfall since a TAC was established in 1981. Most of the shortfall was by the United States rod and reel fishery in terms of landings.

The plausible explanations for relatively low catch by the United States since 2004 are (1) that availability of fish to the U.S. fishery was abnormally low, and/or (2) the overall size of the population in the western Atlantic declined substantially from the level of recent years. The fact that Canada and Japan did not have abnormally low catches in 2005 and 2006 supports the first explanation. Also, the CPUE series from the Gulf of St. Lawrence has been at high levels

since 2004. On the other hand, other fishery indicators in 2005 (some abundance indices, declining size composition in some areas, small changes in the fishing mortality rate suggested by tagging data despite declining catches) support the second explanation. For more detail, see McAllister et al. (2007).

The SCRS in 2006 had no strong evidence to favor either explanation over the other, but it noted that the failure of a fishery to take about one third of its TAC, particularly for a valuable species like BFT, is a reason for concern. The continuation of this trend in 2006, and probably 2007, and other new evidence reviewed by the committee, heightened concern that the estimate of stock status from the 2006 assessment may be optimistic (i.e., gives further weight to the second explanation above). It noted that this phenomenon has been seen in other fisheries prior to it becoming clear that they were in trouble. It should also be noted that the relatively low catch in 2005 was incorporated into short term projections (from 2004 to 2005). This leads to somewhat of an increase in projected abundance in the first few years of the projections. If the second explanation is correct, this is an overly optimistic outlook.

The SCRS cautioned that the conclusions of the 2006 assessment do not capture the full degree of uncertainty in the assessments and projections. An important factor contributing to uncertainty is mixing between fish of eastern and western origin. Furthermore, the projected trends in stock size are strongly dependent on estimates of recent recruitment, which are a particularly uncertain part of the assessment.

3.1.2. Yellowfin Tuna

A full assessment was conducted for YFT tuna in 2003 applying various age-structured and production models to the available catch data through 2001. Unfortunately, at the time of the assessment meeting, only 19 percent of the 2002 catch had been reported (calculated relative to the catch reports available at the time of the SCRS Plenary). The results from all models were considered in the formulation of the SCRS advice.

The variability in overall catch-at-age is primarily due to variability in catches of ages zero and one (note that the catches in numbers of ages zero and especially one were particularly high during the period 1998 - 2001). Both equilibrium and non-equilibrium production models were examined in 2003 and the results are summarized in Table 3. The estimate of maximum sustainable yield (MSY) based upon the equilibrium models ranged from 151,300 to 161,300 mt; the estimates of F_{2001}/F_{MSY} ranged from 0.87 to 1.29. The point estimate of MSY based upon the non-equilibrium models ranged from 147,200 - 148,300 mt. The point estimates for F_{2001}/F_{MSY} ranged from 1.02 to 1.46. The main differences in the results were related to the assumptions of each model. The SCRS was unable to estimate the level of uncertainty associated with these point estimates. An age-structured virtual population analysis (VPA) was made using eight indices of abundance. The results from this model were more comparable to production model results than in previous assessments, owing in part to a greater consistency between several of the indices used. The VPA results compare well to the trends in fishing mortality and biomass estimated from production models. The VPA estimates that the spawning biomass (Figure 4) and the levels of fishing mortality (Figure 5) in recent years have been very close to MSY levels. The estimate of MSY derived from these analyses was 148,200 mt.

Table 3 Summary table for the status of Atlantic yellowfin tuna. Source: SCRS 2004b.

Age/size at Maturity	Age 3/~110 cm curved fork length
Spawning Sites	Tropical waters
Relative Biomass Level *Minimum Stock Size Threshold*	B_{01}/B_{MSY} = 0.73 - 1.10 $0.5B_{MSY}$ (age 2+)
Relative Fishing Mortality Rate *Maximum Fishing Mortality Threshold*	F_{01}/F_{MSY} = 0.87 - 1.46 F_{year}/F_{MSY} = 1.00
Maximum Sustainable Yield	147,200 - 161,300 mt
Current (2006) Yield	103,908 mt
Replacement Yield (2001)	May be somewhat below the 2001 yield (159,000 mt)
Outlook	Approaching an overfished condition

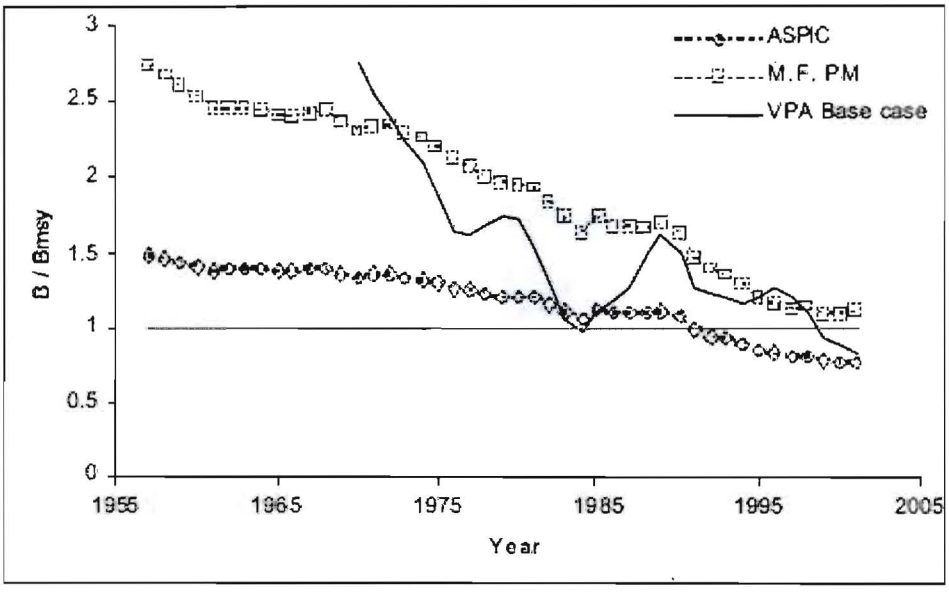

Figure 4 Comparison of yellowfin tuna relative biomass trends calculated using VPA and non-equilibrium production models. Source: SCRS 2004b.

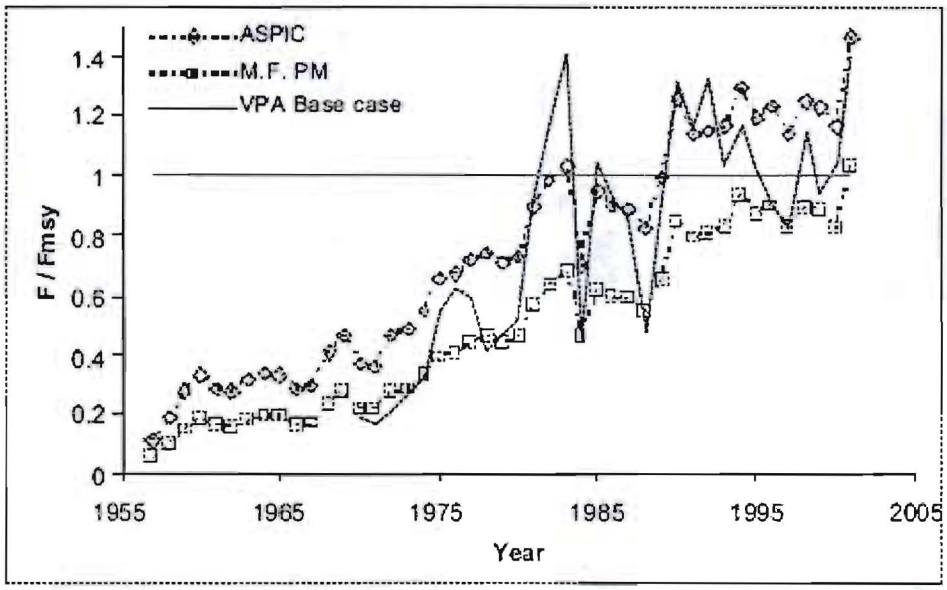

Figure 5 Comparison of yellowfin tuna relative fishing mortality trends calculated using VPA and non-equilibrium production models. Source: SCRS 2004b.

In summary, the age-structured and production model analyses implied that although the 2001 catches of 159,000 mt were slightly higher than MSY levels, effective effort may have been either slightly below or above (up to 46 percent) the MSY level, depending on the assumptions. Consistent with these model results, yield-per-recruit analyses also indicated that 2001 fishing mortality rates could have been either above or about the level which could produce MSY. Yield-per-recruit analyses further indicated that an increase in effort is likely to decrease the yield-per-recruit, while reductions in fishing mortality on fish less than 3.2 kg could result in substantial gains in yield-per-recruit and modest gains in spawning biomass-per-recruit.

3.1.3. Skipjack Tuna

The last assessment on Atlantic SKJ was carried out in 1999 (Table 4). The state of the Atlantic SKJ stock(s), as well as the stocks of this species in other oceans, show a series of characteristics that make it extremely difficult to conduct an assessment using current models. Among these characteristics, the most noteworthy are:

- The continuous recruitment throughout the year, but heterogeneous in time and area, making it impossible to identify and monitor the individual cohorts;
- Apparent variable growth between areas, which makes it difficult to interpret the size distributions and their conversion to ages; and,
- Exploitation by many and diverse fishing fleets (baitboat and purse seine), having distinct and changing catchabilities, which makes it difficult to estimate the effective effort exerted on the stock in the east Atlantic.

For these reasons, no standardized assessments have been able to be carried out on the Atlantic SKJ stocks. Notwithstanding, some estimates were made, by means of different indices of the fishery and some exploratory runs were conducted using a new development of the generalized production model.

Western stock

Standardized abundance indices up to 1998 were available from the Brazilian baitboat fishery and the Venezuelan purse seine fishery, and in both cases the indices seem to show a stable stock status. Uncertainties in the underlying assumptions for the analyses prevent the extracting of definitive conclusions regarding the state of the stock. However, the results suggest that there may be over-exploitation within the fish attraction device (FAD) fisheries, although it was not clear to what extent this applies to the entire stock. The SCRS could not determine if the effect of the FADs on the resource is only at the local level or if it had a broader impact, affecting the biology and behavior of the species. Under this supposition, maintaining high concentrations of FADs would reduce the productivity of the overall stock. However, since 1997, and due to the implementation of a voluntary Protection Plan for Atlantic tunas, agreed upon by the Spanish and French boat owners in the usual areas of fishing with objects, which later resulted in an ICCAT regulation on the surface fleets that practice this type of fishing, there has been a reduction in the SKJ catches associated with FADs. Maintaining this closure could have a positive effect on the resource.

Table 4 Summary Table for the Status of West Atlantic Skipjack Tuna. Source: SCRS 2007.

Age/size at Maturity	Age 1 to 2/~50 cm curved fork length
Spawning Sites	Opportunistically in tropical and subtropical waters
Current Relative Biomass Level *Minimum Stock Size Threshold*	*Unknown* *Unknown*
Current Relative Fishing Mortality Rate F_{2003}/F_{MSY} *Maximum Fishing Mortality Threshold*	*Unknown* $F_{year}/F_{MSY} = 1.00$
Maximum Sustainable Yield	*Not Estimated*
Current (2006) Yield	25,802 mt
Current Replacement Yield	*Not Estimated*
Outlook	*Unknown*

3.1.4. Bigeye Tuna

The SCRS 2007 stock assessment on BET was conducted using various types of models. The assessment summery is presented in Table 5. In general, data availability has improved, but there is still some lack of information regarding detailed fishing and size data from certain fleets, in addition to the past catch and fishing activities of illegal, unreported, and unregulated fleets

(e.g., size, location and total catch), leading to the need to assume catch-at-size for an important part of the overall catch. Species composition of Ghanaian fisheries catch was reconstructed for 1997 based on improved sampling and catch-at-size estimated in recent years as part of the data improvement projects of ICCAT (SCRS 2004a).

Table 5 Summary table for the status of Atlantic bigeye tuna. Source: SCRS 2007.

Maximum Sustainable Yield	90,000 t-93,000 t [1] (68,000- 99,000) [2]
Current (2006) Yield[1]	64,700 t
Replacement Yield (2006)	Slightly below MSY[2]
Relative Biomass (B2006/BMSY)	0.92[1] (0.85-1.07)[3]
Relative Fishing Mortality	
FMSY	0.20[1] (0.07-0.33)[2]
F2005/FMSY	0.87[1] (0.70-1.24)[3]
Conservation & management measures in effect:	[Rec. 04-01] replaced [Rec. 79-01 and Rec. 99-01] after June, 2005. – Total allowable catch for 2005 is set at 81,400 t for major country and entity. – Limits on numbers of fishing vessels less than the average of 1991 and 1992. – Specific limits of number of longline boats; China (45), Chinese Taipei (98), Philippines (8). – Specific limits of number of purse seine boats for Panama (3). – No purse seine and baitboat fishing during November in the area encompassed by 0°-5°N and10° W-20° W.

[1] Reports for 2006 should be considered provisional and in this case includes carryovers from previous years.
[2] Base Case production model (Logistic) results based on catch data 1950-2005.
[3] 80% confidence limits.

This year, two new indices of relative abundance and updated indices of those previously used were made available to the SCRS for use in the assessment. In total, six indices (Figure 6) were provided, of which four were from longline fisheries from Japan, Chinese Taipei, United States, and Brazil. The other two were from a purse seine fishery operated by EC and another from baitboat fishery located in Azores. While the Japanese indices have the longest duration and represent roughly 20-40% of the total catch, the other indices are shorter and generally account for smaller fractions of the catch than the Japanese fishery, except for Chinese Taipei's longline index which is based on catch now as large as the Japanese catch. These longline indices primarily relate to medium and large-size fish. The purse seine index was developed from FAD fishing operations, and this index represents the stock trend in recruitment. The Azorean baitboat index represents various size components.

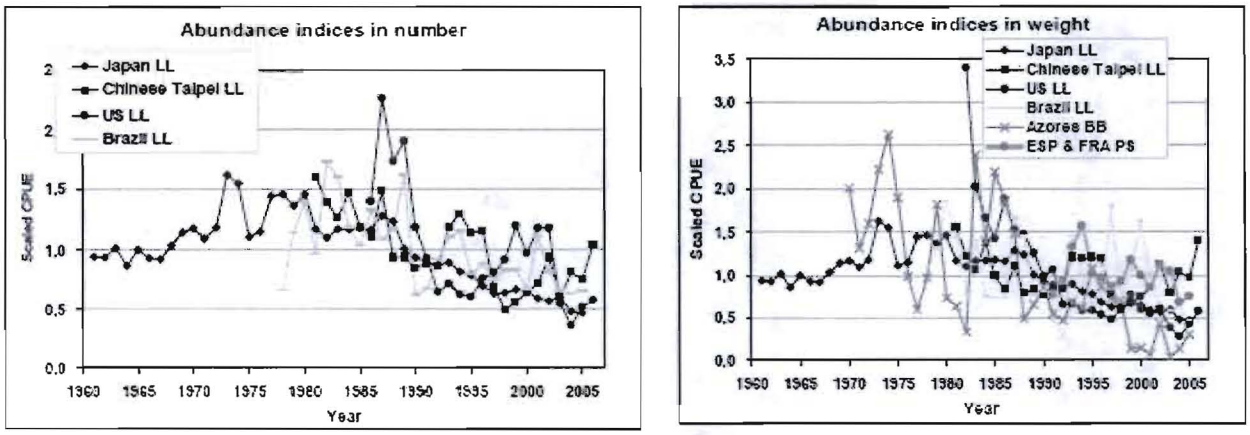

Figure 6 Bigeye tuna abundance indices provided for the 2007 assessment. Source: SCRS 2007.

Several types of assessment models, including production models, VPA, and a statistical integrated model (MULTIFAN-CL) were applied to the available data. There was a range of stock status evaluations from the various model formulations applied, not all of which were judged to be equally likely.

Consistent with previous assessments of Atlantic BET, the results from non-equilibrium production models are used to provide our best characterization of the status of the resource. The current MSY estimated using two types of production models was about 90,000 mt and 93,000 mt, although uncertainty in the estimates broadens the range. In addition, these estimates reflect the current relative mixture of fisheries that capture small or large BET; MSY can change considerably with changes in the relative fishing effort exerted by surface and longline fisheries.

The estimated stock trajectory is shown in Figure 7. The biomass at the beginning of 2006 was estimated to be nearly 92% of the biomass at MSY and the 2005 fishing mortality rate was estimated to be about 13% below the fishing mortality rate at MSY. The replacement yield for the year 2006 was estimated to be slightly below MSY. Considerable uncertainty exists in the estimates of current stock status.

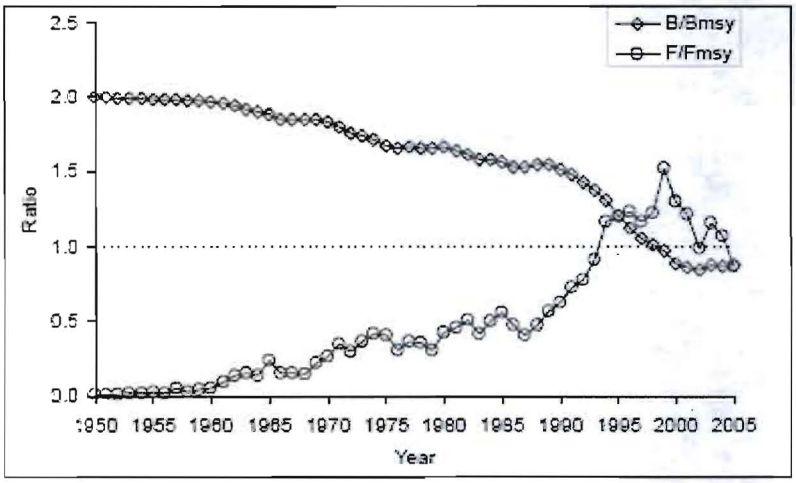

Figure 7 Bigeye tuna trajectories of B/B_{MSY} and F/F_{MSY} estimated from the assessment. Source: SCRS 2007.

While the SCRS felt this characterization best represents the current status of BET in the Atlantic, there are other model formulations which would admit both more optimistic and more pessimistic stock status evaluations.

3.1.5. Albacore Tuna

An assessment of stock status for northern and southern ALB was conducted in 2007 (Table 6). The northern stock's range covers the area affected by this action. The assessment, which considers catch, size, and effort since the 1930s, shows that the northern ALB spawning stock size has declined and is currently about one quarter of the peak levels estimated for the late 1940s. Estimates for recruitment to the fishery, although variable, have shown generally higher levels in the 1960s and earlier periods with a declining trend thereafter until 2004. However, the most recent recruitment is estimated to be large, albeit uncertain (Figure 8). The current assessment indicates that the stock recently rebuilt to levels near B_{MSY} (current SSB is approximately 20% below the MSY level, compared to 2000 when it was 50% below). Recent fishing mortality rates have generally been above F_{MSY} (current F is approximately 50% larger than F_{MSY}) (Figure 9).

Table 6 Summary table for the status of albacore tuna. Source: SCRS 2007

	North Atlantic	South Atlantic	Mediterranean
Current (2006) Yield	36,077 t	24,460 t	5,947 t
Maximum Sustainable Yield	30,200 t (26,800-34,100)[1]	33,300 t (29,900-36,700)[1]	Unknown
Replacement Yield (2006)	~ 32,000 t	28,800 t (25,800-29,300)[1]	Not estimated
B_{2005}/B_{MSY}	0.81 (0.68-0.97)[1]	0.91 (0.71-1.16)[1]	Not estimated
Relative Fishing Mortality			
F_{2005}/F_{MSY}	1.5 (1.3-1.7)[1]	0.63 (0.47-0.9)[1]	Not estimated
F_{2005}/F_{MAX}	2.6 (1.1-3.5)[2] – 1.0[3]	--	Not estimated
$F_{2005}/F_{0.1}$	5.5 (2.4-6.8)[2] - ~2.0[3]	--	Not estimated
Management measures in Effect	[Rec. 98-08]: Limit number of vessels to 1993-1995 average. TAC: 34,500 t [Rec. 03-06]	[Rec. 03-07]: Limit catches to 29,200 t.	None

[1] Approximately 80% confidence bounds from the base case analysis in the North stock and 95% confidence bounds in the South stock.

[2] Approximately 80% confidence bounds from bootstrapped VPA and yield per recruit analysis.

[3] From MULTIFAN-CL yield per recruit analysis not confidence bounds estimated

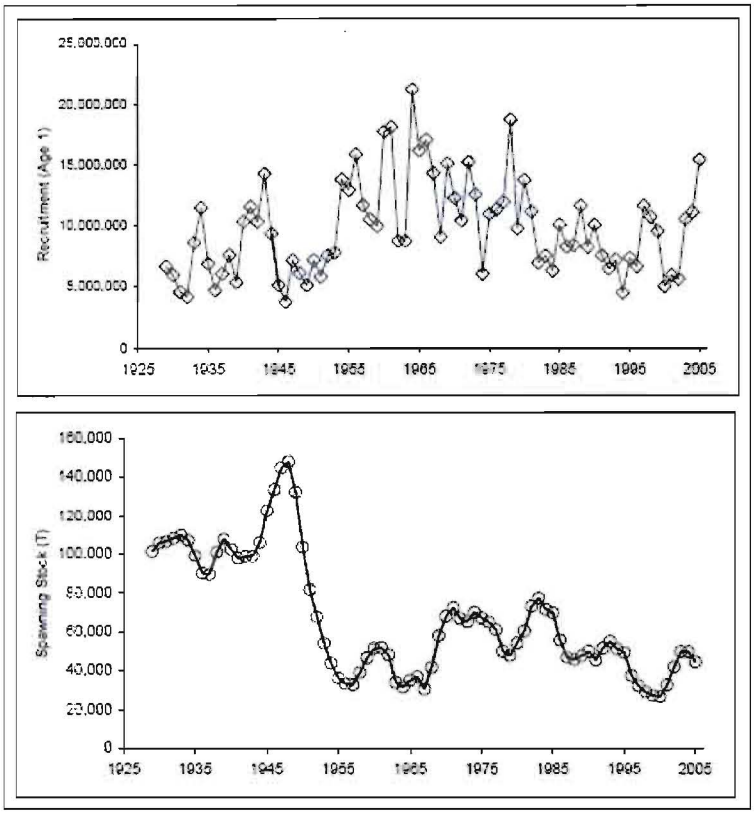

Figure 8 Estimates of northern Atlantic albacore recruitment (age1) and spawning stock size from 1030-2005 from MULTIFAN-CL output. Uncertainty in the estimates has not been characterized, but the uncertainty in recent recruitment levels is considered to be higher than in the past. Source: SCRS 2007.

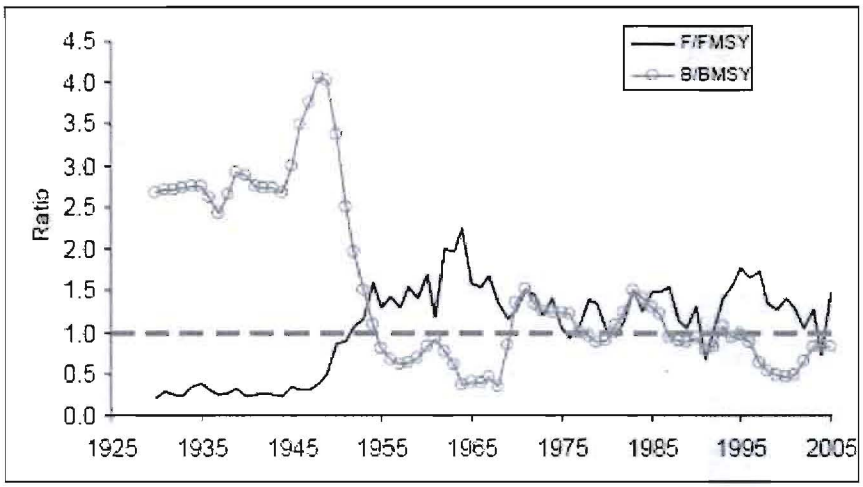

Figure 9 Relative biomass (B/B_{MSY}) and fishing mortality (F/F_{MSY}) of northern Atlantic albacore stock. Source: SCRS 2007.

While estimates of MSY varied over time as the relative combination of fisheries taking juvenile and mature ALB varies which results in different overall selectivity patterns across time, the biomass that supports that MSY has little variation. For the three more recent years, the estimate of MSY is about 30,000 mt, but over time the estimates ranged from about 26,000 mt to 34,000 mt, depending on the relative importance of the surface and longline fisheries catch levels. If recruitment were at the levels estimated in the 1960s, then the MSY would be higher. Total annual ALB average catch was 50,000 mt during the 30 years, 1956-1986, which is higher than the current MSY estimated about 30,200 mt.

The assessment indicated that the spawning stock will decline from the levels estimated in 2005 over the next few years, particularly given the fact that the 2006 catch was higher than the 2005 level (Figure 10). The spawning stock response to different catch levels after the next few years depends upon the real strength of the 2003 year class, which the assessment indicated could be relatively strong.

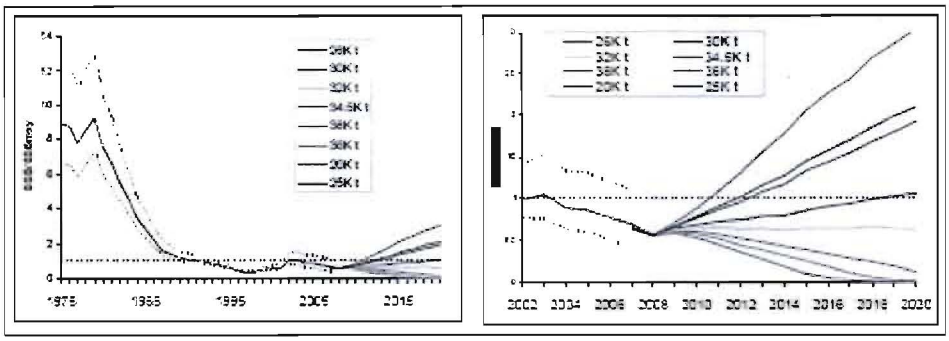

Figure 10 Estimated projections of relative SSB (SSB/SSB_{MSY}) for different scenarios of constant catch assuming average recent year-class strengths for the North Atlantic albacore stock. Note: The order of the lines is the same as the legends; the higher lines correspond to lower projected catches. Source: SCRS 2007.

3.2. Fishery Participants, Gear Types, Data, and Affected Area

As of November 30, 2007, there were 3,616 Atlantic Tunas General category permit holders, 3,901 HMS CHB category permit holders, and 218 Atlantic Tunas Longline category permit holders. These permit data constitute the best available information regarding the universe of permit holders.

Additional information about the operation of U.S. HMS fisheries, including recreational fisheries, can be found in the 2006 SAFE Report (NMFS 2006). The Consolidated HMS FMP (NMFS 2006) provides detailed information about the operation and management of the recreational and commercial HMS fisheries, including international and domestic management measures, and permitting and reporting requirements. Detailed information on fishery participants and recreational fishing tournaments are provided in the 2006 SAFE Report (NMFS 2006).

3.2.1. Bluefin Tuna – Western Atlantic

U.S. landings of BFT for the 1996-2006 period are provided in Table 7. The historical level of landings has generally been determined by quotas since 1982. Commercial fisheries are focused on large medium (73 inches to less than 81 inches) and giant (81 inches or greater) BFT, while recreational fisheries are focused on large school/small medium BFT (47 inches to less than 73 inches), with allowances for school (27 inches to less than 47 inches), large medium, and giant BFT. Since the implementation of the 1999 FMP (NMFS 1999), the BFT fishery has been managed on a fishing year basis (e.g., June 2006-May 2007) versus a calendar year basis. Per implementation of the Consolidated HMS FMP, the fishing year reverted to a calendar year effective January 1, 2008. Commercial categories are monitored by a census of landing cards, whereas the recreational catch is monitored primarily by survey, although the states of Maryland and North Carolina have implemented recreational census BFT tagging programs as well. BFT landings have been considerably less than the adjusted fishing year quota for the last several

years (Figure 11), with 2005, 2006, and 2007 landings representing 33, 15, and 40 percent of the adjusted quotas for those fishing years, respectively.

Table 7 BFT landings by year and category (mt), 1996 to 2007 (2007 fishing year landings as of February 15, 2008).

Category	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
General	575	679	706	714	725	933	898	595	344	234	165	121
Harpoon	58	53	60	59	53	68	41	53	30	23	22	12
Purse Seine	245	250	248	247	275	196	208	265	32	178	4	28
Longline North	21	20	23	17	12	8	8	25	34	29	30	25
Longline South	43	27	24	51	51	28	48	69	58	28	28	8
Trap	1	2	1	0	0	0	0	0	0	0	0	0
Angling	362	299	184	100	50	241	619	392	355	199	191	464
Total	**1,305**	**1,330**	**1,246**	**1,188**	**1,166**	**1,484**	**1,822**	**1,399**	**853**	**691**	**439**	**658**

Note: BFT have been managed on a fishing year basis versus a calendar year basis, starting with the implementation of the 1999 FMP, and reverted to a calendar year basis as of January 1, 2008. Landings are presented on a calendar year (vs. fishing year) basis for 1996 through 1999.

Note: 2007 Fishing year landings figures (calculated as of February 15, 2008) are preliminary and subject to change. Totals may not sum exactly, due to rounding. For the Angling category, landings were estimated using revised preliminary LPS information, reported trophy BFT landings, and North Carolina tagging program information. Commercial landings information is from the NERO dealer report database.

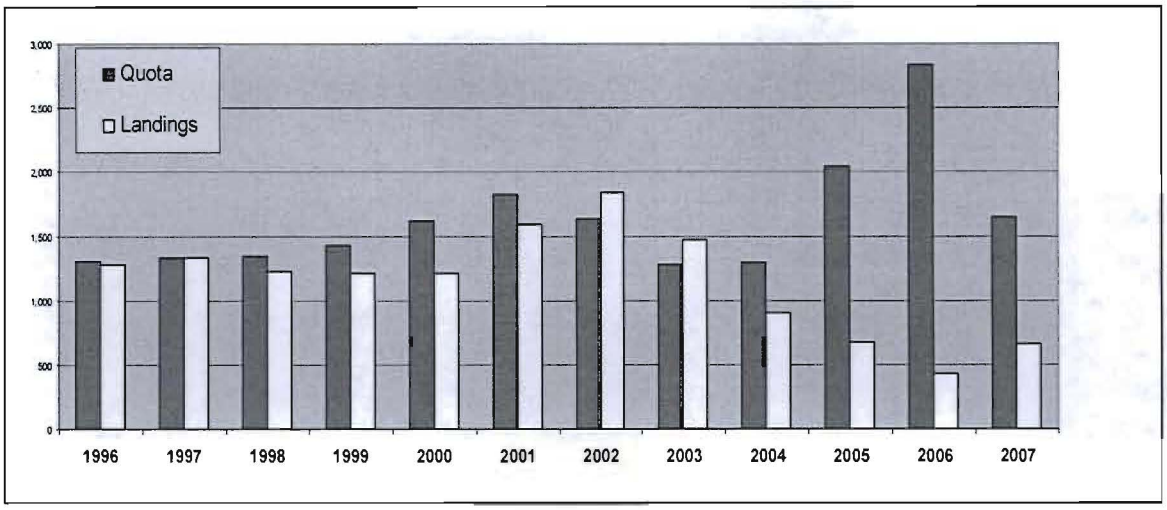

Figure 11 Atlantic BFT adjusted quotas and landings (mt), 1996-2007.

The majority of BFT landings are taken by handgear fisheries in the commercial Atlantic Tunas General category and recreational Angling and HMS CHB categories. The distribution of fishing activity for BFT is generalized in Table 8. Atlantic Tunas General category fisheries are focused in New England during the summer and fall, and the South Atlantic during the winter.

Table 8 Summary of patterns of fishing activities directed at BFT in the United States.

Gear	Area	Size of fish	*Season*
Handline, Harpoon, and Rod and Reel	Cape Cod Bay and Gulf of Maine	Giant	*June-November*
		Medium	*August-October*
		School	*Summer (unpredictable)*
	Cape Lookout to Cape Cod	School	*June-October*
		Medium	*June-October*
		Large Medium and Giant	*December-March*
	Gulf of Mexico	Giant	*January-June*
Purse Seine	Cape Hatteras to Cape Cod	Large Medium and Giant	*July-October*
	Cape Cod Bay	Large Medium and Giant	*July-October*

Recreational fisheries are prosecuted by private vessels fishing in the Angling category and vessels for hire fishing under the HMS CHB category. The Consolidated HMS FMP notes

that HMS CHBs have been targeting school BFT off New York and New Jersey since the early 1900s. School BFT are recreationally targeted off Virginia, Delaware, and Maryland during the summer and off New Jersey and New York as the summer progresses. Fishery landings and school BFT availability decline in the fall. Recreational fishing also takes place for large medium and giant BFT in the South Atlantic winter fishery, and the Consolidated HMS FMP notes that this fishery includes an active HMS CHB fishery. Large school and small medium BFT are landed by private and HMS CHB fisheries in summer and early fall off Virginia, Delaware, Maryland, New Jersey, and Massachusetts, but are overall less accessible to New York, Connecticut and Rhode Island fisheries. Large school and small medium BFT are also available in the South Atlantic winter fishery. In general, BFT fisheries vary from year to year since the exact availability of BFT and the demand for fishing opportunities is unpredictable.

BFT movements throughout the Atlantic are the subject of much research and affect the availability of harvest for regional fisheries. Over the last few years, the availability of large medium and giant BFT in the New England area has declined, causing large reductions in the ability of Atlantic Tunas General category fishermen to harvest the first two time period subquotas and the ability of purse seine and harpoon fishermen to harvest their respective quotas, which are traditionally taken in the New England region. Conversely, the ratio of landings to quota has been high for the Angling category, relative to that for other categories, although time lags in receipt and analyses of survey data, and uncertainty inherent in estimation procedures, mean delayed calculation of final landings estimates.

Harpoon gear authorization

HMS CHB permitted vessels may keep BFT under the daily retention limits applicable to either the Angling or the Atlantic Tunas General category. The size category of the first BFT retained determines the fishing category applicable to the vessel that day. For example, if an HMS CHB vessel catches and retains a school, large school, or small medium BFT (measuring 27 to less than 73 inches curved fork length), the vessel may not retain a commercial-sized BFT (measuring 73 inches or greater) for sale. HMS CHB vessel operators may sell commercial-sized BFT only when fishing under the Atlantic Tunas General category regulations. Dart harpoon use is authorized only as a secondary gear, i.e., as cockpit gear, to assist in subduing, or bringing onboard a vessel, Atlantic HMS that have been first caught or captured using authorized primary gears.

NMFS has adjusted the Atlantic Tunas General category BFT retention limit from the default of one fish (measuring greater than 73 inches) to either 2 or 3 fish for part or all of the Atlantic Tunas General category season for the last several years. Since June 1, 2006, NMFS has maintained the Atlantic Tunas General category retention limit at the maximum allowed under the Consolidated HMS FMP, i.e., 3 BFT, for all subperiods due to low harvest rates.

3.2.2. Yellowfin Tuna

YFT is the principal species of tropical tuna landed by U.S. fisheries in the western North Atlantic. Total estimated landings increased to 7,075 mt in 2006, from the 2005 landings estimate of 5,568 mt (Table 9). The 2006 estimate is considered provisional and may change

owing to incorporation of late reports of commercial catches as they become available and to possible revisions in estimates of rod and reel catches made by recreational anglers. A high proportion of the estimated landings were due to rod and reel catches of recreational anglers in the NW Atlantic (4,649 mt). Estimates of U.S. recreational harvests for tuna and tuna-like species continue to be reviewed and this may result in the need to report additional revisions to the available estimates in the future. Nominal catch rate information from logbook reports (longline catch per 1,000 hooks) for YFT by general fishing areas is shown in Figure 12.

Table 9 Annual landings (mt) of yellowfin tuna from 2002-2006. Source: NMFS 2007.

Area	Gear	2002	2003	2004	2005	2006
NW Atlantic	Longline	400	272	659	394	703
	Rod and reel*	2,624	4,672	3,434	3,504	4,649
	Gillnet	5	1	3	0.1	5
	Trawl	0	2	2	0.2	0.7
	Handline	137	148	213	105	103
	Uncl	**	0	11	4	4
Gulf of Mexico	Longline	2,109	1,828	1,812	1,210	1,121
	Rod and reel*	200	640	247	147	258
	Handline	100	59	28	46	43
Caribbean	Longline	12	7	4	141	180
	Handline	7	9	7	10	8
NC Area 94a	Longline	0	5	**	0.5	0
SW Atlantic	Longline	52	42	17	0	0
	Total	**5,646**	**7,685**	**6,437**	**5,562**	**7,075**

Note: not all gears are represented in this Table; therefore some total values in the Table are a portion of the total U.S. landings of YFT.

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

** $\leq$= 0.05 mt

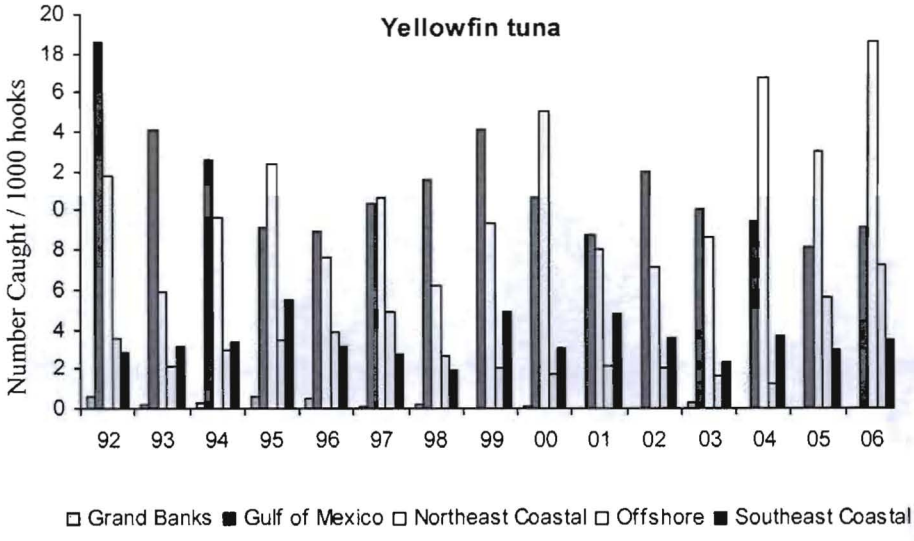

Figure 12 Nominal catch rates for YFT in U.S. pelagic longline logbook reports. Source: NMFS 2007.

3.2.3. Skipjack Tuna

SKJ tuna also are caught by U.S. vessels in the western North Atlantic. Total reported SKJ landings (preliminary) increased by 30.1 mt to 60.7 mt from 2005 to 2006 (Table 10). Estimates of recreational harvests of SKJ continue to be reviewed and could be revised again in the future. Figure 13 presents nominal catch rate information (longline catch per 1,000 hooks) based on fishing logbook reports.

Table 10 Landings (mt) of Skipjack Tuna from 2002-2006. Source: NMFS 2007.

Area	Gear	2002	2003	2004	2005	2006
NW Atlantic	Longline	**	0.9	0.1	0.05	**
	Rod and reel*	23.3	34.0	27.3	8	35
	Gillnet	**	0.9	16.7	2	0.2
	Trawl	**	0.5	0.2	0.07	0.8
	Handline	0.2	0.2	0.6	0.9	0.2
	Trap	**	1.5	**	0	0.3
Gulf of Mexico	Longline	**	**	0.3	0.3	0
	Rod and reel*	13.2	11	6.3	3	6.4
	Handline	0.0	**	0.2	**	0
Caribbean	Longline	2.5	3.3	0.3	0.2	0.2
	Gillnet	0.6	0.4	0.3	0.06	**
	Handline	12.5	9.2	9.6	11	10
	Rod and reel*	33	16	40	4	8
	Total	**85.3**	**77.9**	**101.9**	**29.6**	**61**

Note: not all gears are represented in this Table; therefore total values in the Table are a portion of the total U.S. landings of SKJ.

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

** ≤= 0.05 mt

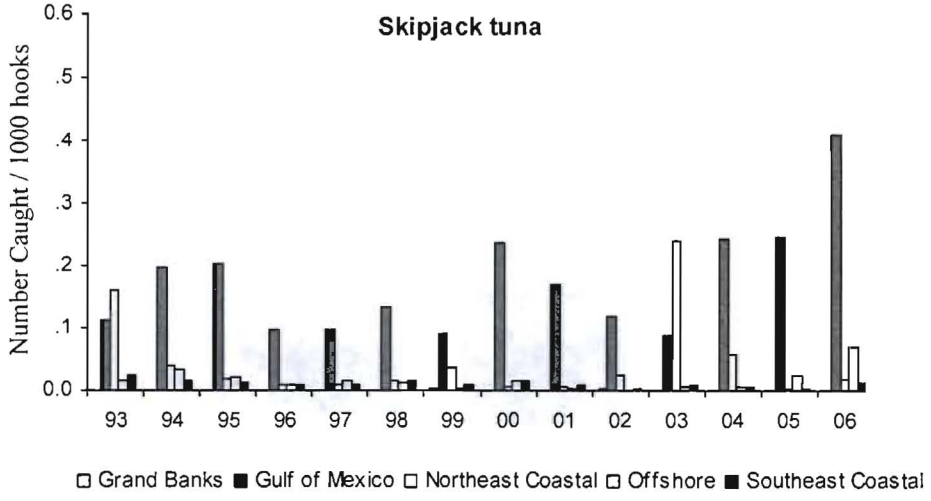

Figure 13 Nominal catch rates for SKJ in U.S. pelagic longline logbook reports. Source: NMFS 2007.

3.2.4. Bigeye Tuna

The other large tropical tuna reported in catches by U.S. vessels in the western North Atlantic is BET. Total reported catches and landings (preliminary) for 2006 increased by 503 mt from 484 mt in 2005 to 987 mt (Table 11). Note that like YFT, the estimates of rod and reel catch are considered provisional and may be revised based on results of a future review of recreational harvest estimates. Figure 14 presents nominal catch rate information (longline catch per 1,000 hooks) based on fishing logbook reports.

Table 11 Landings (mt) of Bigeye tuna by year for 2002-2006. Source: NMFS 2007.

Area	Gear	2002	2003	2004	2005	2006
NW Atlantic	Longline	329	169	267	273	465
	Rod and reel*	50	189	95	165	422
	Handline	14	6	3	6	21
	Trawl	0.5	**	1	0.6	0
	Uncl	0.0	0.0	4	0.6	0.8
Gulf of Mexico	Longline	41	27	20	25	38
	Rod and reel*	0	0	6	0	24
	Handline	0.6	0.3	0.2	0.1	2
Caribbean	Longline	30	7	3.5	7	11
	Handline	0.0	0.0	0.06	**	0
NC Area 94a	Longline	45	37	5	7	3
SW Atlantic	Longline	91	45	14	0	0
	Total	**600**	**480**	**419**	**484**	**987**

Note: not all gears are represented in this Table; therefore total values in the Table are a portion of the total U.S. landings of BET.

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

** $\leq$= 0.05 mt

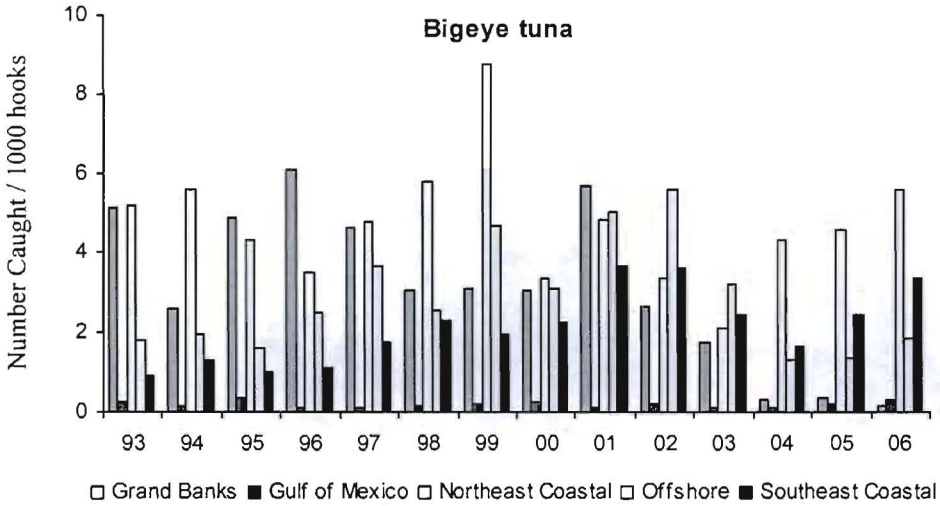

Figure 14 Nominal catch rates for BET in U.S. pelagic longline logbook reports. Source: NMFS 2007.

3.2.5. Northern Albacore Tuna

Northern ALB are landed by U.S. vessels; however, historically, northern ALB has not been a main focus of the U.S. commercial tuna fisheries operating in the North Atlantic. Reported commercial catches were relatively low prior to 1986; however, these catches increased substantially and have remained at higher levels throughout the 1990s, with nearly all of the production coming from the northeastern U.S. coast. The U.S. landings from the Caribbean increased in 1995 to make up over 14% of the total U.S. harvest of northern ALB, but have since remained below 4% of the total. Nominal catch rate information from U.S. longline logbook reports are shown in Figure 15. Estimated total catches of northern ALB were 396 mt in 2006, a decrease of 93 mt from 2005 (Table 12).

Table 12 Landings (mt) of northern albacore tuna for 2002 to 2006. Source: NMFS 2007.

Appendix Table 2.2-ALB. Landings (mt) of Albacore tuna for 2002 to 2006.

Area	Gear	2002	2003	2004	2005	2006
NW Atlantic	Longline	124.0	95.6	106.6	88.9	82.3
	Gillnet	2.6	0.1	4.9	6	0.8
	Handline	3.9	1.4	6.1	3	2.5
	Trawl	0.3	**	2.7	1.7	1.2
	Rod and reel*	323.0	333.8	500.5	356	284
	Uncl	0.0	0.0	3.6	9.9	6.7
Gulf of Mexico	Longline	9.5	7.7	9.8	6.9	7.6
	Handline	0.0	**	0.0	0.2	0.1
Caribbean	Longline	8.4	4.0	3.2	12	10.5
	Trap	0.6	0.2	0.0	0.0	0.0
	Handline	2.7	2.0	2.1	1	0.4
NC Area 94a	Longline	4.8	1.6	0.2	0.6	**
SW Atlantic	Longline	8.3	2.0	0.5	0.0	0.0
	Total	**488**	**448**	**640**	**486**	**396**

Note: not all gears are represented in these Tables; therefore total values in the Table are a portion of the total U.S. landings of ALB and BFT.

** ≤= 0.05 mt

* Rod and Reel catches and landings represent estimates of landings and dead discards when available based on statistical surveys of the U.S. recreational harvesting sector.

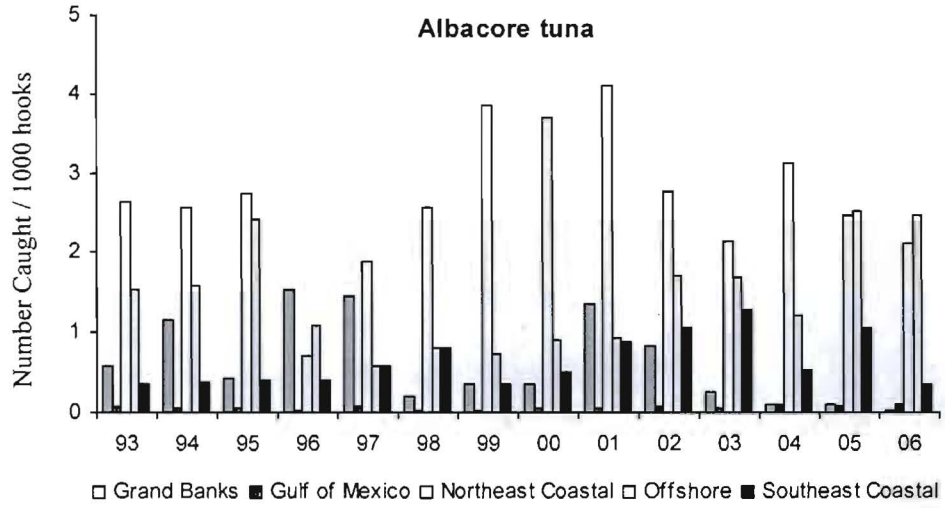

Figure 15 Nominal catch rates for northern ALB in U.S. pelagic longline logbook reports. Source: NMFS 2007.

3.3. Habitat

The area in which this action is planned has been identified as Essential Fish Habitat (EFH) for species managed by the New England Fishery Management Council, the Mid-Atlantic Fishery Management Council, the South Atlantic Fishery Management Council, the Gulf of Mexico Fishery Management Council, the Caribbean Fishery Management Council, and NMFS. Generally, the target species of the HMS fishery management units are associated with hydrographic structures of the water column, e.g., convergence zones or boundary areas between different currents. Because of the magnitude of water column structures and the processes that create them, there is little effect on habitat that can be detected from HMS fishing activities.

3.4. Protected Species

There is little or no formal record of interactions between the Atlantic Tunas General category and HMS CHB fisheries for Atlantic tunas and protected, endangered, or threatened species. Interactions with protected, endangered, and threatened species in the PLL and BLL fisheries were addressed in the 2004 BiOp and 2003 BiOp, respectively. The Consolidated HMS FMP discusses marine mammal and seabird interactions with HMS fisheries and the impact of the MMPA on HMS management. Based on the lack of reported interactions between Atlantic Tunas General category and HMS CHB fisheries and protected resources, the interactions appear to be extremely rare. On August 1, 2008, the HMS Management Division received a memo from the Protected Resources Division of NMFS Southeast Regional Office stating that reinitiation of formal consultation is not necessary for authorization of green-stick and harpoon gear and for the requirement of a sea turtle control device in PLL and BLL fisheries.

For detailed information on BiOps for the HMS PLL fishery, please refer to Section 3.9.9.2 of the Final Consolidated HMS FMP (NMFS 2006). The Final Consolidated HMS FMP also describes the RPAs and Terms and Conditions implemented pursuant to the BiOps for sea turtles which will be modified under preferred Alternative C2.

In 2006, the primary species of marine mammal with which the Atlantic pelagic longline fishery interacted was pilot whales (*Globicephala melaena* and *G. macrorhynchus*). The total estimated number of pilot whale interactions in this fishery during 2006 was 268 (range: 151-474), with a total of 184 estimated to have suffered serious injury or death. In contrast, there were no Risso's dolphin (*Grampus griseus*) interactions observed in this fishery during 2006, which is consistent with a decreasing trend for Risso's dolphins occurring since 2003. There were also an estimated 27 interactions with unidentified species of dolphins, and 13 estimated interactions with unidentified species marine mammals in 2006 (Fairfield-Walsh and Garrison 2007).

Since implementation of circle hook requirements in the PLL fishery, aggregate interactions with leatherback sea turtles declined from 1,362 in 2004 to 415 in 2006 (Table 13). Aggregate loggerhead sea turtle interactions declined from 734 in 2004 to 561 in 2006 (Fairfield-Walsh and Garrison 2007). Sea turtle interactions increased for both species between 2005 and 2006, however, as noted above, 2006 levels remained well below 2004 levels. Additional detailed historical information on PLL interactions with Atlantic sea turtles and marine mammals can be found in the 2006 Consolidated HMS FMP and the 2006 SAFE Report.

On December 22, 2006, the Office of Sustainable Fisheries of NMFS requested reinitiation of the ESA section 7 consultation process for the pelagic longline fishery. On August 9, 2007, the Protected Resources Division of the NMFS Southeast Regional Office determined that the basis and assumptions of the 2004 BiOp remain valid, and that the expected effects on the species, the Terms and Conditions, and the ITS, are still appropriate and do not need to be revised at this time.

Table 13 Estimated number of leatherback and loggerhead sea turtle interactions in the U.S. Atlantic pelagic longline fishery, 2001 - 2005 by statistical area. Sources: Fairfield-Walsh and Garrison 2007, Walsh and Garrison 2006, Garrison 2005, Garrison and Richards 2004, Garrison 2003.

	Leatherback					Loggerhead				
Area	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
CAR	0	0	17	2	4	43	36	61	40	17
GOM	695	838	780	179	28	170	135	45	19	40
FEC	100	27	64	62	110	99	137	99	0	17
SAB	93	75	164	7	39	22	52	194	34	18
MAB	70	94	184	11	30	94	18	92	54	70
NEC	5	76	33	6	73	147	241	150	67	135
NED	0	0	98	63	116	0	0	52	20	235
SAR	0	0	18	20	14	0	70	41	38	19
NCA	0	2	0	0	1	0	39	0	3	10
TUN	0	0	0	0	-	0	0	0	0	--
TUS	0	0	0	0	-	0	0	0	0	--
Total	962	1113	1359	351	415	575	728	734	275	561
NED experimental fishery (2001-03)	158	79	--	--	--	100	92	--	--	--
Experimental fishery (2004-05)	--	--	3	17	--	--	--	0	8	--
Total	1120	1192	1362	368	415	675	820	734	283	561

4.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES CONSIDERED

NMFS, under the authority of the Magnuson-Stevens Act and ATCA manages the U.S. fishery for Atlantic tunas. In addition to being consistent with the Magnuson-Stevens Act and ATCA, HMS fisheries are managed consistent with the ESA, Marine Mammal Protection Act, and other applicable domestic laws.

The alternatives discussed below are intended to ensure fishermen harvest Atlantic tunas within quotas, size limits, or other established limitations and to distinguish green-stick fishing gear from current definitions of other authorized gear types. Also, the purpose is to reduce post-release mortality of sea turtles and increase safety at sea for fishermen when handling sea turtles caught or entangled in LL fishing gear. To accomplish this, the preferred alternatives would be implemented via a final rule that will: 1) authorize green-stick fishing gear for the harvest of Atlantic tunas in the Atlantic Tunas General category, HMS CHB category, and Atlantic Tunas Longline category and 2) require possession and use of sea turtle control devices as an addition to the already existing sea turtle bycatch mitigation gear requirements for pelagic and bottom longline fisheries.

The action is consistent with management objectives contained in the Consolidated HMS FMP. It is within the intent of the Consolidated HMS FMP management objectives, the

Magnuson-Stevens Act, and all other applicable statutes that the following alternatives are being considered. The environmental and socio-economic consequences of these alternatives are discussed below.

4.1. Green-Stick Gear Authorization

As described in Section 2, the alternatives analyzed for green-stick gear authorization include:

Alternative A1: (No action/status quo) Maintain existing gear definitions and authorizations for harvesting Atlantic tunas.

Alternative A2: Authorize green-stick gear for harvest of Atlantic tunas by Atlantic Tunas General category permitted vessels.

Alternative A3: Authorize green-stick gear for harvest of Atlantic tunas by HMS CHB permitted vessels.

Alternative A4: Authorize green-stick gear for harvest of Atlantic tunas by Atlantic Tunas Longline category permitted vessels.

4.1.1. Ecological Impacts

Alternative A1 would maintain the status quo in commercial Atlantic tuna fisheries. Regulations currently in effect regarding authorized gears for Atlantic Tunas General category, HMS CHB, and Atlantic Tunas Longline category permitted vessels would remain the same. Green-stick gear has been used in the Atlantic commercial and recreational BET, northern ALB, YFT, SKJ, and BFT fisheries since the mid-1990s, but it was not originally added to the list of authorized HMS fishery gears (May 28, 1999; 64 FR 29090). Nevertheless, commercial landings of BAYS and BFT with green-stick gear continued in Atlantic Tunas General, Atlantic Tunas Longline, and HMS CHB categories. In the Consolidated HMS FMP (October 2, 2006; 71 FR 58058), NMFS clarified the currently allowable uses of green-stick gear under certain configurations that meet the definition of handgear or longline which are authorized for Atlantic tunas. Public comment has urged NMFS to authorize green-stick gear for harvesting Atlantic tunas. Green-stick gear is currently allowed for use as it meets the definition for handgear, if 2 or fewer hooks are attached, and longline, if 3 or more hooks are attached. The allowable use of the gear in this way impedes operational and economic efficiency of fishermen in the Atlantic Tunas General category or HMS CHB category because rigging of green-sticks with up to 10 hooks is effective and fishermen have used green-sticks rigged in this way historically for Atlantic tunas.

Recent Atlantic tuna landings are presented in Chapter 3. An unknown portion of these landings were made with green-stick gear as the gear has been used in the Atlantic tuna fisheries since the mid-1990s. Reporting mechanisms that are in place do not enable the number of vessels using green-stick gear to be quantified; although, limited data allow the catch to be

characterized as discussed below. As of February 15, 2008, estimated U.S. landings of BFT from the Atlantic (including the Gulf of Mexico) were 658 mt which is an increase of 219 mt over the 2006 estimate and is the first increase in total U.S. BFT landings since 2002. As reported to ICCAT, U.S. YFT landings increased to 7, 075 mt in 2006, which is 1,507 mt more than the 2005 estimate. SKJ landings increased to 61 mt in 2006, which is 31 mt more than the 2005 estimate. BET landings increased to 987 mt in 2006, which is 503 mt more than the 2005 estimate. Northern ALB have not been the main focus of the U.S. commercial tuna fisheries operating in the North Atlantic and landings decreased to 396 mt in 2006 which is 93 mt less than the 2005 estimate.

A portion of green-stick gear landings has been reported via the NMFS Southeast Region's Coastal Logbook when Atlantic Tunas General, HMS CHB, or Atlantic Tunas Longline category fishermen also hold a NMFS Southeast Region fishing permit that requires logbook reporting. NMFS is unable to fully characterize the existing green-stick gear fishery with this information; however, the limited amount of self-reported data provides some useful insight on target catches and bycatch. Table 14 shows this information from 98 fishing trips from 1999-2007 in which green-sticks were used. Landings were dominated by YFT (82.9%), followed by BET (9.8%), BFT (2.3%), and little tunny (*Euthynnus alletteratus*) (2.0%) by weight. All of the landings were reported from the area off the mid-Atlantic states.

Table 14 Atlantic Commercial green-stick gear catch reported via NMFS coastal logbooks, 1999-2007 (number of trips = 98).

Species	Total Weight (lbs)	%
Yellowfin Tuna	66,325	82.9
Bigeye Tuna	7,833	9.8
Bluefin Tuna (unclassified)	1,838	2.3
Little Tunny	1,610	2.0
Dolphin	720	0.9
Blackfin Tuna	551	0.7
Mako Shark (unclassified)	410	0.5
Atlantic Bonito	232	0.3
King Mackerel	183	0.2
Wahoo	120	0.1
Skipjack Tuna	73	0.1
Blue Runner	38	<0.1
Lesser Amberjack	17	<0.1
Albacore Tuna	16	<0.1
Finfishes (Unclassified for Food)	15	<0.1
Cobia	10	<0.1
Total	79,990	

Commercial green-stick gear catches reported in the PLL Logbook Program for 1999 – 2002 can be seen in Table 15. The PLL logbook format was modified in 2003 and eliminated the green-stick gear data field in the years after 2002. Of the 45,712 PLL sets reported during this timeframe, 54 of these sets were reported as green-stick gear. Of the 54 green-stick gear sets

reported, 53 of those were reported from the Mid-Atlantic Bight Statistical Area reporting area and one set was reported from the Northeast Coastal Statistical Area. Landings from this dataset were dominated by YFT (81.9%), followed by dolphin (6.9%) and other BAYS tunas (6.5%) by number. Several other species were reported including 4 BFT.

Table 15 Atlantic commercial green-stick gear catch reported via NMFS PLL logbooks, 1999-2002, in numbers of fish (number of sets = 54).

Species	1999	2000	2001	2002	Total	%
Yellowfin Tuna	0	344	232	102	678	81.9
Dolphin	0	8	2	47	57	6.9
Other BAYS Tunas	0	26	28	0	54	6.5
Pelagic Sharks	0	1	8	2	11	1.3
Swordfish	0	9	0	0	9	1.1
Wahoo	0	0	0	8	8	1
Bluefin Tuna	0	2	0	2	4	<0.1
Bigeye Tuna	0	2	2	0	4	<0.1
Large Coastal Sharks	0	0	3	0	3	<0.1

In order to gain a greater understanding of green-stick gear catch, NMFS examined data from Hawaii in the U.S. Pacific (Table 16). While this information is not from Atlantic tuna fisheries, it aids in better understanding the implications of authorizing this gear. The Hawaiian catch was also dominated by YFT (93.9%), followed by SKJ (2.7%), and dolphin (2.3%). Of note in this dataset are landings of 8 blue marlin which may be sold in the U.S. Pacific and, therefore, may have been targeted by fishermen, thus increasing their reported numbers in this dataset. In the Atlantic, billfish may not be sold and may not be landed with any gear other than rod and reel; therefore, would not be targeted by green-stick gear users. The available green-stick gear logbook information from the Atlantic reported in Table 14 and Table 15 does not show record of billfish interactions.

Table 16 Pacific commercial green-stick gear catch reported via logbooks, 2002-2007 (number of trips = 630). Source: State of Hawaii.

Species	Number	Total Weight (lbs)	% by Weight
Yellowfin Tuna	2,211	116,481	93.9
Skipjack Tuna	413	3,332	2.7
Dolphin	183	2,804	2.3
Blue marlin	8	1,217	1.0
Wahoo	13	212	0.2
Total	2,828	124,045	

Bycatch and interaction with protected species in Atlantic tuna fisheries is also discussed in Chapter 3 as it exists under existing management measures and is described in more detail there. Based on the number of interactions between Atlantic Tunas General category and HMS CHB fisheries and protected resources reported to NMFS, the interactions with protected species appear to be extremely rare. Bycatch of sea turtles in the PLL and BLL fisheries are addressed in the 2004 and 2003 BiOps, respectively. Marine mammal interactions with the PLL fishery

mainly concern pilot whales. Under Alternative A1, the no action alternative, NMFS anticipates no changes in catch or bycatch associated with the continued use of green stick gear under current regulations; however, operational and economic efficiencies for the fishery may not be achieved.

Alternative A2, a preferred alternative, will define green-stick gear and authorize its use in the commercial Atlantic tuna fishery for BAYS and BFT. Vessels fishing under the Atlantic Tunas General category will continue to be subject to all current HMS regulations for that category (such as bag and size limits).

Information from the coastal and PLL logbook program discussed above indicates that green-stick gear is primarily used to target YFT; however, other BAYS tunas and BFT are also landed. As discussed in Chapter 3, the most recent YFT stock assessment (2003) age-structure and production model analyses implied that effective effort may have been either slightly below or above the MSY level, depending on the assumptions. Consistent with these model results, yield-per-recruit analyses also indicated that fishing mortality rates could have been either above or about the level which could produce MSY. Detailed stock status information for BFT, BET, ALB, and SKJ can be found in Chapter 3 of this document.

There is a potential for minor increases in landings of YFT, BET, BFT, and other HMS under Alternative A2, but NMFS cannot accurately quantify anticipated landings for this gear due to the limited amount of effort and landings information available. Green-stick gear has been used in HMS fisheries since at least the mid-1990s (Wescott 1996); however, logbook and/or landings records have been non-existent for some portions of the green-stick gear user fleet due to a lack of reporting requirements or the landings have been difficult to identify and retrieve from some databases due to an inability to identify them by gear type. Some green-stick gear logbook information is included in species-specific stock assessments as the effort and landings are grouped with other fishing activity with similar fishing style such as trolling. This inclusion of some green-stick gear effort and landings with other fishing effort in stock assessments somewhat mitigates the lack of information specific to green-stick gear as stock assessment estimates of fishing mortality historically included and continue to include some green-stick gear fishing activity. Additionally, for BFT, all commercial landings are required to be reported by dealers; therefore, landings with green-stick gear have been and continue to be accounted for against the U.S. BFT quota. While the potential for an increase in effort on Atlantic tunas exists under Alternative A2 considering the increase in number of hooks allowed, such increases in effort over existing practices are expected to be no more than minor due to the pre-existing use of the gear and the capital costs associated with acquisition of greenstick gear. Any unavoidable impacts are discussed in Section 5.2 of this document.

As of November 30, 2007, there were 3,616 Atlantic Tunas General category permitted vessels that, under Alternative A2, will be authorized to use green-stick gear. No mechanism exists to determine how many of these HMS permitted vessels use green-stick gear; therefore, an accurate count of these vessels cannot be obtained. The incidental logbook reporting discussed above shows that a small portion of these vessels use green-stick gear and will likely continue to do so. Anecdotal information provided by fishermen attending public information meetings on green-stick gear authorization indicate that the number of vessels of any HMS permit type

currently using green-sticks is probably less than 300 in the states of North and South Carolina, less than 40 in the New England states, and less than 10 in the Gulf of Mexico. Although this anecdotal estimate does not encompass all of the U.S. Atlantic and Caribbean Sea, based on public comment at HMS AP meetings, public hearings, and public information meetings held through out this area, it is probable that <5% of HMS permitted vessels of all permit types currently use green-sticks. While anecdotal information may provide a general estimate of the upper limit of the percentage of HMS permitted vessels that currently use green-stick gear, no estimate of relative effort is available for making similar estimates of total landings by species or time period with green-stick gear. Nevertheless, because these landings have been occurring, it is not anticipated that authorizing green-stick gear will greatly increase landings or landings rates, or have anything but minimal adverse ecological impacts. It is unknown to what extent that additional vessels not currently using green-stick gear will begin to do so with green-stick gear authorization for any of the commercial Atlantic tuna permits. However, the capital investments involved in rigging a vessel to use green-stick gear are substantial as described in section 4.1.2 below and may serve to constrain the number of additional vessels that begin to use green-stick gear.

While NMFS does not anticipate greatly increased landings from Atlantic Tunas General category vessels, Alternative A2 could result in a minor increase in the overall effort deployed by this category of permit holders. This could occur if additional fishermen become aware of green-stick gear efficiency in catching Atlantic tunas and of the high quality of fish product that can be delivered to the dock resulting in higher ex-vessel value. Green-stick gear could also be deployed at times and in ways that enable more hooks to be fished during a trip, such as while a vessel is in transit between fishing locations where other authorized gears may be deployed. Such increases in effort, if they were to occur, are expected to be minor as green-stick gear use has developed to its current level over a period of several years. The growth of green-stick gear use is constrained by the capital investments involved in rigging a vessel to use green-stick gear. With the possibility of a minor increase in fishing effort with green-stick gear, NMFS anticipates that if increased landings occur, the largest increase will likely be with YFT, BET, and BFT as these are the three most landed tunas (by weight or number depending on the logbook) reported in Coastal and PLL logbooks. NMFS anticipates that any such increase in effort will result in minimal increases in bycatch or bycatch mortality of target and non-target species. If any such increase in effort results in an increase in YFT, BET, and BFT landings, NMFS anticipates that the effects on the health of these stocks will be minimal.

As described in Chapter 3, since 2004, U.S. BFT landings have been well within the U.S. quota allocation from ICCAT. Authorization of green-stick gear in this action is not expected to result anything more than a minimal increase in BFT landings for the reasons previously discussed. If an increase were to occur, repeated quota under-harvests in recent years indicate that room exists within the U.S. BFT quota allocation to allow for some additional landings. NMFS closely monitors Atlantic BFT tuna landings and, as necessary, may make adjustments in size and/or retention limits to limit retention and/or effort. For YFT and BET, size limits regulate the minimum size of fish that may be retained. For BFT, retention limit and effort adjustments may be made to ensure that landings are maintained within the category sub-quota and overall U.S. quota.

Under Alternative A2, bycatch mortality of released fish, including billfish, is anticipated to be low given that baits on green-stick gear are trolled at high speed and deployed at or slightly above the surface of the water. Fish are hooked as they strike the baits, which most frequently results in hooking locations in the jaw or other mouth area and does not often result in deep-hooking. Additionally, because green-stick gear is usually rigged with power haul-back capability and the gear is tended, the mainline can be quickly retrieved, thereby enabling undersized or non-target fish to be released with a minimum of stress and physical trauma. Due to this characteristic of green-stick gear, NMFS anticipates that there may be beneficial effects for the health of target and non-target species when compared to other fishing gears, such as longline, because improving post-release survival of fish reduces overall fishing mortality. Based on available information, interactions with sharks while using green-stick gear are rare.

Alternative A2 is not anticipated to increase interactions with protected resources as this is a surface gear that is actively trolled with baits deployed at or slightly above the surface of the water. The gear is tended as it is fished and therefore can be monitored and or maneuvered to avoid such interactions should they become imminent. There is no record of protected species interactions in the limited dataset available to NMFS.

Collection of data on fishing activity with green-stick gear is important to adequately assess gear performance, efficiency, and bycatch levels. Two existing programs that may be used to collect information on the green-stick gear fishery are vessel logbooks and dealer reports. Currently, NMFS has the authority to require logbook reporting by Atlantic tunas vessels and HMS CHB for which a permit has been issued. Only Atlantic Tunas Longline category permit holders currently are selected for reporting and thus required to report via logbooks. The logbook program provides self-reported catch, effort, and discard information. Atlantic Tunas General and HMS CHB category vessels could be selected and thus required to report via logbooks which would be a large increase in the size of the logbook program. Dealer reports made through the trip ticket program in the southeastern United States and various dealer reporting programs in the northeastern United States could provide landings information and, for some states, effort information. This information is gathered by dealers or their staff based on interviews of the vessel captain or crew. To facilitate green-stick gear specific data collection, coordination of data collection effort for this gear among states and regions is necessary. As a first step in improving green-stick gear specific data collection by dealers, NMFS has designated a gear code for green-stick gear which may be used on dealer reporting forms. This action does not create any new data collection or reporting requirements for Atlantic tuna vessels or dealers.

Alternative A3, a preferred alternative, will define green-stick gear as in Alternative A2 and authorize its use in the commercial Atlantic tuna fishery for BAYS and BFT by HMS CHB category vessels. This alternative will also authorize green-stick gear for recreational harvest of Atlantic tunas when an HMS CHB permitted vessel is on a for-hire trip. NMFS prefers this alternative because HMS CHB vessels may sell Atlantic tunas whether the vessel is for-hire or non-for-hire. Additionally, NMFS received public comment that HMS CHB vessels desired to have the option of using green-stick gear on for-hire trips. As defined at 50 CFR 635.2, "for-hire trip" means a recreational fishing trip taken by a vessel with an Atlantic HMS CHB permit during which paying passenger(s) are aboard; or, for uninspected vessels, trips during which there are more than three persons aboard, including operator and crew; or, for vessels that have

been issued a Certificate of Inspection by the U.S. Coast Guard to carry passengers for hire, trips during which there are more persons aboard than the number of crew specified on the vessel's Certificate of Inspection. Vessels fishing under the HMS CHB category will continue to be subject to all current HMS regulations for that category (such as retention and size limits).

The ecological impacts for Alternative A3 are anticipated to be similar to Alternative A2 above. Green-stick fishing gear has been used in the HMS CHB fishery since the mid-1990s; however, the same data limitations exist for HMS CHB vessels using the gear as for Atlantic Tunas General category vessels. Anecdotal information obtained during public information meetings indicate that green-stick gear is primarily used to target YFT, but dolphin, other Atlantic tunas, and HMS species are caught as well. The stock status of targeted tunas is discussed with Alternative A2 above and in Chapter 3.

There is a potential for increases in landings of YFT, BET, BFT, and other HMS under Alternative A3, but, as with Alternative A2, NMFS cannot specifically quantify anticipated landings for this gear due to the limited amount of effort and landings information available. Issues related to potential increases in Atlantic tunas landings are discussed with Alternative A2 above. As discussed with Alternative A2 above, the potential for minor increases in effort on Atlantic tunas and other HMS exists under Alternative A3 considering the increase in number of hooks allowed, however, such increases over existing practices are not anticipated to be anything more than minor. Any unavoidable impacts are discussed in Section 5.2 of this document.

As of November 30, 2007, there were 3,901 HMS CHB permitted vessels that, under Alternative A3, will be authorized to use green-stick gear. No mechanism exists to determine how many of these HMS permitted vessels use green-stick gear; therefore, an accurate count of these vessels cannot be obtained. The incidental logbook reporting discussed above shows that a small portion of these vessels do use green-stick gear and will likely continue to do so. The estimates of potential green-stick gear users presented with Alternative A2 above include HMS CHB users as well. While anecdotal information may provide a general estimate of the upper limit of the percentage of HMS permitted vessels that currently use green-stick gear, no estimate of relative effort is available for making similar estimates of total landings by species or time period with green-stick gear. Nevertheless, because these landings have been occurring, it is not anticipated that authorizing green-stick gear will greatly increase landings or landings rates, or have anything but minimal adverse ecological impacts.

Similar to Alternative A2 above, NMFS does not anticipate greatly increased landings from HMS CHB vessels under Alternative A3; however, Alternative A3 could result in a minor increase in the overall effort deployed by HMS CHB permit holders. This could occur if additional fishermen become aware of green-stick gear efficiency in catching Atlantic tunas and/or of the high quality of fish product that can be delivered to the dock resulting in higher ex-vessel value. Such increases in effort, if they were to occur, are expected to be minor as green-stick gear use has developed to its current level over a period of several years. The growth of green-stick gear use is constrained by the capital investments involved in rigging a vessel to use green-stick gear. NMFS anticipates that the ecological impacts of Alternative A3 will be the same as those described under Alternative A2 above. Regulatory mechanisms as described under Alternative A2 also apply under Alternative A3. Under Alternative A3, bycatch mortality

of released fish is expected to be low and interactions with protected resources are not anticipated to increase for the same reasons described under Alternative A2 above.

As described under Alternative A2 above, collection of data on fishing activity with green-stick gear is important to adequately assess gear performance, efficiency, and bycatch levels. In the proposed rule comment period, NMFS sought public comment on the pros and cons of data collection programs regarding the quality and applicability of the information collected as well as social and economic impacts. The comments that NMFS received are summarized and responded to in Appendix 2 of this document.

Alternative A4, a preferred alternative, will define green-stick gear as in Alternative A2 and authorize its use in the directed commercial Atlantic BAYS tuna fishery, and allow for the incidental retention of BFT by Atlantic Tunas Longline category vessels. Green-stick gear can currently be used with more than 2 hooks by Atlantic Tunas Longline permitted vessels under current target catch and gear (i.e., circle hooks) requirements.

With the clarification of gear definition and configuration provided in the Consolidated HMS FMP, green-stick gear with more than 2 hooks meets the definition of longline, thereby restricting Atlantic Tunas Longline permitted vessels from fishing with green-stick gear in PLL or BLL closed areas. Alternative A4 will distinguish green-stick gear from longline gear thus allowing green-stick gear to be fished in PLL and BLL closed areas if existing regulations for removal of PLL and BLL gear are met. These regulations state that a vessel is considered to have PLL gear onboard when a power-operated longline hauler, a mainline, floats capable of supporting the mainline, and leaders (gangions) with hooks are onboard. Likewise, a vessel is considered to have BLL gear onboard when a power-operated longline hauler, a mainline, weights and/or anchors capable of maintaining contact between the mainline and the ocean bottom, and leader (gangions) with hooks are onboard. For closed areas respective to both PLL and BLL gear, removal of any one of these elements constitutes removal of the PLL or BLL gear.

Under Alternative A4, Atlantic Tunas Longline permitted vessels will continue to be subject to current HMS PLL or BLL regulations, whichever is applicable, including the closed areas, except that up to 20 J-hooks will be allowed onboard if green-stick gear is also onboard. This provision to allow up to 20 J-hooks is intended to facilitate the high speed trolling methods used when fishing with green-stick gear and is discussed further below. Current requirements to use only circle hooks on PLL gear will remain unchanged.

In the Gulf of Mexico, PLL vessels are prohibited from using live bait in order to reduce the incidental catch of Atlantic billfish. NMFS is concerned about the effect that the 20 J-hook allowance, as described above, may have on enforcement of the live bait prohibition because fishing rigs that catch live bait utilize small J-hooks. The possession of such J-hooks is currently prohibited. NMFS' concern is over the possibility that bait catching rigs would be used under the guise of green-stick gear, thus making enforceability of the live bait prohibition more difficult. In the proposed rule, NMFS sought public comment on establishing a minimum hook size for J-hooks allowed with green-stick gear onboard Atlantic Tunas Longline Permitted vessels and received comments in favor of such a restriction. As a result, this action will

establish a minimum hook size for J-hooks allowed to be possessed and used with green-stick gear onboard PLL vessels. J-hooks possessed or used when green-stick gear is onboard may only be used with green-stick gear and may be no smaller than 1.5 inch (38.1 mm) when measured in a straight line over the longest distance from the eye to any other part of the hook. The minimum size limit for J-hooks in specific units of length is necessary as hook sizes such as 1/0, 2/0, 3/0 etc. are not standardized among hook manufacturers. The length 1.5 inch used for this minimum size limit is a size that restricts small hooks used with bait catching rigs which are normally 1/0 sized hooks or smaller. A 1.5 inch J-hook is approximately the size of a 2/0 or 3/0 standard J-hook depending on the manufacturer and style. J-hooks used with green-stick gear when fishing for Atlantic tunas (usually 7/0 to 11/0) are much larger than the 1.5 inch minimum size limit established by this action. This minimum J-hook size limit only applies to Atlantic Tunas Longline permitted vessels; however, it does apply these vessels throughout the Atlantic.

Under Alternative A4, PLL vessels will be allowed to use artificial baits with green-stick gear. Green-stick gear is usually fished with artificial baits most of which are shaped like squid and made of rubber or plastic. Artificial baits are preferred because they last longer on the hook when trolled in comparison to natural, dead squid which often fall apart relatively quickly when trolled. Some PLL vessels use both green-stick gear and PLL on the same trip. The specific allowance of the use of artificial baits with green-stick gear on PLL vessels in necessary because, under existing regulations, PLL vessels are restricted in the Northeast Distant Restricted Fishing Area (NED) to possessing onboard and/or using only whole Atlantic mackerel and/or squid bait for the purpose of reducing sea turtle interactions as stipulated by the 2004 BiOp. For similar reasons under existing regulations, PLL vessels outside the NED are restricted to possessing onboard and/or using only whole finfish and/or squid bait. Artificial baits are not typically effective for use on PLL because PLL gear is not fished in a way that causes an artificial bait to have action that would entice a fish to bite. Green-stick gear landings information shown in Table 14, Table 15, and Table 16 show no sea turtle interactions. Green-stick gear is actively trolled with the baits fished at or above the surface of the water. Feeding behavior that enables organisms to be caught on green-stick gear includes swimming and feeding at high speed with the capability, at times, to leap out of the water to obtain food. Sea turtles do not typically feed while swimming at speeds necessary to strike a trolled bait neither do they leap out of the water to obtain food, thus sea turtle feeding behavior does not enable being caught on green-stick gear. Accordingly, NMFS does not expect the use of this gear in the Atlantic tuna fishery to increase interactions with sea turtles or other protected resources.

The ecological impacts for Alternative A4 are anticipated to be similar to Alternative A2 above. Green-stick fishing gear has been used in the Atlantic tunas fishery since the mid-1990s (Wescott 1996); however, similar data limitations exist for Atlantic Tunas Longline permitted vessels using the gear as for Atlantic Tunas General category and HMS CHB vessels. HMS PLL logbook information presented in Table 14 and Table 15 as well as anecdotal information obtained during public information meetings indicate that green-stick gear is primarily used to target YFT, but dolphin, other Atlantic tunas, and HMS species are caught as well. The stock status of targeted tunas is discussed with Alternative A2 above and in Chapter 3.

There is a potential for increases in landings of YFT, BET, BFT, and other HMS under Alternative A4, but, as with Alternatives A2 and A3, NMFS cannot specifically quantify

anticipated landings for this gear due to the limited amount of effort and landings information available. Issues related to potential increases in Atlantic tunas landings are discussed with Alternative A2 above.

As of November 30, 2007, there were 218 Atlantic Tunas Longline permitted vessels that, under Alternative A4, will be authorized to use green-stick gear. No mechanism exists to determine how many of these HMS permitted vessels use green-stick gear; therefore, an accurate count of these vessels cannot be obtained. The incidental logbook reporting discussed above shows that a small portion of these vessels use green-stick gear and will likely continue to do so. The estimates of potential green-stick gear users presented with Alternative A2 above include Atlantic Tunas Longline vessels as well. While anecdotal information may provide a general estimate of the upper limit of the percentage of HMS permitted vessels that currently use green-stick gear, no estimate of relative effort is available for making similar estimates of total landings by species or time period with green-stick gear. Nevertheless, because these landings have been occurring under existing gear definitions and authorizations for several years as described in the discussion of A2 above, it is not anticipated that authorizing green-stick gear will greatly increase landings or landings rates, or have anything but minimal adverse ecological impacts.

Similar to Alternative A2 above, NMFS does not anticipate greatly increased landings from Atlantic Tunas Longline vessels; however, Alternative A4 could result in a minor increase in the overall effort deployed by Atlantic Tunas Longline permit holders. This could occur if additional fishermen become aware of green-stick gear efficiency in catching Atlantic tunas and/or of the high quality of fish product that can be delivered to the dock resulting in higher ex-vessel value. Green-stick gear could also be deployed at times and in ways that enable more hooks to be fished during a trip such as in PLL or BLL closed areas or while a vessel is in transit between fishing locations where other authorized gears may be deployed. Similar to Alternative A2 above, any such increases in effort, if they were to occur, are expected to be minor as green-stick gear use has developed to its current level over a period of several years. The growth of green-stick gear use is constrained by the capital investments involved in rigging a vessel to use green-stick gear. NMFS anticipates that if increased landings occur, the largest increase will likely be for YFT, BET, and BFT as these are the most landed tunas (by weight and number depending on the logbook) reported in Coastal and PLL logbooks.

As with Alternative A2 above, authorization of green-stick gear under Alternative A4 is anticipated to result in only minor increases in BFT landings; however, if such an increase were to occur, repeated quota under-harvests in recent years indicate that room exists within the U.S. BFT quota allocation to allow for some additional landings. The same ability to monitor Atlantic tuna landings and, as necessary, may make adjustments in size and/or retention limits to limit retention and/or effort that was described under Alternative A2 above apply for Alternative A4. NMFS anticipates that any increase in effort as described above will result in minimal increases in bycatch or bycatch mortality of target and non-target species. Under Alternative A4, bycatch mortality of released fish, including billfish, is anticipated to be the same as described for Alternative A2 above.

While blue marlin catches with green-stick gear are reported in the Pacific (Table 16), this may be a result of the fact that marlin may be caught and sold in the Pacific and, thus may

have been targeted. In the Atlantic, no blue marlin, white marlin, sailfish, or spearfish were reported captured in either of the green-stick gear landings datasets (Table 14 and Table 15). Although no billfish have been reported captured on green-stick gear in the Atlantic, increased interactions with Atlantic blue marlin, white marlin, sailfish, and spearfish are possible. However, because this gear type has been used in Atlantic HMS fisheries for several years, it is not anticipated that authorizing it will greatly increase effort; therefore, green-stick gear will not likely result in significant increases in interaction rates with Atlantic billfish or harvest rates of other species. Adverse ecological impacts are anticipated to be minimal because green-stick gear is an actively trolled and tended gear, thus fish may be retrieved quickly resulting in minimal physiological stress and an improved release condition in comparison to longline.

No sea turtle interactions have been reported with green-stick gear. As described above, green-stick gear is actively trolled with the baits fished at or above the surface of the water and sea turtles do not typically feed while swimming at speeds necessary to strike a trolled bait. Accordingly, NMFS does not expect the use of this gear in the Atlantic tuna fishery to increase interactions with sea turtles or other protected resources. For this reason, NMFS does not believe that allowing the possession of no more than 20 J-hooks onboard PLL vessels that also possess green-stick gear, under Alternative A4, will result in an increase in mortalities of sea turtles or other bycatch species. PLL vessels will continue to be required to use only circle hooks with longline gear according to current regulations.

Alternative A4 is not anticipated to increase interactions with other protected resources as this is a surface gear that is actively trolled with baits deployed at or slightly above the surface of the water. The gear is tended as it is fished and therefore can be monitored and or maneuvered to avoid such interactions should they become imminent. There is no record of protected species interactions in the limited dataset available to NMFS.

In the aggregate, preferred alternatives A2, A3, and A4 may result in minor increases in targeted catch of YFT, BET, and BFT, which is not anticipated to have noticeable impacts on the stock status of these targeted species. These alternatives are also anticipated to have positive impacts for bycatch and bycatch mortality of target and non-target species. Further, taken in combination, these alternatives are not anticipated to increase interactions with protected species.

4.1.2. Social and Economic Impacts

A detailed description of fishery participants is presented in Section 3.2. The social and economic impacts of Alternative A1 are expected to be minimal as green-stick gear would continue to be allowed under current gear definitions for longline and handgear, thus there would be no change from the baseline allowable use of green-stick gear. Although minimal, unquantified social and economic impacts may occur to Atlantic Tunas General category and HMS CHB permitted vessel holders with the status quo because they would not be allowed to use green-stick gear with 3 hooks or more unless they purchased an Atlantic Tunas Longline permit. In such cases, these fishermen who then held Atlantic Tunas Longline permits would be required to abide by PLL and BLL closed area restrictions and gear restrictions (i.e., circle hooks). Many of these Atlantic tunas category and HMS CHB permit holders used green-stick gear rigged with 3 hooks or more prior to the original HMS gear authorization in 1999 ((May 28,

1999; 64 FR 29090)) and continued to do so until at least the Consolidated HMS FMP (NMFS 2006) when the allowed use of green-stick gear was clarified according to the LL and handgear definitions.

Alternative A2 is expected to have positive social impacts. Green-stick gear is popular with Atlantic Tunas General category permit holders in areas of the Atlantic where it has been used since at least the mid-1990s. Negative public comments were not expressed during a series of public information meetings about green-stick gear authorization held during the summer of 2007 in Foxboro, MA; Silver Spring, MD; Morehead City, NC; and Saint Petersburg, FL; and the South Atlantic Fishery Management Council (SAFMC) in Key West, FL. Green-stick gear authorization was also discussed at HMS AP meetings in March and October 2007. A number of HMS AP members expressed support for green-stick gear authorization for Atlantic tunas including BFT. A commonly expressed reason for support at the public information meetings, the SAFMC meeting, and the HMS AP meetings was the low bycatch rate of green-stick gear as evidenced by the datasets above and by anecdotal reports of fishermen. Another expressed reason for support at these meetings was the potential for low post-release mortality rates of fish released from green-stick gear in comparison with other fishing gears such as PLL (due to the longline not being tended as quickly as green-stick gear is) or rod and reel (due to long fight times).

The economic impacts of Alternative A2 are expected to be positive. Authorization of green-stick gear for harvest of Atlantic tunas will allow Atlantic Tunas General category permit holders additional opportunities for harvest. Tuna and other species harvested commercially with green-stick gear are usually high in quality and bring high prices due to the speed with which the fish are brought to the vessel, stored on ice, transported to the dock, and sold. Existing regulations, such as size limits, retention limits, and applicable quotas on commercial Atlantic tuna fisheries will continue to be in effect. Economic benefits may be realized through continued, and possibly increased, harvest of Atlantic tunas. Use of this gear may result in an unknown number of additional trips. Additional landings or effort will have positive economic benefits for dockside businesses through increased need for fish processing and the sale of additional fishing gear, fuel, ice, and other supplies. The economic benefits may be minimal, however, as green-stick gear has been used in U.S. Atlantic tuna fisheries for several years.

Green-stick gear ranges in cost from $1,300-$3,300 for the fiberglass pole. Completely outfitting a vessel with hydraulic spool and other tackle would cost between $4,000-$6,000 depending on the size of the rig. Anecdotal information indicates that some fishermen may run mainlines from outriggers, a flying bridge, or a tuna tower which would not be as costly. Outfitting costs are discretionary for fishermen as the gear is not required to participate in the fishery. This gear will be authorized for use from properly permitted vessels only. The current cost of a Federal vessel permit is $28.00 per year.

Alternative A3 is expected to have positive social and economic impacts similar to those discussed under Alternative A2 above. Public and HMS AP member support has been expressed as described in Alternative A2 above. Vessel outfitting costs and permitting costs are similar to those described in A2 above.

Alternative A4 is expected to have positive social impacts particularly for longline fishermen and are similar to those described under A2 above. Public and HMS AP member support has been expressed as described in Alternative A2 above.

The economic impacts of Alternative A4 are expected to be positive particularly for longline fishermen and are similar to those described under A2 above. Existing regulations, such as target catch requirements, size limits, retention limits, applicable quotas, closed areas, gear restrictions, and sea turtle mitigation measures on the Atlantic PLL and BLL fishery will continue to be in effect. Vessel outfitting costs are similar to those described in A2 above. The Atlantic Tunas Longline permit is a limited access permit (LAP) as are the shark and swordfish LAPs that must be held with the Atlantic Tunas Longline permit.

4.1.3. Conclusion

Information on U.S. Atlantic commercial green-stick gear landings indicates that vessels employing this gear type target YFT; however, other BAYS tunas and BFT are also landed. Landings information obtained by NMFS since publication of the 2006 Consolidated FMP (NMFS 2006), when green-stick gear authorization was previously considered, confirm that green-stick gear landings have been included in U.S. landings reports to ICCAT even though limitations in the data collection programs make identification of these landings difficult. With the preferred alternatives' authorization of green-stick gear under this action, there is a potential for limited increases in landings of YFT, BET, BFT, and other HMS under Alternative A2, but NMFS cannot accurately quantify anticipated landings for this gear due to the limited amount of effort and landings information available. Nevertheless, because green-stick gear landings have been occurring and use of the gear has grown to its current level within existing economic constraints, it is not anticipated that authorizing green-stick gear will greatly increase landings or landings rates, or have anything but minimal adverse ecological impacts. It is unknown to what extent that additional vessels not currently using green-stick gear will begin to do so if green-stick gear is authorized for any of the commercial Atlantic tuna permits. However, the capital investments involved in rigging a vessel to use green-stick gear are substantial and may serve to constrain the number of additional vessels that begin to use green-stick gear. If landings of BFT increase as a result of this action, U.S. BFT landings since 2004, as described in Chapter 3, have been well within the U.S. quota allocation from ICCAT. Repeated quota under-harvests in recent years indicate that room exists within the U.S. BFT quota allocation to allow for some additional landings. NMFS closely monitors Atlantic BFT tuna landings and, as necessary, may make adjustments in size and/or retention limits to limit retention and/or effort. For YFT and BET, size limits regulate the minimum size of fish that may be retained. For BFT, retention limit and effort adjustments may be made to ensure that landings are maintained within the category sub-quota.

Although no billfish have been reported captured on green-stick gear in the Atlantic, increased interactions with Atlantic blue marlin, white marlin, sailfish, and spearfish are possible under Alternatives A2, A3, and A4. However, because this gear type has been used in Atlantic HMS fisheries for several years, it is not anticipated that authorizing it will greatly increase effort; therefore, green-stick gear will not likely result in significant increases in interaction rates with Atlantic billfish or harvest rates of other species. Adverse ecological impacts are

anticipated to be minimal because green-stick gear is an actively trolled and tended gear, thus fish may be retrieved quickly resulting in minimal physiological stress and an improved release condition in comparison to longline. Also, these same benefits for improved release condition result from the power haul back capability of green-stick gear, thus in this way, may have benefits over rod and reel for Atlantic tunas. Interactions with protected species are expected to be minimal as the available information on green-stick gear catches in the Atlantic and Pacific show no such interactions. Social and economic impacts are expected to be minimal and generally positive due to the already occurring use of the gear and public and HMS AP comments that have been supportive of green-stick gear authorization.

4.2. Harpoon Authorization

As described in Section 2, the alternatives analyzed for harpoon authorization for BFT in HMS CHB category include:

Alternative B1: *(No action/status quo) Maintain existing gear authorizations for harvesting Atlantic tunas by HMS CHB permitted vessels.*

Alternative B2: Authorize harpoon gear for harvest of Atlantic tunas by HMS CHB permitted vessel.

Alternative B2a: Authorize harpoon gear for Atlantic tunas fishing by HMS CHB permitted vessels on all trips.

Alternative B2b: Authorize harpoon gear for Atlantic tunas fishing by HMS CHB permitted vessels on non-for-hire trips only.

4.2.1. Ecological Impacts

Alternative B1 would maintain the status quo regarding harpoon use in the Atlantic tuna fisheries. This alternative was not preferred in the Draft EA but is preferred in the Final EA. The authorized gears for Atlantic tunas fishing by HMS CHB permitted vessels would remain the same, i.e.,: speargun (for recreational BAYS tunas only), and rod and reel (including downriggers), bandit gear, and handline (for all tunas). Harpoon use is currently authorized only for vessels permitted in the Atlantic Tunas General and Harpoon categories. Of the 560 fish landed by General category vessels as of December 17, 2007, 61 were reported as harpooned.

HMS CHB vessels may currently fish under the Atlantic Tunas General category regulations and may fill the daily retention limit for either the Atlantic Tunas General or the HMS Angling category. The size category of the first BFT retained determines the fishing category applicable to the vessel that day. For example, if an HMS CHB catches and retains a school, large school, or small medium BFT (measuring 27 to less than 73 inches curved fork length), the vessel may not retain a commercial-sized BFT (measuring 73 inches or greater) for sale. HMS CHBs are allowed one trophy BFT per year, which cannot be sold. HMS CHB vessel operators may sell commercial-sized BFT only when fishing under the Atlantic Tunas

General category regulations. Other than for the Harpoon category, dart harpoon use currently is authorized only as a secondary gear (i.e., as cockpit gear) to assist in subduing, or bringing onboard a vessel Atlantic HMS that have been first caught or captured using authorized primary gears.

Impacts of handgear used to fish for Atlantic tunas under the Atlantic Tunas General category and Harpoon categories are described in full in the Consolidated HMS FMP (NMFS 2006). Harpoon gear is selective gear that is used to capture only one large pelagic fish (primarily BFT but also swordfish) at a time. Bycatch and bycatch mortality by commercial handgear is considered to be low, particularly for harpoons, which are thrown individually at a fish, determined by the fisherman to be greater than the minimum commercial size. As discussed in Section 3.4, there is no information or evidence of interactions between harpoon users targeting Atlantic tunas and threatened or endangered sea turtles, marine mammals, or other protected resources. The harpoon fishery is a Category III fishery under the Marine Mammal Protection Act, i.e., one with remote likelihood of serious injury or mortality to marine mammals.

Alternative B2 would authorize harpoon gear for the commercial harvest of Atlantic tunas, including BFT, for HMS CHB permitted vessels. This alternative was preferred in the Draft EA, but is not preferred in the Final EA. While fishing under the rules that apply when filling the Atlantic Tunas General category BFT retention limit, HMS CHB vessels would be able to use harpoon gear to fish for and retain BFT greater than 73 inches curved fork length. HMS CHBs may currently fish under the Atlantic Tunas General category regulations and may fill the daily retention limit for either the Atlantic Tunas General or the Angling category.

At the October 2007 HMS AP meeting, NMFS heard comments from HMS AP members about potential rulemaking to authorize harpoon use for HMS CHBs. Comments supporting the authorization are described below. However, some HMS AP members were concerned about potential increases in bycatch mortality due to highgrading or if fish under the commercial size are harpooned and released due to size restrictions. Overall, ecological impacts are expected to be neutral.

Available Northeast and Southeast Region Vessel Trip Report data indicate that, for Atlantic tunas fishing, harpoon gear is only used to target BFT. Since 1996, only five trips (where primary landings were swordfish) have been reported with a BAYS tuna captured, and all five involved YFT. This alternative would not change the number or size of BFT allowed to be retained on a HMS CHB vessel, but would provide HMS CHB fishermen the opportunity to use harpoon gear in filling the Atlantic Tunas General category daily retention limit. Alternative B2a would allow harpoon gear use on all types of CHB trips. Alternative B2b would limit harpoon use to non-for-hire trips. As defined at 50 CFR 635.2, "for-hire trip" means a recreational fishing trip taken by a vessel with an Atlantic HMS CHB permit during which paying passenger(s) are aboard; or, for uninspected vessels, trips during which there are more than three persons aboard, including operator and crew; or, for vessels that have been issued a Certificate of Inspection by the U.S. Coast Guard to carry passengers for hire, trips during which there are more persons aboard than the number of crew specified on the vessel's Certificate of Inspection. Under this alternative, it is NMFS' understanding that, due to safety and liability

concerns, only vessel captain and crew would be involved in harpoon fishing, i.e., no other passengers would be offered the opportunity to use the gear. Harpoon gear is not authorized for recreational fishing (i.e., under the Angling category permit or applicable fishing regulations). Therefore, if the authorization is restricted to non-for-hire trips only, there should be no incentive to harpoon a recreational sized fish (27 to less than 73 inches) as such activity would be illegal and as paid charter passengers, who would seek recreational fishing opportunities, would not be present. With effort focused on commercial-sized BFT, bycatch of undersized fish and associated fish mortality is expected to be minimal, particularly as the size of BFT targeted by for-hire CHB vessels fall within the school and large school BFT size classes (i.e., 27-59 inches).

The General category BFT quota and overall U.S. TAC are designed to allow for BFT rebuilding, and the General category BFT retention limit is specified to allow fishing opportunities over the duration of the General category season and in all areas, without exceeding the General category BFT quota. This action is not expected to result in an expanded geographic area of harpoon use for BFT, which has historically been off New England, and primarily on the fishing grounds off Massachusetts, New Hampshire, and Maine. Therefore, authorization of harpoon gear in the HMS CHB category is not expected to have ecological impacts beyond those previously analyzed in the Consolidated HMS FMP and in the 2007 Fishing Year Atlantic BFT Quota Specifications and Effort Controls Environmental Assessment (EA).

4.2.2. Social and Economic Impacts

As discussed in Section 3.2, as of November 30, 2007, there were 3,901 HMS CHB permitted vessels. Focusing on the area where NMFS anticipates that harpoon gear would be used on HMS CHBs to capture a BFT, there were 91 HMS CHB permitted vessels in Maine, 53 in New Hampshire, 644 in Massachusetts, and 159 in Rhode Island.

The status quo Alternative B1 would have neutral impacts on permitted HMS vessels, which could continue to fish under the Atlantic Tunas General and Angling category regulations using existing authorized gear. Total Atlantic Tunas General category revenues, which included sale of commercial-sized BFT by HMS CHBs, for the 2006 fishing year were approximately $2.6 million. Atlantic Tunas General category revenues for 2005 and 2004 were approximately $3.8 million and $5.4 million, respectively (in nominal dollars).

General category fishing year BFT quotas, adjusted as necessary for underharvest, have not been met since 2004, when landings amounted to 96 percent of the quota. Atlantic Tunas General category landings, as a percentage of adjusted General category quota, were 33 percent (234 mt out of 707.3 mt) for 2005, 14 percent for 2006 (165 mt out of 1,163.3 mt), and 19 percent for 2007 (121 mt out of 643.6 mt).

Alternative B2 would have positive social and economic impacts, specifically for those vessels that have success in harpooning BFT that may be available at the water's surface. Landings data and information from fishermen indicate that there are times when the feeding behavior of commercial sized BFT makes hooking a fish difficult. NMFS has received comment over the last few years that the abundance and feeding behavior of dogfish is making trolling and

chumming for BFT even more difficult. To the extent that a fisherman could harpoon BFT at the surface when the fish are present at the water surface, Alternative B2 could increase the potential of filling the General category BFT daily retention limit and of gaining more ex-vessel revenue per trip. NMFS anticipates that the number of BFT that would be caught with harpoon gear by HMS CHBs is very low. Use of harpoon gear typically involves installation of a pulpit to the bow of the vessel (and the associated investment of money to do so) and requires a certain degree of skill. Comments made to NMFS at the October 2007 AP meeting reinforce the notion that that the ability to harpoon a BFT will not necessarily lead to a substantial increase in incidences of a BFT being caught with harpoon gear on HMS CHBs. Alternative B2 may have slightly negative social and economic impacts for existing HMS CHB operators due to the potential for Atlantic Tunas General or Harpoon category permit holders to change to the HMS CHB category, potentially diluting HMS CHB business.

Success rate information for Atlantic Tunas General category vessels using harpoon gear is contained in Table 17. The bulk of these successful trips involved retention of only one BFT. It is important to note that NMFS adjusted the Atlantic Tunas General category retention limit via inseason action several times over the course of these fishing seasons in order to extend fishing opportunities through the Atlantic Tunas General category season and allow the Atlantic Tunas General category quota to be fully harvested, without risking overharvest (Table 18). Since June 1, 2006, NMFS has maintained the Atlantic Tunas General category retention limit at the maximum allowed under the Consolidate HMS FMP (NMFS 2006), i.e., 3 BFT, for all subperiods due to low harvest rates.

Table 17 Number of successful Atlantic Tunas General category trips using harpoon gear.

Year	Number of fish	Trips
2000	1	636
2001	1	143
	2	15
2002	1	83
	2	4
2003	1	74
	2	11
2004	1	47
	2	5
2005	1	30
	2	3
2006	1	24
	2	1
	3	2

Table 18 Atlantic bluefin tuna Atlantic Tunas General category retention limits and seasons for the 2000-2007 fishing years (June 1 through May 31).

Fishing Year	Dates	Number of BFT (73"+)
2000	June 1 – December 31	1
2001	June 1 – July 29	1
	July 30 – October 18	2
	October 19 – October 22	1
	October 23 – November 11	CLOSED
	November 12 – December 31	1
2002	June 1 – July 17	1
	July 18 – September 14	2
	September 1 – September 19	1
	September 20 – September 30	2
	October 1 – October 12	1
	October 13 – October 25	2
	October 26 – November 30	CLOSED
	December 1 – December 15	1
	December 16 – December 31	CLOSED
2003	June 1 – July 14	1
	June 15 – September 26	2
	September 27 – October 31	3
	November 1 – November 14	1
	November 15 – November 30	CLOSED
	December 1 – December 9	1
	December 10 – January 1	CLOSED
	January 2 – January 3	1
	January 4- January 31	CLOSED
2004	June 1 – July 18	1
	July 19 – August 31	2
	September 1 – September 19	1
	September 20 – November 18	2
	November 19 – December 7	CLOSED
	December 8 – December 20	1
	December 21– January 1	CLOSED
	January 2 – January 4	1
	January 5 – January 31	CLOSED
2005	June 1 – June 6	1
	June 6 – December 1	2
	December 2 – December 4	CLOSED
	December 5 – December 8	2
	December 9 – December 11	CLOSED
	December 12 – December 22	2
	December 23 – December 25	CLOSED
	December 26 – December 29	2
	December 30	CLOSED
	December 31 – January 5	2
	January 6	CLOSED
	January 7 – January 31	2
2006	June 1 – January 31	3
2007	June 1-December 31	3

* In 2003, NMFS extended the Atlantic Tunas General category fishery through January.

As described in Section 3.2, NMFS received a request from a commercial handgear fishing organization to authorize use of harpoon gear by HMS CHB permitted vessels while

fishing under Atlantic Tunas General category regulations to allow HMS CHB operators increased flexibility and efficiency in harvesting BFT, particularly given the high costs of BFT fishing, particularly fuel.

Comment received at the October 2007 HMS AP meeting echoed the initial request. Some described fishermen's recent difficulty with trolling and chumming for BFT due to the abundance and feeding behavior of dogfish, which take the bait intended to attract and capture BFT. Others stressed the importance of maximizing opportunities for fishermen to harvest the U.S. quota . However, some HMS AP members expressed concern that HMS CHBs would "cheat", i.e., use harpoons to capture BFT to fill the Angling category retention limit, for instance to satisfy charter passengers. The representative of the organization requesting the action clarified that the request was specifically made to allow HMS CHB operators increased flexibility while fishing commercially.

Alternative B2 would be consistent with a NMFS action taken in the 1999 final rule to implement the Atlantic Tunas, Swordfish, and Sharks FMP (NMFS 1999), which expanded the list of gear types authorized for HMS CHB permitted vessels to include bandit gear (which was already authorized for use by Atlantic Tunas General category permitted vessels) as part of an effort to achieve consistency in HMS regulations. This alternative would provide consistency in the regulations regarding authorized handgear used historically for commercial harvest of BFT, and would increase opportunities for commercial handgear fishermen to attain the BFT Atlantic Tunas General category quota.

As the current regulations state that the size category of the first BFT retained determines the fishing category applicable to the vessel that day, an HMS CHB vessel that catches and retains a school, large school, or small medium BFT (measuring 27 to less than 73 inches curved fork length) may not also retain a commercial-sized BFT (measuring 73 inches or greater) for sale. HMS CHB vessel operators may sell commercial-sized BFT only when fishing under the Atlantic Tunas General category regulations.

NMFS specifically requested comment on Subalternatives B2a and B2b. Alternative B2a would allow HMS CHB operators to harpoon a BFT to fill the Atlantic Tunas General category retention limit whether paying passengers are onboard or not. Alternative B2b would allow the same use of harpoon to capture a BFT on an HMS CHB vessel, but only on non-for-hire trips. The regulations state that the size category of the first BFT retained determines the fishing category applicable to the vessel that day. Thus, if an HMS CHB catches and retains a school, large school, or small medium BFT (measuring 27 to less than 73 inches curved fork length), the vessel may not retain a commercial-sized BFT (measuring 73 inches or greater) for sale. HMS CHB vessel operators may sell commercial-sized BFT <u>only</u> when fishing under the Atlantic Tunas General category regulations. It is NMFS' understanding that, due to safety and liability concerns, only vessel captain and crew would be involved in harpoon fishing (i.e., paying passengers would not be offered the opportunity to use the gear). Harpoon gear is not authorized for recreational fishing (i.e., under the Angling category permit or applicable fishing regulations), so there should be no incentive to harpoon a recreational sized fish (27 to less than 73 inches), as such activity would be illegal and as paid charter passengers, who would seek recreational fishing opportunities, would not be present.

4.2.3. Conclusion

The comments NMFS received on the issue of harpoon authorization for HMS CHBs are summarized in Section 15. NMFS has considered these comments, some of which were also made at the April 2008 HMS Advisory Panel meeting, in the preparation of this Final EA. Based in part on public comment, NMFS has reconsidered the proposed action to authorize an additional directed fishing gear type for BFT in the HMS CHB category at this time. After consideration of recent HMS AP discussion and public comment on the proposed action, NMFS believes that harpoon use by HMS CHB vessels could result in increased discard mortality of BFT over the discard mortality that occurs with gear currently authorized for HMS CHB use or with green-stick gear. Based on the relative lack of public support, and the concerns raised by NMFS and the public, including bycatch, enforcement, safety, and BFT stock status generally, NMFS has decided, at this time, to maintain the status quo regarding authorized harpoon use, i.e., authorized harpoon use by the Atlantic Tunas General and Atlantic Tunas Harpoon permit categories only

4.3. Sea Turtle Bycatch Mitigation Measure

As described in Section 2, the alternatives analyzed for a sea turtle mitigation measure include:

Alternative C1: (No action/status quo) Maintain existing sea turtle bycatch mitigation regulations for pelagic and bottom longline fisheries.

Alternative C2: Require possession and use of a sea turtle control device as an addition to the already existing requirements for sea turtle bycatch mitigation gear.

4.3.1. Ecological Impacts

A detailed description of protected species interactions in the PLL fishery is provided in Section 3.4. Development of the turtle tether and T&G ninja sticks resulted from the need to better control sea turtles caught during the research conducted in the Northeast Distant area which validated the sea turtle bycatch mitigation measures. These measures were then implemented by the 2004 BiOp. When the 2004 BiOp was developed, it was felt that further observation of the performance of these sea turtle control devices was needed, but that their usefulness merited recommending their use. Further testing, observation, and reports from field observations compiled by NMFS at the Southeast Fishery Science Center (SEFSC) have indicated that this equipment should now be required. This work by the SEFSC showed that the use of these sea turtle control devices improved the ability of fishermen to remove hooks and entangling fishing gear from sea turtles. Removing as much fishing gear as possible from sea turtles improves post-release survival rates.

NMFS scientists also observed through field testing that the use of two sea turtle control devices in combination improves even further the ability of fishermen to safely control large sea turtles and remove entangling fishing gear. Although, the use of two sea turtle control devices is advantageous, NMFS only proposes to require the possession and use of one sea turtle control device aboard a vessel as this will adequately meet the goal. NMFS highly recommends the use of two sea turtle control devices when the number of crew members on a vessel allows (4 crew members or more), but does not propose to require more than one device as it is common for vessels in the BLL fishery to have crews of 1-2 persons. Requiring the use of two sea turtle control devices on a vessel with 1-2 crew members may create an unsafe situation in rough seas or strong current when other tasks such as vessel operation and fishing gear removal are of very high importance for safely retrieving the fishing gear. In such situations, the use of one sea turtle control device will be helpful while requiring the use of two sea turtle devices may be impractical and/or unsafe. Based on the SEFSC data collection, NMFS preferred alternative is to l add possession and use of a sea turtle control device as a requirement.

Alternative C1, which is the status quo, would continue existing ecological benefits of the current requirements for possession and use of sea turtle bycatch mitigation equipment such as low post-release mortality of sea turtles and other bycatch species; however, Alternative C1 would not provide for additional post-release survival benefits that may be achievable under preferred Alternative C2. Currently, one type of sea turtle control device, the turtle tether, is recommended for possession and use, but is not required. While NMFS is unable to quantify how many sea turtles would be negatively impacted by not requiring sea turtle control devices, the benefit of better control of large sea turtles not boated for improved removal of hook and fishing gear would not be fully realized.

Alternative C2, the preferred alternative, would have unquantified positive ecological impacts as possession and use of a sea turtle control device will be required aboard Atlantic PLL and BLL vessels. Two types of sea turtle control devices, the turtle tether and T&G ninja sticks, would be approved to meet this requirement. Information collected by the NMFS SEFSC showed that use of these two types of sea turtle control devices better enabled fishermen to remove fishing hooks and line from sea turtles by better controlling the animals thus likely reducing post-release hooking mortality of the sea turtles. The final rule implementing sea turtle bycatch and bycatch mortality mitigation measures for the PLL fishery provided for additional rulemaking and non-regulatory actions, as necessary, to implement any other management measures that are required under the BiOp (July 6, 2004; 69 FR 40736).

4.3.2. Social and Economic Impacts

The social and economic impacts of Alternative C1 will be minimal as sea turtle bycatch mitigation gear is currently required in the PLL fishery and sea turtle control devices are recommended, but not required. Any safety-at-sea benefit from improved control of large sea turtles not boated will not be fully realized with Alternative C1.

Large sea turtles may weigh as much as one metric ton and in rough seas can be difficult to control. With Alternative C2, there may be a safety-at-sea benefit from the use of sea turtle

control devices as fishermen using the gear can more easily control large sea turtles while fishing hooks and lines are being removed.

The social and economic impacts of Alternative C2 are expected to be minimal. Sea turtle bycatch mitigation gear is currently required on Atlantic PLL and BLL vessels. The turtle tether is recommended, but not required as part of that gear. It is unknown how many vessels currently follow the recommendation and possess and use sea turtle control devices. Production models of the turtle tether cost from $200-$250 and may be constructed according to the design specifications for $40-$70. Production models of the T&G ninja sticks cost $175 and may be constructed according to the design specifications for approximately $25-$85. It is difficult to determine the number of Atlantic HMS permitted vessels that use longline and will be affected by this requirement as users of longline gear may possess any one of three permits; however, not all holders of these permits use longline gear. To estimate the total cost of outfitting the longline fleet with one sea turtle control device, NMFS summed the number of Atlantic Tunas Longline, Shark Directed, or Shark Incidental permits which produced an overestimate of the actual number of permitted vessels affected by the requirement. Based on the number of Atlantic Tunas Longline, Shark Directed, or Shark Incidental permitted vessels as of November 2007, it is estimated that the cost of outfitting the longline fleet with one turtle control device ranges from $18,575, if all permit holders construct the least expensive device, to $185,750, if all permit holders purchase the most expensive production model. Design specifications for the turtle tether and T&G ninja sticks as well as instructions for use are found in Appendix 1 of this document.

The subject of requiring sea turtle control devices as an addition to the already existing sea turtle mitigation gear requirements was discussed at the October 2007 HMS AP meeting. HMS AP members asked a few questions about the gear and already existing requirements, but had no negative comments about requiring sea turtle control devices. One comment made during the public comment period stated that commercial shark fishermen cannot afford to meet the sea turtle control device requirement. NMFS has approved options for low cost construction of the devices that range from $25-85 and the gears may be made from materials that fishermen may already have on hand which would further reduce the cost.

4.3.3. Conclusion

Sea turtle interactions and post-release mortality rates declined from 2002-06 as a result of regulatory requirements, but improvements in post-release survival are needed. By improving the ability of fishermen to remove fishing gear from sea turtles not boated, Alternative C2 is anticipated to do so and thereby aid in recovery of threatened and endangered sea turtle populations. Sea turtle control devices are currently recommended in Atlantic PLL and BLL fisheries; however, requiring this gear would l ensure that fishermen have the equipment necessary to safely control caught sea turtles and remove fishing gear from them. The negative social and economic impacts of this requirement would be minimal.

4.4. Impacts on Essential Fish Habitat

The Magnuson-Stevens Act requires NMFS to evaluate the potential adverse effects of fishing activities on EFH. If NMFS determines that fishing gears are having an adverse effect on EFH, or other species EFH, then NMFS must include management measures that minimize adverse effects to the extent practicable. The area in which this action is planned has been identified as EFH for species managed by the New England Fishery Management Council, the Mid-Atlantic Fishery Management Council, the South Atlantic Fishery Management Council, the Gulf of Mexico Fishery Management Council, the Caribbean Fishery Management Council, and the HMS Management Division of NMFS. At this time, there is no evidence to suggest that the preferred alternatives will affect EFH to the extent that detrimental effects can be identified on the habitat or fisheries. No HMS gear used in directed Atlantic tuna fisheries is considered to have an adverse effect on EFH. Green-stick gear and harpoon gear are fished at the water's surface and do not impact the ocean substrate.

4.5. Impacts on Other Finfish Species

The action is not expected to jeopardize the sustainability of any non-target finfish species. Greenstick gear allows for the live release of non-target species to a great degree. Dolphin is frequently caught with green-stick gear and is managed under FMPs and regulations developed by the South Atlantic Fishery Management Council and the Gulf of Mexico Fishery Management Council.

4.6. Impacts on Protected Species Listed under the Endangered Species Act or Marine Mammal Protection Act

As noted in the discussions of the alternatives above, NMFS anticipates that endangered or threatened species, marine mammals, or critical habitat of these species are not likely to be adversely affected by this action. There is little information or evidence of interactions between green-stick gear users targeting Atlantic tunas and threatened or endangered sea turtles, marine mammals, or other protected resources. Green-stick gear is actively trolled with the baits fished at or above the surface of the water. Feeding behavior that enables organisms to be caught on green-stick gear includes swimming and feeding at high speed with the capability, at times, to leap out of the water to obtain food. Sea turtles do not typically feed while swimming at speeds necessary to strike a trolled bait neither do they leap out of the water to obtain food, thus sea turtle feeding behavior does not enable being caught on green-stick gear. Green-stick gear authorization is not anticipated to increase interactions with other protected resources as this is a surface gear that is actively trolled with baits deployed at or slightly above the surface of the water. The gear is tended as it is fished and therefore can be monitored and or maneuvered to avoid such interactions should they become imminent. There is no record of protected species interactions with green-stick gear in the limited dataset available to NMFS. The action to require sea turtle control devices on Atlantic PLL and BLL vessels is provided for by the 2004 BiOp on the Atlantic PLL fishery and will ensure that fishermen have equipment onboard needed to better

control large sea turtles not boated and more effectively remove fishing gear thus reducing post-release mortality rates of sea turtles and promoting their long term recovery and sustainability.

4.7. Environmental Justice Concerns

Executive Order 12898 requires that Federal actions address environmental justice in the decision-making process. The fisheries affected by this action are located throughout the U.S. Atlantic, Caribbean Sea, and Gulf of Mexico. The environmental effects of the actions are expected to be minimal as analyzed in sections 4.1.1, 4.2.1, and 4.3.1. For the preferred alternatives to authorize green-stick gear in the Atlantic tuna fisheries, social and economic effects, as analyzed in sections 4.1.2 and 4.2.2, are expected to be minimal, but in most cases positive. For the preferred alternative to require a sea turtle control device in PLL and BLL fisheries, social and economic effects, as analyzed in section 4.3.2, are expected to have minimal negative effects on permit holders. These effects for the action, though minimal, may occur throughout the management area where the gears will be used, thus should not have a disproportionate effect on minority and low-income communities.

4.8. Coastal Zone Management Act Concerns

On May 9, 2008, NMFS provided all the coastal states with the consistency determination letter, copies of the proposed rule and the draft Environmental Assessment. In this letter, NMFS determined that this final rule is consistent to the maximum extent practicable with the enforceable policies of the approved coastal management program of coastal states on the Atlantic including the South Atlantic, Gulf of Mexico, and Caribbean that have approved coastal zone management programs. NMFS received letters of concurrence with the consistency determination from the following states: CT, DE, NJ, LA, NH, NC, FL, MS, and RI. NMFS has not yet received letters of concurrence from ME, PA, NY, MD, VA, SC, GA, AL, TX, PR, and USVI and, therefore, NMFS presumes concurrence with the consistency determination.

4.9. Comparison of the Alternatives

Table 19 compares the impacts of the various alternatives considered in this document. The symbols "+", "-", and "0" refer to positive, negative, and zero impacts, respectively. Minor impacts, and impacts that are possible but unlikely, are denoted with a single plus or minus sign. Moderate impacts are denoted with a double plus or minus sign, and significant impacts are denoted with a triple plus or minus sign. Please refer to the preceding sections for additional explanations of the impacts associated with each alternative.

Table 19 Comparison of the Alternatives.

Alternative	Ecological Impacts	Economic Impacts	Social Impacts
Alternative A1 (Green-Stick Authorization) No Action	0	-	-
Alternative A2 (Green-Stick – Atlantic Tunas General) Preferred	+/-	+	+
Alternative A3 (Green-Stick – HMS CHB) Preferred	+/-	+	+
Alternative A4 (Green-Stick Atlantic Tunas Longline) Preferred	+/-	+	+
Alternative B1 (Harpoon Authorization) No Action - Preferred	0	0	0
Alternative B2 (Harpoon Authorization)	0	+	+/-
Alternative C1 (Sea Turtle Control Device) No Action	-	0	-
Alternative C2 (Sea Turtle Control Device) Preferred	++	-	+

4.10. Cumulative Impacts

The cumulative impacts of authorizing green-stick gear for Atlantic tunas are expected to be minimal. Green-stick gear will be allowed for use according to existing regulations such as retention limits, size limits, target catch requirements, and others. Green-stick gear has been and continues to be used in U.S. Atlantic tuna fisheries and limited additional use of the gear is anticipated by commercial fishermen not already using green-stick gear or by fishermen already using the gear, but using it in ways and places that they currently are not. Such additional use is anticipated to result in minor adverse ecological impacts given the potential for increased landings. Additional use of green-stick gear is also anticipated to result in limited positive socio-economic impacts given the potential for additional opportunities for harvesting tunas that are usually high in quality and bring high prices. Existing regulations, such as size limits, retention limits, and applicable quotas on commercial Atlantic tuna fisheries will continue to be in effect. Economic benefits may be realized through continued, and possibly increased, harvest of Atlantic tunas. Additional landings or effort will have positive economic benefits for dockside businesses through increased need for fish processing and the sale of additional fishing gear, fuel, ice, and other supplies. The selection of the status quo alternative regarding authorized harpoon use in the final action does not preclude NMFS from taking future action regarding fishing gear authorization, either in general or specifically regarding harpoon use.

The cumulative impacts of requiring sea turtle control devices for Atlantic Tunas Longline permitted vessels as part of already existing sea turtle mitigation measures is expected to be minimal. The already existing cumulative impact of the sea turtle mitigation measures, however, is positive and substantial both ecologically and economically as developed in the Final Environmental Impact Statement for implementation of those measures according to the 2003 BiOp for the Commercial Shark Fishery and 2004 BiOp for the Pelagic Longline Fishery. The

positive benefit is increased post-release survival of sea turtles caught in the PLL and BLL fisheries and the resulting continued operation of the PLL and BLL fisheries. These measures include: required possession and use of several sea turtle handling and release gears, use of circle hooks in the PLL fishery, and mandatory completion of Protected Species Safe Handling and Release Workshops.

Since the 1999 FMP for Atlantic Tunas, Swordfish and Sharks (NMFS 1999), the majority of regulatory actions regarding BFT have been designed to improve BFT management and provide positive social and economic impacts to the fishery. For example, past adjustments to the target catch tolerance limits in both the harpoon and purse seine BFT fisheries and changes to the pelagic longline BFT incidental catch allowance provided marginal increases in social and economic impacts and responded to changing conditions in the environment and marketplace. While certain actions have resulted in negative socio-economic impacts, all of the past, present, and reasonably foreseeable future actions are expected to promote the long-term sustainability and continued economic viability of U.S. Atlantic HMS fisheries consistent with applicable law. Annual management measures and inseason actions are analyzed and implemented to maximize the utilization of available quota and fishing opportunities for all fishery sectors.

Thus, NMFS considers that this action is consistent with past, current, and reasonably foreseeable future actions with no substantial adverse, cumulative impacts on the environment from the actions. NMFS recognizes, however, that it may need to reexamine BFT or other HMS management measures in the future, for instance, to control landings and discards to potentially lower future TACs if necessary. NMFS would continue to take actions, consistent with the Consolidated HMS FMP, to ensure that there are no substantial adverse cumulative impacts on the environment.

5.0 MITIGATION AND UNAVOIDABLE ADVERSE IMPACTS

5.1. Mitigating Measures

The preferred alternatives are not likely to have significant long-term adverse ecological or socioeconomic impacts, and no additional mitigation measures were identified nor considered necessary associated with the use of the gear in the preferred alternatives A2, A3 and A4. The alternatives are designed to provide additional opportunities for fishermen to harvest Atlantic tunas within quotas, size limits, or other established limitations and to reduce post-release mortality of sea turtles and increase safety at sea for fishermen when handling sea turtles caught or entangled in longline fishing gear. Green-stick gear has been and continues to be used in the commercial Atlantic tuna fisheries; therefore, large increases in tuna landings are not expected with this gear. The characteristics of green-stick gear catch and the possibility of increased harvest of Atlantic tunas is discussed in more detail in Chapter 4. The action to authorize green-stick gear in the Atlantic tuna fisheries provides additional flexibility for gear choice that may result in some unquantifiable amount of effort previously made with longline to be replaced by green-stick gear, which is more discriminate in catch composition than longline. Also, green-stick gear allows for rapid haul-back of the gear which results in regulatory discards or bycatch

being released in better condition than might occur with the long fight times associated with traditional rod and reel gear. NMFS closely monitors Atlantic BFT tuna landings and, as necessary, may make adjustments in size and/or retention limits to limit retention and/or effort. For YFT and BET, size limits regulate the minimum size of fish that may be retained. For BFT, retention limit and effort adjustments may be made to ensure that landings are maintained within the category sub-quota. Additionally, to facilitate monitoring of potential changes in Atlantic tuna harvest and associated impacts, NMFS intends to explore mechanisms for improved data collection for green-stick gear fishing activity. NMFS began that process with the designation of a green-stick gear code to aid in data collection. Through existing and possibly new mechanisms for monitoring of Atlantic tuna fishing effort and landings, NMFS has the capability, if necessary to reexamine BFT or other HMS management measures in the future. The preferred alternative regarding harpoon use is to maintain the status quo, therefore no new gear for harvesting BFT would be authorized, and no mitigation measures associated with harpoon gear is warranted. Under the alternatives for sea turtle, the preferred alternative itself implements a mitigating measure to improve the post-release survival of listed sea turtles.

5.2. Unavoidable Adverse Impacts

The preferred alternatives will assist NMFS in achieving the objective of this rulemaking and the Magnuson-Stevens Act, but are anticipated to have minimal unavoidable adverse impacts as described and developed in Section 4.1 above. These include a potential for increases in landings of YFT, BET, BFT, and other HMS under Alternatives A2, A3, and A4; however, these potential increases are not anticipated to be large because this gear type has been and continues to be used in Atlantic HMS fisheries. Adverse ecological impacts are also anticipated to be minimal because green-stick gear is an actively trolled and tended gear, thus fish may be retrieved quickly, resulting in minimal physiological stress and an improved release condition in comparison to longline.

5.3. Irreversible and Irretrievable Commitment of Resources

The action will assist NMFS in achieving the objectives of this rulemaking and the Magnuson-Stevens Act and are not expected to have any irreversible or irretrievable commitments of resources. Alternative C2 will likely reduce post-release mortality of sea turtles and thus may aid in reducing the need for more drastic management measures in the PLL or BLL fishery to reduce sea turtle interactions.

6.0 ECONOMIC EVALUATION

This section assesses the economic impacts of the alternatives presented in this document. NMFS considered three no action/*status quo* alternatives and 5 alternatives to authorize green-stick gear for harvest of Atlantic tunas, including BFT, authorize harpoon use for BFT harvest in the HMS CHB category, and require additional sea turtle control devices in PLL and BLL fisheries. Additional economic and social considerations and information are discussed in Chapters 3, 4, 7, 8, and 9 of this document. No additional information is required in this section on the status quo alternatives, as there would be no economic change from the current

condition. Note that all dollars are reported in nominal dollars, consistent with methods used in the Consolidated HMS FMP (NMFS 2006).

6.1. HMS Fishing Permits

In order to examine the baseline universe of entities potentially affected by the action, NMFS analyzed the permits that were issued as of November 30, 2007, in conjunction with HMS commercial tuna fishing activities. There are three types of permits associated with HMS commercial tuna fishing activity. The Atlantic Tunas General category permit allows the sale of BAYS tunas and BFT and is required for fishermen targeting them using rod and reel, handline, bandit gear, and/or harpoon. The Atlantic Tunas General category permit holder may recreationally fish for Atlantic billfish, sharks, swordfish, and tunas only if participating in an HMS registered tournament and the sale of fish caught in this manner is prohibited. Additionally, Atlantic Tunas General category permitted vessels may only land commercially sized tunas when fishing in a registered tournament. The HMS CHB permit allows for the sale of Atlantic tunas and allows HMS CHB vessels to catch and land sharks, swordfish, and billfish according to the recreational regulations (i.e., no sale of fish). Authorized gears for HMS CHB are any gear authorized for tuna other than purse seine and longline. Speargun is allowed for recreational harvest of BAYS tunas only. The HMS CHB permit holder may also hold a swordfish handgear and/or shark limited access permit that allows for the sale of those species under the regulations for those permits. The Atlantic Tunas Longline category permit is a limited access permit that allows the sale of swordfish, shark, BFT, and BAYS tunas. It must be held in conjunction with 1) a shark limited access permit (either directed or incidental) and 2) a swordfish limited access permit (either directed or incidental). Table 20 below details the universe of potentially affected permit holders by permit category.

Table 20 Number of HMS permits issued as of November 30, 2007, that will be affected by green-stick gear authorization.

Category	Number of Permits
Atlantic Tunas General Category	3,616
HMS Charter/Headboat	3,901
Atlantic Tunas Longline	218

6.2. Costs and Revenues of Fishermen

Detailed information on gross revenues, variable costs, and net revenues of fishermen in Atlantic tunas and other HMS fisheries is available in the 2006 SAFE Report Final, which is incorporated in Chapter 6 of the Consolidated HMS FMP (NMFS, 2006).

6.3. Expected Economic Impacts of the Alternatives Considered

Alternatives A2, A3, and A4 will authorize green-stick gear for the commercial harvest of Atlantic tunas. These alternatives will likely have positive economic impacts for those fishermen targeting Atlantic tunas commercially with green-stick gear and for some shoreside businesses. Higher landing rates and higher quality of fish landed are possibilities using green-stick gear and could provide positive economic impacts to commercial fishermen, as well as benefit fish houses, gear supply houses, and other associated business. The economic benefits of these alternatives, however, will likely be small since some vessels are already utilizing this gear type.

Alternative B2 would authorize harpoon gear for HMS CHB category for the harvest of BFT. This alternative would likely have positive economic impacts for HMS CHB permit holders targeting BFT by providing additional opportunities to harvest BFT. As described in Section 4.2.2, fishermen may have greater success with filling the daily retention limit if they have the option to harpoon a BFT when the fish are present at the water surface. As of October 28, 2007, the average weight (for the 2007 fishing season) of General category BFT caught with harpoon gear is 375 lb. At $5.81/lb round weight (the average ex-vessel price for June through August 2007), the estimated value of a harpooned Atlantic Tunas General category caught BFT for the 2007 season is $2,179. Note that this estimate may be high because price/lb values tend to be lower at the beginning of the summer relative to late summer and fall prices. Analysis of the Atlantic Tunas General category daily retention limit (set at a range of 0 to 3) is contained in the Consolidated HMS FMP in the 2007 Fishing Year Atlantic Bluefin Tuna Quota Specifications and Effort Controls EA. Estimates of the cost of outfitting a vessel with a tuna tower, pulpit, and associated equipment, provided by custom boat builders, is approximately $3,000-$5,000 for an average length pulpit installed, $6,000-$8,000 for a tuna tower installed w/controls, $1,500 for harpoon rigs, harpoons, buoys, and high flyers. The total cost estimate would range from $10,500 to $14,500.

Alternative C2 will require sea turtle control devices to be possessed and used aboard vessels in the PLL and BLL fisheries. This alternative will likely have minimal negative economic impacts due to the gear's low cost. Production models of the turtle tether cost from $200-$250 and may be constructed according to the design specifications for $40-$70. Production models of the T&G ninja sticks cost $175 and may be constructed according to the design specifications for approximately $25-$85. It is difficult to determine the number of Atlantic HMS permitted vessels that use longline and will be affected by this requirement as users of longline gear may possess any one of three permits; however, not all holders of these permits use longline gear. To estimate the total cost of outfitting the longline fleet with one sea turtle control device, NMFS summed the number of Atlantic Tunas Longline, Shark Directed, or Shark Incidental permits which produced an overestimate of the actual number of permitted vessels affected by the requirement. Based on the number of Atlantic Tunas Longline, Shark Directed, or Shark Incidental permitted vessels as of November 2007, it is estimated that the cost of outfitting the longline fleet with one turtle control device ranges from $18,575, if all permit holders construct the least expensive device, to $185,750, if all permit holders purchase the most expensive production model.

7.0 REGULATORY IMPACT REVIEW

The 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 EA. Thus, this section should be considered only part of the RIR; the rest of the RIR can be found throughout this document.

7.1. Description of the Management Objectives

Please see Chapter 1 for a description of the management objectives associated with these management actions.

7.2. Description of the Fishery

Please see Chapter 3 of this document and the Consolidated HMS FMP (NMFS 2006) for a detailed description of the fisheries that could be affected by this rulemaking.

7.3. Statement of the Problem

Please see Chapter 1 for a description of the problem and need for these management actions.

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. Chapter 6 and 8 provide additional information related to the impacts of 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 will change significantly in the long run as a result of implementation of the final action compared to the baseline of no action. Table 21 summarizes the expected effects of each alternative relative to the baseline. Chapters 4, 5 and 8 provide further details regarding the benefits and costs associated with the alternatives considered.

Table 21 Net Economic Benefits and Costs for Each Alternative.

Alternatives	Net Economic Benefits	Net Economic Costs
Alternative A1 (Green-Stick Authorization) No Action	Long Term: None Short Term: None	Long Term: None Short Term: None
Alternative A2 (Green-Stick – Atlantic Tunas General) Preferred	Long Term: Potential benefits from increased tuna landings and/or improved quality of tuna product due to speed at which tuna are brought to vessel, stored on ice, brought to dock, and sold. Short Term: Same.	Long Term: Costs of outfitting vessel with green-stick gear is approximately $3,000-$5,000; however, this cost is discretionary for fishermen. Short Term: Same.
Alternative A3 (Green-Stick – HMS CHB) Preferred	Long Term: Potential benefits from increased tuna landings and/or improved quality of tuna product due to speed at which tuna are brought to vessel, stored on ice, brought to dock, and sold. Short Term: Same	Long Term: Costs of outfitting vessel with green-stick gear is approximately $3,000-$5,000; however, this cost is discretionary for fishermen. Short Term: Same
Alternative A4 (Green-Stick – Atlantic Tunas Longline) Preferred	Long Term: Potential benefits from increased tuna landings and/or improved quality of tuna product due to speed at which tuna are brought to vessel, stored on ice, brought to dock, and sold. Short Term: Same	Long Term: Costs of outfitting vessel with green-stick gear is approximately $3,000-$5,000; however, this cost is discretionary for fishermen. Short Term: Same
Alternative B1 (Harpoon Authorization) No Action - Preferred	Long Term: None Short Term: Same	Long Term: None Short Term: Same
Alternative B2 (Harpoon Authorization)	Long Term: Potential benefits from increased tuna landings Short Term: Same	Long Term: Estimated costs of outfitting vessel with pulpit and harpoon gear is $10,500-$14,500; however, this cost is discretionary for fishermen. Short Term: Same
Alternative C1 (Sea Turtle Control Device) No Action	Long Term: None Short Term: None	Long Term: Potential benefits for safety-at-sea may not be achieved. Short Term: Same
Alternative C2 (Sea Turtle Control Device) Preferred	Long Term: Further reduction in sea turtle mortalities by enabling fishing gear removal aids in continuation of the PLL fishery. Potential benefits for safety-at-sea. Short Term: Same	Long Term: Minimal cost of purchasing or constructing sea turtle control devices are estimated to range from $25-$250. Short Term: Same

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; and (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 final actions described in this document do not meet the above criteria. Therefore, under E.O. 12866, the final 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, which are based on supporting text in Chapters 4 and 6, can be found in Table 21.

8.0 FINAL REGULATORY FLEXIBILITY ANALYSIS

The Final Regulatory Flexibility Analysis (FRFA) is conducted to comply with the Regulatory Flexibility Act (5 USC 601 et. seq.) and provides a description of the economic impacts of the various alternatives on small entities. Certain elements required in a FRFA are also required as part of an EA. Therefore, the FRFA incorporates the economic impacts identified in the EA.

8.1. Description of the Reasons Why Action is Being Considered and Statement of the Objectives of, and Legal basis for the Proposed Rule

Please see Chapter 1 for a description of the need for action and for a description of the objectives, need, and legal basis for this action.

8.2. A Summary of the Significant Issues Raised by the Public Comments in Response to the Initial Regulatory Flexibility Analysis, a Summary of the Assessment of the Agency of Such Issues and a Statement of Any Changes Made in the Rule as A Result of Such Comments

NMFS received several comments on the proposed rule and draft EA during the public comment period. A summary of these comments and the Agency's responses are included in the appendix and will be included in the final rule. NMFS did not receive any comments specific to the Initial Regulatory Flexibility Analysis (IRFA). During the public comment period, NMFS received an economic comment that NMFS should not require a sea turtle control device in PLL and BLL fisheries because the shark fishing fleet cannot afford the device to meet the requirement. NMFS understands that there may be some negative economic impact from this requirement and has attempted to minimize these impacts by allowing the devices to be

constructed with low cost materials. Construction costs for the sea turtle control devices range from $25-85 and may be constructed with materials that fishermen may already have on hand, thus reducing the construction cost. NMFS believes that the economic impacts to fishermen are not likely to be large with this final action. No changes were made to this final action as a result of this comment.

8.3. Description and Estimate of the Number of Small Entities to Which the Final Rule Will Apply

NMFS considers all HMS commercial and CHB permit holders to be small entities because they either had gross receipts less than $3.5 million for fish-harvesting, gross receipts less than $6.0 million for charter/headboats, or 100 or fewer employees for wholesale dealers. These are the SBA size standards for defining a small versus large business entity in this industry. A description of the fisheries affected and the categories and number of permit holders can be found in Chapter 6.

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

None of the actions considered for this final action will result in any new reporting or record keeping requirements. New compliance requirements will occur under the action to require the possession and use of a sea turtle control device onboard PLL and BLL vessels; however, the economic impacts are not expected to be significant. An estimate of the classes of small entities which will be subject to these requirements may be found in Chapter 6.

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

Fishermen and managers in the Atlantic tuna 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 ATCA, the High Seas Fishing Compliance Act, the MMPA, the Endangered Species Act, the National Environmental Policy Act, the Paperwork Reduction Act, and the Coastal Zone Management Act. NMFS strives to ensure consistency among the regulations with Fishery Management Councils and other relevant agencies. NMFS developed the preferred alternative in a manner that will not conflict with any relevant regulations, federal or otherwise.

8.6. Description of the Steps that NMFS has taken to Minimize the Significant Adverse Economic Impact on Small Entities, Consistent with the Stated Objectives of Applicable Statutes, Including a Statement of the Factual, Policy, and Legal Reasons for Selecting the Alternative Adopted in the Final Rule and the Reason that Each One of the Other Significant Alternatives to the Rule was Rejected

One of the requirements of an FRFA is to describe any alternatives to the final rule which accomplish the stated objectives and which minimize any significant economic impacts. These impacts are discussed below and in Chapters 4 and 6 of this document. Additionally, the Regulatory Flexibility Act (5 U.S.C. § 603 (c) (1)-(4)) lists four general categories of "significant" alternatives that would assist an agency in the development of significant alternatives. These categories of alternatives are:

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

In order to meet the objectives of this final rule, consistent with the Magnuson-Stevens Act, ATCA, and the ESA, NMFS cannot establish differing compliance requirements for small entities or exempt small entities from compliance requirements. Thus, there are no alternatives that fall under the first and fourth categories described above. NMFS developed the alternative to require a sea turtle control device so that options exist for fishermen to construct the device at minimal cost thus simplifying compliance for all entities including small entities (category three above). Similarly, the design standards (category four above) used to allow construction of a sea turtle control device at minimal cost satisfies the aforementioned objectives of this rulemaking while, concurrently, complying with the Magnuson-Stevens Act and ESA.

NMFS considered eight different alternatives to authorize fishing gear in Atlantic tuna fisheries to increase fishery operational flexibility in the fishery while still achieving the objectives of the Consolidated HMS FMP, to allow harvest of Atlantic tunas with a gear that is generally efficient in harvesting target species and, at the same time, is low in bycatch and bycatch mortality, and to require a sea turtle control device in the PLL and BLL fisheries to achieve and maintain low post-release mortality of sea turtles. As previously described, and as expanded upon below, NMFS has provided justification for the selection of the preferred alternatives to achieve the desired objectives.

Alternative A1 is a no action, or the status quo alternative. This alternative would maintain existing regulations for harvesting Atlantic tunas, thereby allowing green-stick gear use only as allowed under the current definitions and regulations for longline or handgear based on

the gear configuration. Under Alternative A1, there would be no change in the existing regulations and, as such, no change in the current baseline economic impacts.

The no action alternative would instead continue to consider green-stick gear as being within the longline definition if 3 or more hooks are attached and as handgear if 2 or fewer hooks are attached. The allowable use of the gear in this way impedes operational and economic efficiency in the Atlantic Tunas General category or HMS CHB category because fishermen have used green-stick gear rigged with up to 10 hooks historically for Atlantic tunas. Under alternative A1, the social and economic impacts are expected to be minimal, although unquantified social and economic impacts may occur to Atlantic Tunas General category and HMS CHB permitted vessel holders with the status quo because they would not be allowed to use green-stick gear with 3 hooks or more, as they have historically, unless they purchased an Atlantic Tunas Longline permit and other associated limited access permits for swordfish and shark. This alternative was not selected because other alternatives increase operational flexibility in the fishery while still achieving the objectives of the Consolidated HMS FMP and to allow fishermen additional opportunities to fulfill U.S. quota allocations.

Under selected Alternative A2, which was preferred in the proposed rule, green-stick gear will be defined and authorized for use in the commercial Atlantic tuna fishery including BFT. Vessels fishing under the Atlantic Tunas General category will continue to be subject to all current HMS regulations for that category (such as bag and size limits). NMFS does not anticipate greatly increased landings from Atlantic Tunas General category vessels as a result of this rule because green-stick gear has been used in HMS fisheries since at least the mid-1990s. While NMFS does not anticipate greatly increased landings, Alternative A2 could result in a minor increase of overall effort deployed by this category of permit holders. This could occur if additional fishermen become aware of green-stick gear efficiency in catching Atlantic tunas and of the high quality of fish product that can be delivered to the dock as a result. Higher quality fish product often commands high ex-vessel prices, and thus could potentially improve the profitability of trips. Under Alternative A2, authorization of green-stick gear use is expected to have generally positive social impacts as the gear is popular with Atlantic Tunas General category permit holders in areas of the Atlantic where it has been used.

The economic impacts under Alternative A2 are expected to be positive. Authorization of green-stick gear for harvest of Atlantic tunas will allow Atlantic Tunas General category permit holders additional opportunities for harvest. Tuna and other species harvested commercially with green-stick gear are usually high in quality and command higher prices due to the speed with which the fish are brought to the vessel, stored on ice, transported to the dock, and sold. Economic benefits may be realized through continued, and possibly increased, harvest of Atlantic tunas. Use of this gear may result in an unknown number of additional trips. The economic benefits may be minimal, however as green-stick gear has been used in U.S. Atlantic tuna fisheries for several years and potential increases above existing levels of use as a result of this rule are expected to be minimal.

Green-stick gear ranges in cost from $1,300-$3,300 for the fiberglass pole. Completely outfitting a vessel with hydraulic spool and other tackle to use the gear would cost $4,000-$6,000 depending on the size of the rig. Anecdotal information indicates that some fishermen may run

mainlines from outriggers, a flying bridge, or a tuna tower, which would not be as costly. Outfitting costs are discretionary for fishermen as the gear is not required to participate in the fishery. This gear will be authorized for use from properly permitted vessels only. The current cost of a Federal vessel permit is $28.00 per year.

Under selected Alternative A3, which was a preferred alternative in the proposed rule, green-stick gear will be defined as in Alternative A2 above and authorized for use in the commercial Atlantic tuna fishery for BAYS and BFT by HMS CHB category vessels. This alternative will also authorize green-stick gear for recreational harvest of Atlantic tunas when an HMS CHB permitted vessel is on a for-hire trip. NMFS prefers this alternative because HMS CHB vessels may sell Atlantic tunas whether the vessel is for-hire or non-for-hire. Additionally, NMFS received public comment that HMS CHB vessels desired to have the option of using green-stick gear on for-hire trips. Vessels fishing under the HMS CHB category will continue to be subject to all current HMS regulations for that category. Alternative A3 is expected to have positive social and economic impacts similar to those described under Alternative A2 above, but with the added economic benefits associated with authorizing the use of green-stick gear for recreational harvest of Atlantic tunas even when an HMS CHB permitted vessel is on a for-hire trip.

Under selected Alternative A4, which was a preferred alternative in the proposed rule, green-stick gear will be defined as in Alternative A2 and authorized for use in the directed commercial Atlantic BAYS tuna fishery and allow for the incidental retention of BFT by Atlantic Tunas Longline category vessels. Green-stick gear can currently be used with more than two hooks by Atlantic Tunas Longline permitted vessels under current target catch and gear (i.e., circle hook) requirements. Alternative A4 will distinguish green-stick gear from longline gear thus allowing green-stick gear to be fished in PLL and BLL closed areas if existing regulations for removal of PLL and BLL gear are met. These regulations state that a vessel is considered to have PLL gear onboard when it has onboard a power-operated longline hauler, a mainline, floats capable of supporting the mainline, and leaders (gangions) with hooks. Likewise, a vessel is considered to have BLL gear onboard when it has onboard a power-operated longline hauler, a mainline, weights and/or anchors capable of maintaining contact between the mainline and the ocean bottom, and leader (gangions) with hooks. For closed areas respective to both PLL and BLL gear, removal of any one of these elements constitutes removal of the PLL or BLL gear. Atlantic Tunas Longline permitted vessels will continue to be subject to current HMS PLL or BLL regulations, whichever is applicable, including the closed areas and circle hook requirements except that up to 20 J-hooks will be allowed onboard if green-stick gear is also onboard for use only with the green-stick gear. This provision to allow up to 20 J-hooks is intended to facilitate the high speed trolling methods used when fishing with green-stick gear. J-hooks possessed or used when green-stick gear is onboard may only be used with green-stick gear and may be no smaller than 1.5 inch (38.1 mm) when measured in a straight line over the longest distance from the eye to any other part of the hook. Current requirements to use only circle hooks on PLL gear will remain unchanged.

Alternative A4 is expected to have positive social and economic impacts particularly for fishermen holding Atlantic Tunas Longline permits. Public and HMS AP member support has been expressed for this alternative as described in chapter four. Authorization of green-stick for

harvest of Atlantic tunas will allow Atlantic Tunas Longline category permit holders additional opportunities for harvest. Economic benefits may be realized in similar fashion to Alternatives A2 and A3 above through increased need for fish processing and the sale of additional fishing gear and supplies. The economic benefits for the fishing community may be minimal, however as green-stick gear has been and continues to be used in U.S. Atlantic tuna fisheries and increases beyond existing levels are expected to be minimal. Vessel outfitting costs are similar to those described in A2 above.

Alternative B1 would maintain the status quo regarding harpoon use in the Atlantic tuna fisheries. Under this selected alternative, the authorized gears for Atlantic tunas fishing by HMS CHB permitted vessels would remain the same. Harpoon use is currently authorized only for vessels permitted in the Atlantic Tunas General and Harpoon categories. Harpoon gear is selective gear that is used to capture only one large pelagic fish (primarily BFT, but also swordfish) at a time. Bycatch and bycatch mortality of commercial handgear is considered to be low, particularly for harpoons, which are thrown individually at a fish, determined by the fisherman to be greater than the minimum commercial size. There is no information or evidence of interactions between harpoon users targeting Atlantic tunas and threatened or endangered sea turtles, marine mammals, or other protected resources. There were 3,901 HMS CHB permitted vessels as of November 30, 2007. Focusing on the area where harpoon gear has historically been used to capture commercial-sized BFT, there were 91 HMS CHB permitted vessels in Maine, 53 in New Hampshire, 644 in Massachusetts, and 159 in Rhode Island. Under Alternative B1, NMFS anticipates neutral impacts on permitted HMS vessels, which could continue to fish under the Atlantic Tunas General and Angling category regulations using existing authorized gear. Total Atlantic BFT General category revenues, which included sale of commercial-sized BFT by HMS CHB vessels, for the 2006 fishing year were approximately $2.6 million. General category BFT revenues for 2005 and 2004 were approximately $3.8 million and $5.4 million, respectively (in nominal dollars). General category BFT fishing year quotas, adjusted as necessary for underharvest, have not been met since 2004, when landings amounted to 96 percent of the quota. Atlantic Tunas General category landings, as a percentage of adjusted General category quota, were 33 percent (234 mt out of 707.3 mt) for 2005, 14 percent for 2006 (165 mt out of 1,163.3 mt), and 19 percent for 2007 (121 mt out of 643.6 mt).

Alternative B2 would authorize harpoon gear for the commercial harvest of Atlantic tunas, including BFT, for HMS CHB permitted vessels. Available vessel trip report data indicate that, for Atlantic tunas fishing, harpoon gear is only used to target BFT. Under this alternative, HMS CHB vessels would be able to use harpoon gear to fish for and retain BFT greater than 73 inches curved fork length. HMS CHB vessels may currently fish under the Atlantic Tunas General category regulations and may fill the daily retention limit for either the Atlantic Tunas General category or the HMS Angling category. The size category of the first BFT retained determines the fishing category applicable to the vessel that day. This alternative would not change the number or size of BFT allowed to be retained on an HMS CHB vessel, but would provide HMS CHB fishermen the opportunity to use harpoon gear in filling the Atlantic Tunas General category daily retention limit.

Sub-alternative B2a would allow harpoon gear use on all types of HMS CHB trips. Sub-alternative B2b would limit harpoon use to non-for-hire trips. It is NMFS' understanding that,

due to safety and liability concerns, only vessel captain and crew would be involved in harpoon fishing, i.e., no other passengers would be offered the opportunity to use the gear. Under this alternative, there would be no incentive to harpoon a recreational sized fish (27 to less than 73 inches) to fill the Angling category retention limit (to satisfy expectations of individuals chartering the vessel). With effort focused on commercial-sized BFT, bycatch of undersized fish and associated fish mortality is expected to be minimal, particularly as the size of BFT targeted by for-hire HMS CHB vessels fall with in the school and large school BFT size classes, i.e. (27-59 inches).

The General category quota and overall U.S. TAC are designed to allow for BFT rebuilding, and the General category BFT retention limit is specified to allow fishing opportunities over the duration of the General category season and in all areas, without exceeding the General category BFT quota. Alternative B2 would not be expected to expand the geographic area of harpoon use for BFT, which has historically been off New England, and primarily on the fishing grounds off Massachusetts, New Hampshire, and Maine. Therefore, authorization of harpoon gear in the HMS CHB category would not be expected to have ecological impacts beyond those previously analyzed in the Consolidated HMS FMP and in the 2007 Fishing Year Atlantic BFT Quota Specifications and Effort Controls EA.

Alternative B2 would have positive social and economic impacts, specifically for those vessels that have success harpooning BFT that may be available at the water's surface. To the extent that a fisherman could harpoon BFT at the surface when the fish are present at the water surface, Alternative B2 could increase the potential of filling the General category daily retention limit and of gaining more ex-vessel revenue per trip. NMFS anticipated that the number of BFT that would be caught with harpoon gear by HMS CHB vessels is low. Alternative B2 may have slightly negative social and economic impacts for existing HMS CHB operators due to the potential for Atlantic Tunas General or Harpoon category permit holders to change to the HMS CHB category, potentially increasing competition in the HMS CHB sector and potentially resulting in lower profits for existing permit holders. Alternative B2 was not selected because, based in part on public comment, NMFS has reconsidered the proposed action to authorize an additional directed fishing gear type for BFT in the HMS CHB category at this time. After consideration of recent HMS AP discussion and public comment on the proposed action, NMFS believes that harpoon use by HMS CHB vessels could result in increased discard mortality of BFT over the discard mortality that occurs with gear currently authorized for HMS CHB use or with green-stick gear. Based on the relative lack of public support, and the concerns raised by NMFS and the public, including bycatch, enforcement, safety, and BFT stock status generally, NMFS has decided, at this time, to maintain the status quo regarding authorized harpoon use, i.e., authorized harpoon use by the Atlantic Tunas General and Atlantic Tunas Harpoon permit categories only

Alternative C1, which is the status quo alternative, would continue existing ecological benefits of the current requirements for possession and use of sea turtle bycatch mitigation equipment such as low post-release mortality of sea turtles and other by catch species. Alternative C1 is not selected because it would not provide for additional post-release survival benefits that may be achievable under preferred Alternative C2. Currently one type of sea turtle control device, the turtle tether, is recommended for possession and use, but is not required.

Under the status quo, the benefit of better control of large sea turtles not boated and improvements in hook and fishing gear removal that would result in reduced PRM would not be fully realized, but NMFS is unable to quantify the number of sea turtle mortalities that might occur in the absence of this benefit.

Under Alternative C1, the social and economic impacts would be minimal as sea turtle bycatch mitigation gear is currently required in the PLL fishery and sea turtle control devices are recommended, but not required. Any safety-at-sea benefit from improved control of large sea turtles not boated would not be fully realized with Alternative C1.

Under selected Alternative C2, which was a preferred alternative in the proposed rule, social and economic impacts may be positive in that further reduction in sea turtle mortalities achieved by enabling fishing gear removal may aid in continuation of the PLL fishery. Improved fishing gear removal from sea turtles caught in PLL gear could improve sea turtle bycatch mortality estimates, thus reducing the likelihood that the incidental take statement for the PLL fishery is exceeded. Also, a safety-at-sea benefit from the use of sea turtle control devices would be realized as fishermen using the gear can more easily control large sea turtles while removing fishing hooks and lines. Other social and economic impacts of Alternative C2 are expected to be minimal. It is unknown how many vessels currently follow the recommendation to possess and use sea turtle control devices. Production models of the turtle tether cost from $200-$250 and may be constructed according to the design specifications for $40-$70. Production models of the T&G ninja sticks may be purchased for $175 and may be constructed according to the design specifications for approximately $25-$85. It is difficult to determine the number of Atlantic HMS permitted vessels that use longline and will be affected by this requirement as users of longline gear may possess any one of three permits; however, not all holders of these permits use longline gear. To estimate the total cost of outfitting each boat in the longline fleet with one sea turtle control device, NMFS totaled the number of Atlantic Tunas Longline, Shark Directed, or Shark Incidental permits, which produced an overestimate of the actual number of permitted vessels affected by the requirement. Based on the number of Atlantic Tunas Longline, Shark Directed, or Shark Incidental permitted vessels as of November 2007, it is estimated that the cost of outfitting the longline fleet with one turtle control device would range from $18,575, if all permit holders construct the least expensive device, to $185,750, if all permit holders purchase the most expensive model produced.

9.0 COMMUNITY PROFILES

This chapter serves as a brief overview and determination of the social impacts associated with the final regulation. A more comprehensive review of community profiles for all HMS fisheries can be found in Section 9 of the FCHMS FMP.

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. A summary of potential social impacts to Atlantic and Gulf of Mexico coastal states resulting from the alternatives is presented in Section 4 of this document.

9.2. State and Community Profiles

Section 9.4 of the Consolidated HMS FMP (NMFS 2006) provides a comprehensive summary of the states and communities that participate in HMS fisheries and are affected by HMS regulations.

10.0 OTHER CONSIDERATIONS

10.1. National Standards

The analyses in this document are consistent with the National Standards (NS) set forth in the 50 CFR part 600 regulations. The action seeks to achieve optimum yield from Atlantic tuna fisheries by allowing harvest with gears that are efficient and result in low bycatch to be used within the established quotas, retention limits, and size limits, thus preventing overfishing (NS 1). The action is based on the best scientific information available (NS 2), including stock assessment data which provide for the management of these species throughout their ranges (NS 3). This action does not discriminate against fishermen in any state (NS 4) and promotes efficiency in utilizing the resource (NS 5) by allowing the use of gears that efficiently harvest tunas, potentially resulting in high quality fish product and higher prices while incurring low bycatch. With regard to NS 6, the action takes into account variations that may occur in the fishery and the fishery resources and provides for these by allowing additional opportunities to harvest Atlantic tunas with efficient gears. NMFS considered the costs and benefits of these

management measures economically and socially under NSs 7 and 8 in Sections 4, 5, and 6 of this document, finding the potential for positive economic and social impacts with the allowing of additional gears in Atlantic tuna fisheries. NMFS found the potential for negative, but minimal, economic and social impacts from the requirement for a turtle control device to be possessed and used onboard PLL and BLL vessels. The action will minimize bycatch and minimize bycatch mortality (NS 9) by allowing use of efficient gears. It will also minimize bycatch mortality in the PLL and BLL fisheries by requiring a turtle control device to improve safe handling of sea turtles and better facilitate removal of hooks and entangling fishing gear, thus improving post-release survival. Finally, the action will not require fishermen to fish in an unsafe manner and by requiring a sea turtle control device in the PLL and BLL fisheries, promotes the safety of human life at sea (NS 10) when fishermen are handling and releasing a large sea turtle.

10.2. Paperwork Reduction Act

This action does not contain any new collection-of-information requirements 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 LIST OF PREPARERS

A team of individuals from the HMS Management Division, Office of Sustainable Fisheries, NMFS prepared this document, including:

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12.0 LIST OF AGENCIES AND PERSONS CONSULTED

Discussions pertinent to the formulation of the final actions involved input from the various staff within NMFS and NOAA, including NOAA General Counsel for Fisheries, General Counsel for Enforcement, NOAA Office of Law Enforcement, NMFS Southeast Fisheries Science Center, NMFS Southeast Regional Office, and the members of the HMS AP (which

includes representatives from the commercial and recreational fishing industries, environmental and academic organizations, state representatives, and fishery management councils). NMFS also has received numerous comments from individual fishermen and interested parties.

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14.0 APPENDIX 1 – SEA TURTLE CONTROL DEVICE SPECIFICATIONS AND GUIDELINES FOR USE

Design Specifications:

(A) Turtle Control Device (currently two styles: the "Turtle Tether" and the "T&G Ninja Sticks"). In response to safety concerns for fishing vessel crew members and for incidentally captured sea turtles, as well as to facilitate the likelihood of maximum gear removal potential, the turtle control device concept was devised. Its function is to control the front flippers of the sea turtle so that the animal can be controlled at the side of the vessel while the gear is removed. Restraint is most effective when a pair of turtle control devices is used (two sets of Turtle Tethers, two sets of T&G Ninja Sticks, or one of each style). Currently, there are two styles of turtle control device that reduce safety risks associated with removing gear from active sea turtles not boated, particularly leatherbacks. Minimum design standards are as follows:

(I) *Turtle Tether*

(1) Design Standards:

(i) *Line.* 15-20' of 1/2" hard lay negative buoyancy line (e.g., Samson Crab Rope #SSR-100-MHL or similar)* is used to make a ~30" loop to slip over the flipper. The line is fed through a 3/4" fair lead, eyelet or eyebolt at the working end of a pole and through a 3/4" eyelet or eyebolt in the midsection. A 1/2" quick release cleat (e.g., Clamcleat® or similar)* holds the line in place near the end of the pole. A final 3/4" eyelet or eyebolt should be positioned ~7" behind the cleat to secure the line, while allowing a safe working distance to avoid injury when releasing the line from the cleat. Turtle Tethers constructed according to original design standards in the document "Reduction of Sea Turtle Bycatch and Bycatch Mortality in the Pelagic Longline Fishery - Final Supplemental Environmental Impact Statement - June 22, 2004" and the associated final rule implementing the sea turtle bycatch mitigation measures (July 6, 2004; 69 FR 40736) would qualify under current standards.

(ii) *Extended reach handle.* The line must be securely fastened to an extended reach handle or pole. Check applicable regulations for required minimum handle length (e.g., the U.S. Highly Migratory Species Pelagic Longline Fisheries require a minimum length equal to or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined for these purposes (other definitions exist) 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.**

(2) Example model(s) meeting current design standards:

(i) *Turtle Tether (*e.g., *ARC Model TT08, Model TT12)*

(II) *T&G Ninja Sticks*

(1) Design Standards:

(i) *Line.* Approximately 30-35' of 1/2" to 5/8" soft lay polypropylene or nylon line or similar is fed through 2 PVC conduit, fiberglass, or similar sturdy poles and knotted using an overhand (recommended) knot at the end of both poles or otherwise secured. 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 ends of both poles to prevent line slippage if they are not otherwise secured. The remaining line is used to tether the apparatus to the boat unless an additional tag line is used.

(ii) Extended reach handles (2). Two lengths of sunlight resistant 3/4" schedule 40 PVC electrical conduit, fiberglass, aluminum, or similar should be used. Check applicable regulations for required minimum handle length (e.g., the U.S. Highly Migratory Species Pelagic Longline Fisheries require a minimum length equal to or greater than 150% of the freeboard or a minimum of 6', whichever is greater. Freeboard is defined for these purposes (other definitions exist) as the working distance between the top rail of the gunwale to the water's surface and will vary based on the vessel design).

(2) Example model(s) meeting current design standards:

(i) *T&G Ninja Sticks*

Guidelines for Use:

14.1. Turtle Control Device

In response to safety concerns for fishing vessel crew members and for incidentally captured sea turtles, as well as to facilitate the likelihood of maximum gear removal potential, the turtle control device concept was devised. These devices, which NMFS strongly recommends be used in pairs, take pressure off the involved branch line and help stabilize the animal. They secure the front flippers of the sea turtle so that the animal can be controlled at the side of the vessel, facilitating rapid gear removal 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. Currently, there are two turtle control device styles that reduce safety risks associated with removing gear from active sea turtles not boated, particularly leatherbacks.

The first type, referred to as the "Turtle Tether" is designed to "noose" the flipper using one pole and a line threaded through eyebolts. The end of the negatively buoyant tether line should be threaded through an eyebolt at the end of the tether, then through two eyebolts farther down the pole. A tag line threaded through the end of the tether must be attached to the vessel to ensure that the turtle cannot escape with the tether attached. Loop the stiff rope around the front

flipper up to the "shoulder" region, tighten, and cinch the rope in the cleat. Keep a firm hold of the tether pole to keep the animal near the vessel, allowing for dehooking and disentanglement. To optimize safe handling of the turtle, it is strongly recommended that two people each operate a set of the Turtle Tethers to capture both flippers and restrain the turtle alongside the vessel.

The second type, referred to as the "T&G Ninja Sticks," consists of two long poles (electrical conduit PVC, fiberglass, aluminum, or similar) with line threaded through or securely affixed to both lengths. The free end of the line should be tethered to the vessel, leaving enough slack to create a ~24" working section between the two poles to secure the flipper unless an additional tag line is used. Holding one pole in each hand, capture the flipper with one pole, bring the poles together, and twist the line until the flipper is secured. To optimize safe handling of the turtle, it is strongly recommended that two people each operate a set of the T&G Ninja Sticks to capture both flippers and restrain the turtle alongside the vessel.

* The use of Samson Crab Rope and Clamcleat® are by reference only and no endorsement or affiliation is implied.

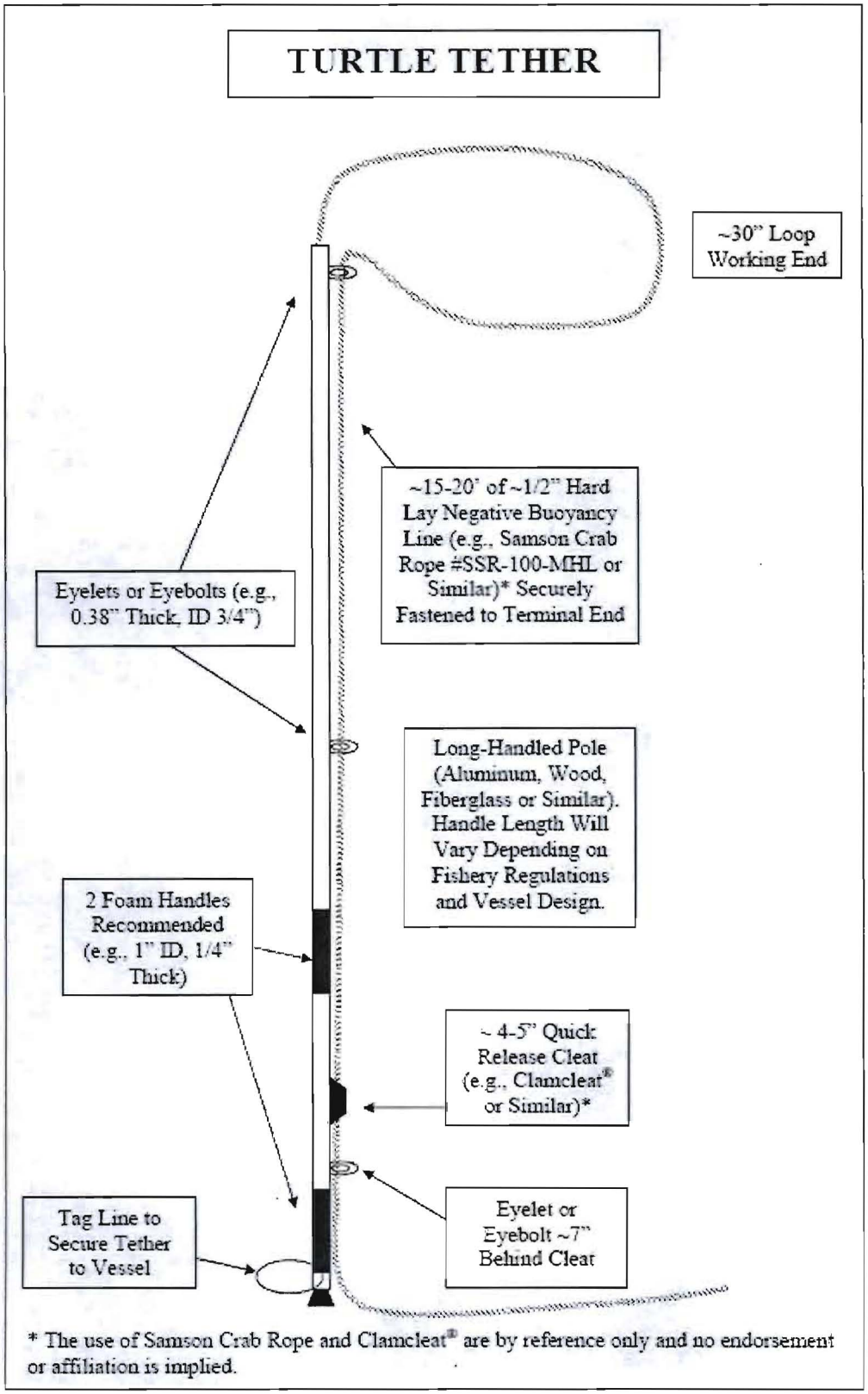

Figure 16 Turtle tether design standards.

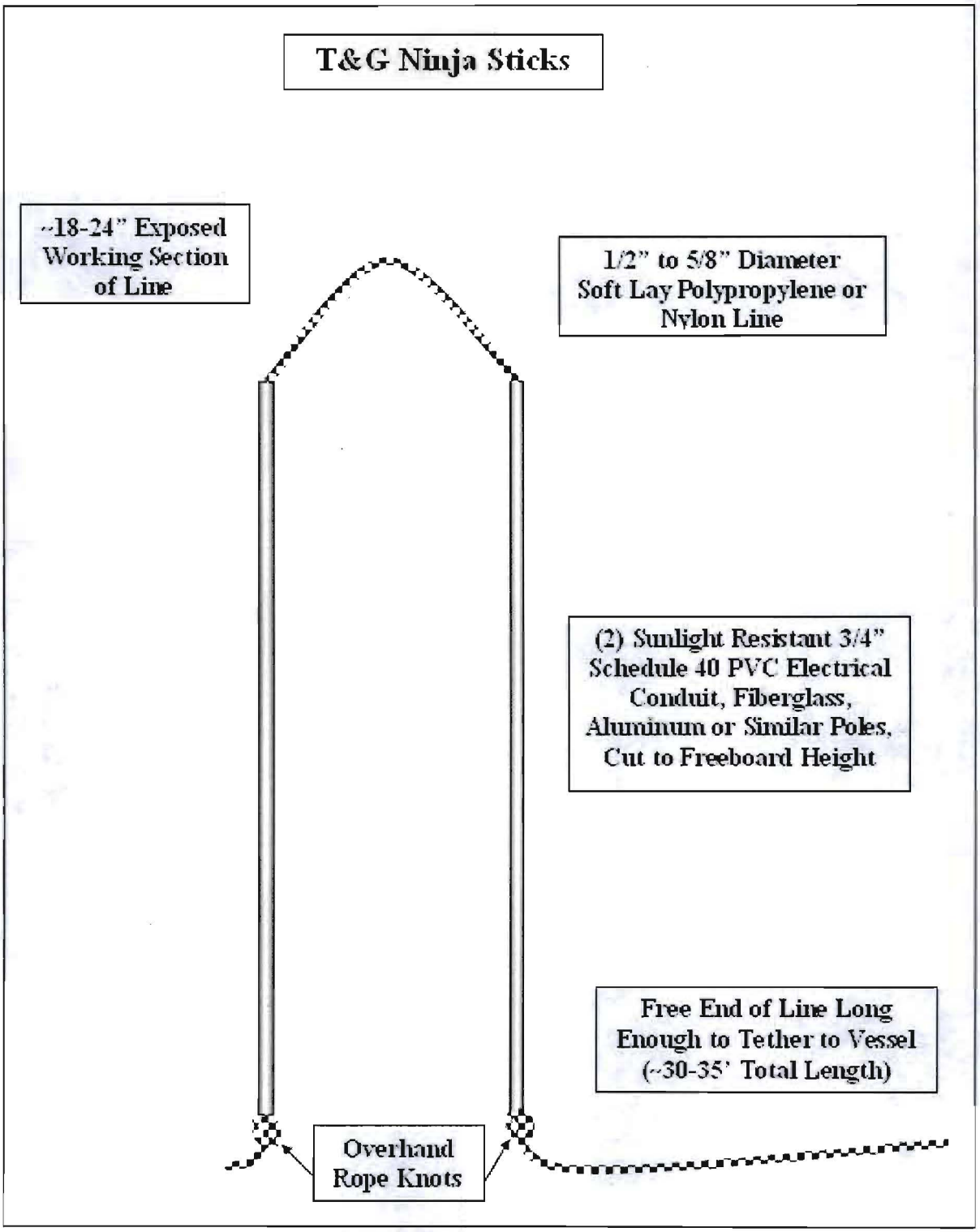

Figure 17 T&G ninja sticks design standards.

15.0 APPENDIX 2 - COMMENTS ON PROPOSED RULE TO AUTHORIZE GREEN-STICK AND HARPOON GEAR IN ATLANTIC TUNA FISHERIES AND REQUIRE SEA TURTLE CONTROL DEVICES

1. Green-Stick Gear Authorization

Comment 1: NMFS should authorize green-stick gear for Atlantic Tunas General, HMS CHB, and Atlantic Tunas Longline permitted vessels because green-stick gear is selective in what species fishermen catch, results in minimal bycatch and low bycatch mortality, and increases fishery operational flexibility in harvesting Atlantic tunas within established limitations. Comments included support from the North Carolina Division of Marine Fisheries, the South Atlantic Fishery Management Council, and representatives of several diverse constituencies on the HMS AP.

Response: NMFS considered these characteristics of green-stick gear when developing the alternatives. Green-stick gear is an actively trolled and tended gear. When fished, the hooks and baits are suspended at or above the surface of the water which reduces the likelihood of catching species that do not strike moving prey at or above the surface of the water. Since the gear is tended, animals that are caught are quickly retrieved to the vessel and either kept, if the species is desired, or released, if it is undersized or an unintended species. Quick retrieval and release of unwanted or unintended animals causes less physiological stress on an animal than some other gears such as longline and results in a higher likelihood of survival.

Increased operational flexibility in harvesting Atlantic tunas results from fishermen having another option or choice in the type of fishing gear they use, particularly when fishing for YFT. This flexibility may be beneficial to help offset increasing operational costs due to factors such as high fuel prices. The availability of green-stick gear as an option provides a gear that is low in bycatch and bycatch mortality and may be chosen by some fishermen for this reason.

Comment 2: Comments were received that NMFS is discriminatory against Longline category vessels if those vessels that do not have longline gear onboard are still required to abide by the incidental catch requirements and if the BFT that they catch are not counted against the General category quota instead of the Longline quota. The premise of these comments is that an Atlantic Tunas Longline permitted vessel that does not have PLL or BLL onboard and is fishing with a gear that is also authorized in another permit category should be treated according to the regulations for that other category. In this case, the other category would be General category, thus allowing BFT to be targeted and counted against the General category's quota.

Response: The action to authorize green-stick gear for Atlantic tunas does so within existing quotas, size limits, or other established limitations. Currently established retention limits are some of the existing limitations of permit categories such as Atlantic Tunas Longline and are not modified by this action. This includes the incidental catch requirements described in the response to Comment 3.

The BFT management structure, developed in the 1999 FMP, created quota allocations, effort controls, retention limits, and size limits associated with the various quota categories in an effort to rebuild BFT while allowing for continued BFT harvest. The 1999 FMP also solidified the BFT Longline category as incidental by definition yet provided for limited retention of BFT bycatch. The directed BFT fishery is also managed with a suite of permits and associated regulations such as authorized fishing gears, retention limits, restricted fishing days, and limited access for Purse Seine category. NMFS manages fisheries throughout the United States with different permit types and various regulatory restrictions respective to those permit types in order to achieve the goals of applicable domestic fisheries laws and international agreements. The type of permit(s) that an individual holds may be changed at the discretion of the vessel owner, according to established regulations, among individual persons and or vessels over time. As such, the distinctive management measures among permit types are not discriminatory.

Comment 3: Comments were received that the target catch requirements of the Atlantic Tunas Longline permit should not apply if a vessel is fishing with green-stick gear and without longline gear onboard.

Response: The action to authorize green-stick gear for Atlantic tunas does so within existing quotas, size limits, or other established limitations. Currently established retention limits are one such existing limitation on permit categories such as Atlantic Tunas Longline and are not modified by this action. The Atlantic Tunas Longline permit allows for the take of BFT only as incidental to other targeted species. The target catch requirements of this permit are found at §635.23(f), which states that one large medium or giant BFT per vessel per trip may be landed, provided that at least 2,000 lb (907 kg) of species other than BFT are legally caught, retained, and offloaded from the same trip and are recorded on the dealer weighout slip as sold. Two large medium or giant BFT per vessel per trip may be landed, provided that at least 6,000 lb (2,727 kg) of species other than BFT are legally caught, retained, and offloaded from the same trip and are recorded on the dealer weighout slip as sold. Three large medium or giant BFT per vessel per trip may be landed, provide that at least 30,000 lb (13,620 kg) of species other than BFT are legally caught, retained, and offloaded from the same trip and are recorded on the dealer weighout slip as sold.

These existing target catch requirements along with existing retention limits, quota management structure, size limits, restricted fishing days, and other established limitations serve to constrain the harvest of, effort on, and bycatch of BFT. These constraints are necessary amid ongoing concerns about the overfished status of BFT and the continuing need to avoid increases in BFT bycatch and levels of directed effort that might negatively impact BFT stocks. The existence of these constraining regulations is a major factor in the decision to allow the use of green-stick gear as provided by this final rule. Additionally, modifying retention limits or target catch requirements as provided for at § 635.23(f)(2) was not within the scope of the proposed rule; therefore, adjustment of the target catch is not considered in this final rule.

Comment 4: NMFS should maintain the target catch requirements of the Atlantic Tunas Longline permit.

Response: As stated in the response to Comment 2, this action authorizes green-stick gear within existing quotas, size limits, or other established limitations. This action does not change the existing BFT incidental catch requirements of the Atlantic Tunas Longline Permit and thus, maintains the incidental nature of the Longline category . The existing target catch requirements will remain in effect and are listed in the response to Comment 2 above.

Comment 5: NMFS should avoid increasing directed fishing pressure on BFT.

Response: Directed fishing pressure on BFT is not expected increase beyond a minimal amount as a result of this rule. Green-stick gear is used primarily to harvest YFT, although catch of BFT also occurs at a much lower level. According to coastal and pelagic logbook reports, which include reports from Atlantic Tunas General, HMS CHB, and Atlantic Tunas Longline permitted vessels, YFT and BFT represent approximately 82 percent and 2 percent (or less) of the catch, respectively, both by number and weight. The use of green-stick gear by Atlantic Tunas General, HMS CHB, and Atlantic Tunas Longline permitted vessels has occurred since at least the mid-1990s. Any potential for an increase in directed fishing pressure on BFT as a result of this rule exists within the General category where directed BFT fishing is allowed. Both Atlantic Tunas General and HMS CHB (when selling BFT) permitted vessels operate within the BFT General category. Increases in directed fishing pressure on BFT are not expected in the Longline category due to the target catch requirements in place for Atlantic Tunas Longline permitted vessels as described in the response to Comment 3 above. Also, targeted fishing for BFT is not allowed in the Gulf of Mexico, an important BFT spawning area; therefore, increases in directed fishing pressure for BFT would not occur in the Gulf of Mexico as a result of this final rule.

While the potential for an increase in directed or incidental effort on BFT exists considering the increase in number of hooks allowed, such increases in effort over existing practices are expected to be minor because the gear is already being used and has been used since the mid-1990s. There is potential for additional vessels not currently using green-stick gear to begin to do so as more fishermen become aware of green-stick gear efficiency in catching Atlantic tunas and of the high quality of fish product that can be delivered to the dock resulting in higher ex-vessel value. Green-stick gear also could be deployed at times and in ways that enable more hooks to be fished during a trip, such as while a vessel is in transit between fishing locations where other authorized gears may be deployed. Such increases in effort, if they were to occur, are expected to be minor as green-stick gear use has developed to its current level over a period of several years. The growth of green-stick gear use is somewhat constrained by the capital investments involved in rigging a vessel to use green-stick gear. A green-stick rig with fiberglass pole and hydraulic haul-back capability is estimated to cost $5,300–$9,300.

If directed use of green-stick gear for YFT or BFT increases above its current level, there may be benefits in improved bycatch mortality compared to some other fishing gears. Bycatch mortality of released fish is anticipated to be low given that baits on green-stick gear are trolled at high speed and deployed at or slightly above the surface of the water. Fish are hooked as they strike the baits which most frequently results in hooking locations in the jaw or other mouth area and does not often result in deep-hooking. Additionally, because green-stick gear is usually rigged with power haul-back capability, the mainline can be quickly retrieved, thereby enabling undersized or non-target fish to be released with a minimum of stress and physical trauma. Due

to this characteristic of green-stick gear, NMFS anticipates that there may be beneficial effects for target and non-target species when compared to other fishing gears, such as longline and rod and reel, because improving post-release survival of fish reduces overall fishing mortality. Finally, while authorization of green-stick gear is not expected to result in a great increase in BFT landings, if an increase were to occur, repeated quota under-harvests in recent years indicate that sufficient quota exists to allow for some additional landings.

Comment 6: NMFS should maintain enforceability of PLL closed areas by ensuring that PLL gear is not onboard vessels fishing with green-stick gear in PLL closed areas.

Response: This final rule does not change the requirement that PLL or BLL gear be removed from an Atlantic Tunas Longline permitted vessel when the vessel is in a PLL or BLL closed area. Green stick gear will, however, by allowed in the closed area. The rule distinguishes green-stick gear from PLL and BLL by defining it as "an actively trolled mainline attached to a vessel and elevated or suspended above the surface of the water with no more than 10 hooks or gangions attached to the mainline. The suspended line, attached gangions and/or hooks, and catch may be retrieved collectively by hand or mechanical means. Green-stick does not constitute a PLL or a BLL as defined in this section or as described at § 635.21(c) or § 635.21(d), respectively." The distinguishing characteristics that separate the gears are that green-stick gear is actively trolled and does not have floats capable of supporting the mainline as with PLL nor weights and/or anchors capable of maintaining contact between the mainline and the ocean bottom as with BLL. NMFS believes that these characteristics are recognizable and, with the definition and distinctions made between the gears, enforceability of longline restrictions in the closed areas will be maintained.

Comment 7: NMFS should maintain the enforceability of the circle hook requirement on PLL vessels.

Response: This action does not change the requirement that only circle hooks may be used on PLL gear. It does provide for the possession of up to 20 J-hooks for use only with green-stick gear if green-stick gear is onboard. NMFS believes that the definition of green-stick gear allows the gear to be recognized by enforcement agents and distinguishes it from PLL, thus enabling enforcement agents to know when the possession of 20 J-hooks is allowed.

Comment 8: NMFS should maintain enforceability of the live bait prohibition in the Gulf of Mexico.

Response: This action does not change the live bait prohibition in the Gulf of Mexico. In order to enhance enforcement capability of the live bait prohibition and prevent the use of bait catching rigs such as "sabiki" rigs (which use small hooks) under the guise of green-stick gear, a minimum hook size is established for J-hooks that are allowed to be used with green-stick gear onboard Atlantic Tunas Longline Permitted vessels. Under this provision, the use of J-hooks less than 1.5 inch (38.1 mm, approximately the size of a standard 2/0 to 3/0 J-hook), when measured in a straight line over the longest distance from the eye to any other part of the hook, is prohibited.

Comment 9: NMFS should require that any BFT caught on green-stick gear in the GOM be released regardless of permit category in order to protect BFT in the spawning area.
Response: This action authorizes green-stick gear for Atlantic tunas within existing quotas, size limits, or other established limitations. Directed fishing for BFT remains prohibited in the GOM. This action does not change existing provisions to protect BFT in the GOM. Green-stick gear is authorized for use by Atlantic Tunas General, HMS CHB, and Atlantic Tunas Longline permitted vessels. Atlantic Tunas General category vessels may not retain BFT in the GOM. Atlantic-wide, when selling BFT, HMS CHB permitted vessels operate under the rules for General category, and General category vessels may not retain BFT in the GOM. This means that HMS CHB vessels may not retain BFT for commercial purposes in the GOM. For recreational fishing in the GOM, which also applies to HMS CHB permitted vessels, one "trophy" BFT (73 in CFL) is allowed to be retained per vessel per year only as incidental to targeted fishing for other species.

Comment 10: Comments were received in support of increased data collection on green-stick gear fishing to include designating a green-stick gear code. Also, comments were received in support of improved data collection on green-stick gear fishing that would allow for appropriate monitoring of effort and landings to enable changes or problems in the fishery to be addressed as soon as possible. In addition, improved data collection could show benefits of green-stick gear such as low bycatch and the possible elimination of protected species interactions.

Response: NMFS has designated a gear code which will facilitate improved gear-specific data collection via dealer reporting through trip tickets in the southeast and dealer reporting systems in the northeast. The gear code may also aid in improved gear-specific data collection via logbooks. Data collection on green-stick gear and other gears is important for assessing the need for and appropriateness of future management measures.

2. Harpoon Authorization

Comment 1: NMFS received a wide range of comments on authorization of harpoon gear for use by HMS CHB permitted vessels, from full support to complete opposition. The majority of comments received on the harpoon authorization issue opposed the action, as described below. Comments in support of harpoon use authorization for All HMS CHB trips included: 1) the BFT fishing industry needs all the help it can get and NMFS should do all it can to maximize fishing opportunities within current quotas, particularly because harpoon fishing is already limited by the need for good weather conditions; 2) the action would provide fishermen the flexibility of gear choice, which would be beneficial given current high operating costs, and would increase opportunities to harvest BFT within the General category daily retention limit (currently 3 BFT/vessel); and 3) authorization of harpoon gear on HMS CHB vessels would not significantly increase competition for current HMS CHB permit holders as very few vessel owners would make the large capital investment to outfit their vessels to use harpoon gear in the HMS CHB category.

Comments supporting harpoon authorization for HMS CHB vessels on non-for-hire trips only include: 1) this alternative would work well for HMS CHB captains and crew, who could

harpoon BFT in the early season (when BFT are more readily caught at the water's surface in the Gulf of Maine) and switch to rod and reel use in the late summer for use on charter trips; and 2) there is no reason for harpoons to be used on charter trips with paying passengers aboard.

The majority of comments received on the harpoon authorization issue opposed the action. Comments include: 1) NMFS needs to take a more precautionary approach in regard to the BFT fishery, which is overfished, and in which overfishing is occurring; 2) this action would be inconsistent with efforts to rebuild BFT; 3) new measures should not be adopted in the name of quota utilization; 4) the action could lead to shorter seasons and lower retention limits for HMS CHB vessels; and 5) the action could lead to disruption by new harpooners of Harpoon category fishing activities, and/or dilution of the historical HMS CHB business by historical harpooners (contradicting the rationale NMFS used in establishing a separate HMS CHB permit category).

Response: NMFS has considered these comments, some of which were also made at the April 2008 HMS Advisory Panel meeting. Based on the relative lack of public support, and on consideration of the various concerns raised by NMFS and the public, including concerns about bycatch, enforcement and safety (discussed further in responses below), and BFT stock status generally, NMFS has decided, at this time, to maintain the status quo regarding authorized harpoon use, i.e., authorized harpoon use by the General and Harpoon categories only.

Comment 2: NMFS received several comments specifically regarding potential increases in BFT dead discards, bycatch (of undersized fish), and bycatch mortality that may result from the proposed harpoon authorization. Comments expressed concern that now is not the time to increase fishing effort on BFT as it could further strain the resource. Examples of this resource strain were increased mortality of BFT that are harpooned and lost, undersized BFT that are harpooned unintentionally by less experienced crew while targeting commercial-sized BFT, or BFT that are discarded in the process of highgrading. Comments from those supportive of the action stated that authorization of harpoon gear on HMS CHB vessels would not significantly increase BFT bycatch and bycatch mortality as effort is unlikely to substantially increase due to the large capital investment for owners to outfit their vessels to use harpoon gear in the HMS CHB category.

Response: NMFS does not have information with which to estimate quantitatively the potential increase in discards, bycatch, and bycatch mortality that could result from HMS CHB harpoon use. NMFS anticipates that the number of HMS CHB operators that would outfit their vessels with harpoon gear would be low. However, to the extent that inexperienced users may inadvertently strike an undersized BFT, bycatch and bycatch mortality likely would increase with the proposed authorization. NMFS believes that harpoon use by HMS CHB vessels could result in increased discard mortality of BFT over the discard mortality that occurs with gear currently authorized for HMS CHB use (rod and reel, bandit gear, and handline) and green-stick gear to be authorized by this final rule.

Comment 3: NMFS received several comments regarding enforceability of the harpoon authorization. Comments opposing harpoon authorization stated that enforcement would be difficult if harpoons are authorized on non-for-hire trips only. Some of these comments further

state that the proposed action may provide an incentive for captains to convert recreational trips to commercial trips and highgrade, or to use harpoon gear expressly for the satisfaction of paying passengers. Some indicated that harpoon authorization could exacerbate both the nonreporting of catch and landings and the illegal sale of BFT. A comment supportive of the action suggested that NMFS could require that the pulpit be stowed in the upright position while the vessel is on for-hire trips.

Response: Field and dockside enforcement of harpoon authorization for only certain HMS CHB trips would be more challenging than if the authorization applied to all HMS CHB trips. Although NMFS recognizes the possibility that harpoon authorization on for-hire trips would increase the incentive to discard and/or not report fish since HMS CHB crew may fill either the commercial or recreational retention limit on any given fishing day, it is not possible to estimate quantitatively the increase in discards and non-reporting that may occur. As NMFS is not taking action to authorize harpoon use on HMS CHB vessels at this time, consideration of specific gear stowage requirements is not necessary.

Comment 4: NMFS received a few comments regarding safety implications of the proposed action. Some believed that liability and safety of passengers is the captain's responsibility, and as it would be very unlikely that a paid passenger would be allowed to use the harpoon gear, authorization of harpoon gear should be for all trips. A few commenters asked why NMFS raised safety concerns regarding HMS CHB use of harpoon gear but not of green-stick gear.

Response: NMFS must ensure that management measures, to the extent practicable, promote the safety of human life at sea. Authorization of harpoon gear on HMS CHB vessels, particularly if authorized on all trips, presents the possibility of charter passengers walking out to and standing on a pulpit and/or handling harpoon gear, which may be capable of passing an electric current. Therefore, it is appropriate for NMFS to consider safety concerns and to engage the public in a discussion of these issues. In the proposed rule, NMFS selected as the preferred subalternative gear authorization on non-for-hire trips only as it would reduce the incentive for both crew and passengers to use the gear for recreational-sized BFT fishing, thus reducing potential safety concerns. Green-stick gear has been used on charter vessels for several years, including on for-hire trips, and neither existing green-stick gear use or use of the gear as proposed raised novel or substantial safety concerns.

Comment 5: If NMFS authorizes harpoon gear use on HMS CHB vessels, NMFS should allow permit holders a category change (not currently allowed for the 2008 fishing year as the May 31 deadline has passed) so that vessels could make use of the HMS CHB harpoon authorization this year.

Response: As NMFS is not implementing the proposed HMS CHB harpoon authorization at this time, allowances for permit category changes are not needed at this time.

3. Sea Turtle Control Device

Comment 1: NMFS should require a sea turtle control device in PLL and BLL fisheries to achieve and maintain low post-release mortality of sea turtles.

Response: The proposed and final rule do require a sea turtle control device in the PLL and BLL fisheries to achieve and maintain low post-release mortality of sea turtles. The implementation of sea turtle bycatch mitigation measures in the PLL and BLL fisheries, in accordance with the 2004 BiOp, which includes the mandatory use of circle hooks in the PLL fishery, possession and use of sea turtle handling and release gears in the PLL and BLL fisheries, and mandatory participation in protected species safe handling and release workshops has reduced the post-release mortality of sea turtles. Sea turtle control devices have been recommended in these fisheries and are now required to better enable fishermen to remove fishing gear from sea turtles. Maximizing the removal of fishing gear from sea turtles results in improved post-release mortality.

Comment 2: NMFS should require two sea turtle control devices instead of one in order to better control sea turtles by securing both front flippers.

Response: NMFS considered requiring two sea turtle control devices instead of one in order to better control sea turtles by securing both front flippers, but did not prefer this as an alternative. Some BLL vessels are small and requiring two devices onboard is impractical, at this time, due limited available space. Also, requiring the use of two devices when there are often only two crew members onboard raises concerns about safety at sea, especially in heavy seas and/or currents when one crew member must remain at the wheel while the other crew member retrieves the longline gear. In such circumstances, one crew member would reasonably be expected to use one sea turtle control device and remove fishing gear from the sea turtle while the use of two devices and removal of the fishing gear would be an unreasonable expectation.

Comment 3: NMFS should not require a sea turtle control device in PLL and BLL fisheries because the shark fishing fleet cannot afford the device to meet the requirement.

Response: NMFS considered cost of the sea turtle control devices when developing this requirement and made options available for construction of the devices with inexpensive materials. The amount of time required for construction of these devices is minimal. Fishermen may already have many of these materials on hand. Construction costs for the T&G ninja sticks and turtle tether range from $25 to $85. Only one device is required to be carried onboard and used.

Drafted RBlankinship and SMcLaughlin	7/7/2008
Harpoon FRFA and C&R sections plus minor edits: SMcLaughlin	7/28/2008
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