Draft Amendment 7 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan

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NOAA FISHERIES

DRAFT

AMENDMENT 7 TO THE CONSOLIDATED ATLANTIC HIGHLY MIGRATORY SPECIES FISHERY MANAGEMENT PLAN

Including:
A Draft Environmental Impact Statement,
A Draft Regulatory Impact Review,
An Initial Regulatory Flexibility Analysis,
A Draft Social Impact Analysis

August 2013

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Amendment 7 to the 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan (FMP)

ABSTRACT

Abstract: The National Marine Fisheries Service (NMFS) is amending the 2006 Consolidated HMS FMP to address bluefin tuna management due to recent trends and characteristics of the bluefin fishery. This action is necessary to meet domestic management objectives of the Magnuson-Stevens Fishery Conservation and Management Act including preventing overfishing, achieving optimal yield, and minimizing bycatch to the extent practicable, as well as the objectives of the Atlantic Tunas Convention Act (ATCA) and obligations pursuant to binding recommendations of the International Commission for the Conservation of Atlantic Tunas (ICCAT). NMFS takes these actions to reduce bluefin dead discards and account for dead discards in all categories; optimize fishing opportunities in all categories; enhance reporting and monitoring; and adjust other aspects of the 2006 Consolidated HMS FMP as necessary.

Proposed Actions: Reallocate bluefin quotas; implement several actions applicable to the pelagic longline fishery, including Individual Bluefin Quotas, two new Gear Restricted Areas, access to current closed areas based on performance criteria, , closure of the pelagic longline fishery when annual bluefin quota is reached, elimination of target catch requirements, mandatory retention of legal-sized bluefin, expanded monitoring requirements including electronic monitoring via cameras and reporting via Vessel Monitoring System (VMS), authorization for future development of an industry funded observer program, and transiting provisions for pelagic and bottom longline vessels; require VMS use and reporting by the Purse Seine category; change start date of Purse Seine category to June 1; expand Automated Catch Reporting System use to the General and Harpoon categories; provide additional flexibilities for inseason adjustment of the General category quota and Harpoon category retention limits; allocate a portion of the Angling category Trophy South subquota to the Gulf of Mexico; implement a U.S. North Atlantic albacore tuna quota; modify rules regarding permit category changes; and implement minor regulatory changes.

Type of statement: Draft Environmental Impact Statement (DEIS), Regulatory Impact Review (RIR), and Initial Regulatory Flexibility Analysis (IRFA)

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EXECUTIVE SUMMARY

Background

Management Authority

Atlantic Highly Migratory Species (HMS) fisheries 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 manage fisheries to maintain optimum yield on a continuing basis while preventing overfishing. ATCA authorizes the Secretary of Commerce (Secretary) to promulgate regulations, as may be necessary and appropriate to carry out recommendations of the International Commission for the Conservation of Atlantic Tunas (ICCAT). The authority to issue regulations under the Magnuson-Stevens Act and ATCA has been delegated from the Secretary to the Assistant Administrator for Fisheries, NMFS.

The proposed rule builds upon an extensive regulatory framework for management of the domestic bluefin tuna fishery pursuant to a rebuilding program adopted in the 1999 FMP and continued under the 2006 Consolidated HMS FMP. The existing rebuilding program and ICCAT total allowable catch take into account uncertainties in the scientific information regarding the status of the bluefin tuna stock. The proposed rule does *not* increase or decrease the overall authorized bluefin tuna harvest levels by bluefin tuna fisheries. Rather, the proposed management measures will affect the time, place, and manner in which U.S. fisheries may harvest the U.S. quota and the relative volumes of fish that may be caught by the domestic fisheries.

The bluefin fishery is a quota-managed species and dead discards must be accounted for.

Annual implementation of the existing domestic allocation quota system has become more difficult due to a change in the way dead discards are calculated which increased the estimate of bluefin dead discards, a larger percentage of the adjusted quota being landed within the directed fisheries, and lastly, changes in ICCAT requirements regarding accounting for dead discards and allowable carryforward of unused quota.

The annual U.S. bluefin quota (recommended by ICCAT) is allocated among seven quota categories. The amount of quota allocated to each category is expressed as a percentage of the U.S. quota, as first established in the 1999 Fishery Management Plan (FMP) based on landings from 1983-1991 and continued unchanged in the 2006 Consolidated HMS FMP. Total catch generally consists of landings and dead discards. The amount of quota allocated to each category was specified in 1999, based upon historical landings, and did not account for dead discards. Landings were the only portion of catch that were factored into the 1999 FMP percentage allocation analysis because, at that time, dead discards were accounted for under a separate quota allowance (68 mt) per ICCAT recommendations. However, in 2006, the separate dead discard allowance was been discontinued per ICCAT recommendation and dead discards must now be accounted for within each country's annual quota allocations.

The Longline category is currently allocated 8.1% of the total U.S. quota for landings, but catches (landings plus dead discards) have been significantly over that subquota in recent years, resulting in a need for NMFS to rely on underharvest and annual quota adjustments from the Reserve category to cover longline operations while ensuring that the United States remains within its annual U.S. bluefin quota. The amount of unharvested quota from one year that may be carried forward and utilized in the subsequent year is limited by ICCAT. The percentage of quota that can be carried forward has been reduced from no limitation to the current 10% level. Reliable estimates of dead discards are available only for the pelagic longline fishery, which has a 100% logbook reporting requirement and a minimum of 8% observer coverage due to measures needed to reduce bycatch of sea turtles and protect ESA-listed and other species.

In recent years, the bluefin tuna quota system was able to fully account for both dead discards and landings, and not exceed the U.S. bluefin quota, because a portion of the allocated quota remained unharvested.

Because the U.S. quota has been insufficient to account for landings and anticipated dead discards at the beginning of the fishing year, the quota specifications were based on the underlying premise that full and final accounting for dead discards would occur at the end of the fishing year, and that such accounting would be possible due to the likelihood of unharvested quota at the end of the fishing year. However, recent trends have included increased dead discards and a larger percentage of the adjusted quota being landed; thereby decreasing unharvested quota at the end of the fishing year. The combined effect of the domestic quota system and the need to account for dead discards results in an annual allocation/accounting challenge: How to both account for anticipated dead discards as well as optimize fishing opportunity for all categories in a fair manner while ensuring that the United States remains within its overall allocated quota.

Development of Amendment 7

NMFS began to formally address some of the quota accounting issues at the September 2011 HMS Advisory Panel meeting by presenting a summary of recent issues and a white paper on bluefin bycatch in the HMS fisheries. The HMS Advisory Panel discussed issues related to the Longline category as well as issues in the bluefin fishery as a whole and suggested an array of measures as potential solutions. In preparation for the formal process of amending the 2006 Consolidated HMS FMP, NMFS presented a preliminary version of a scoping document ("Preliminary White Paper") to the HMS Advisory Panel meeting at the March 2012 meeting (NMFS, March 2012). The HMS Advisory Panel expressed qualified support for further exploring and analyzing the range of measures in the Preliminary White Paper, and suggested several additional measures which were incorporated into a final scoping document (NMFS, April 2012).

On April 23, 2012, NMFS published a Notice of Intent to conduct scoping and develop a Draft Environmental Impact Statement (DEIS) and FMP amendment (78 FR 24161). During the scoping meetings in May and June 2012, NMFS described the results of the recent bluefin tuna stock assessment, the latest relevant ICCAT recommendations, issues concerning HMS management with respect to the Atlantic tuna fisheries, and options or alternatives that may be

considered to achieve objectives. NMFS also consulted with the five Atlantic Fishery Management Councils (New England, Mid-Atlantic, South Atlantic, Gulf of Mexico, and the Caribbean). The comment period on the scoping document closed July 15, 2012. The contents of the scoping document and this DEIS are based largely upon the comments, suggestions, and discussions regarding bluefin management by various members of the bluefin fisheries, the HMS Advisory Panel, interested organizations, members of the public, and NMFS staff since 2009.

In September 2012, NMFS presented a pre-draft of Amendment 7 to the HMS Advisory Panel and made the document available to the public through the HMS website (http://www.nmfs.noaa.gov/sfa/hms). The Predraft included a suite of potential management measures based on public input. NMFS requested that the HMS Advisory Panel and HMS Consulting Parties (Atlantic, Gulf, and Caribbean Fishery Management Councils, Marine Fisheries Commissions, U.S. Coast Guard, and other State and Federal Agency representatives) submit comments on the Predraft by October 20, 2012. Public comment has supported the conclusion that substantive changes to the 2006 Consolidated HMS FMP are warranted, and it is important to rebuild the stock while optimizing fishing opportunity for all categories in a fair manner.

Amendment 7 Objectives

NMFS identified the following objectives with regard to this proposed action:

- Prevent overfishing and rebuild bluefin tuna, achieve on a continuing basis optimum yield, and minimize bluefin bycatch to the extent practicable by ensuring that domestic bluefin tuna fisheries continue to operate within the overall TAC set by ICCAT consistent with the existing rebuilding plan;

- Optimize the ability for all permit categories to harvest their full bluefin quota allocations; account for mortality associated with discarded bluefin in all categories; maintain flexibility of the regulations to account for the highly variable nature of the bluefin fishery; and maintain fairness among permit/quota categories;

- Reduce dead discards of bluefin and minimize reductions in target catch in both directed and incidental bluefin fisheries, to the extent practicable;

- Improve the timeliness and quality of catch data through enhanced reporting and monitoring to ensure that landings and dead discards do not exceed the quota and to improve accounting for all sources of fishing mortality;

- Adjust other aspects of the 2006 Consolidated HMS FMP as necessary and appropriate.

Management Alternatives

Introduction

The measures analyzed in this amendment and proposed through associated rulemaking are developed under the authority of the Magnuson-Stevens Act and consistent with ATCA.

NMFS is considering a range of alternative management measures to achieve the purpose, need, and objectives listed above. A full description and analysis of the different alternatives can be found in Chapter 2 of this document. The list of preferred alternatives in the DEIS can be found below (Table 1.1). NMFS organized the alternatives into five groups, according to the type of management measures. The following list is a summary of the common themes of each of the five groups:

1. *Allocation Alternatives* would make modifications to how the U.S. bluefin quota is allocated among the quota categories;
2. *Area Based Alternatives* would implement restrictions on the use of pelagic longline gear in various time and area combinations, or modify gear restrictions, or provide conditional access to current pelagic longline closed areas;
3. *Bluefin Quota Controls* would strictly limit the total catch (landings and dead discards) of bluefin in the Longline category using different strategies;
4. *Enhance Reporting Alternatives w*ould implement a variety of new bluefin reporting requirements;
5. *Other Measures* would make modifications to the rules that control how the various quota categories utilize quota, and implement a northern albacore tuna quota.

Based on public comments, NMFS will consider and reassess all alternatives, including those suggested by the public, before making a final decision.

Preferred Alternatives

The Draft Amendment 7 preferred alternatives are listed in Table 1.1 below.

Table 1.1 The preferred alternatives in Draft Amendment 7 to the 2006 Consolidated HMS FMP and the Quota Category to which the Alternative would apply.

	Preferred Alternatives in DEIS	**Regulated Quota Category**
Quota Allocation		
Codified Reallocation	Alternative A 2a - Reallocation to Longline Category Based on Historical 68-mt Dead Discard Allowance	Longline, Purse Seine, General, Harpoon, Angling

	Preferred Alternatives in DEIS	**Regulated Quota Category**
Annual Reallocation	Alternative A 3a - Annual Reallocation of Bluefin Quota from Purse Seine Category	Longline, Purse Seine, General, Harpoon, Angling
Reserve Category	Alternative A 4b - Modify Reserve Category	Longline, Purse Seine, General, Harpoon, Angling
Area Based Measures		
Gear Restricted Areas	Alternative B 1c – Cape Hatteras Gear Restricted Area with Access based on Performance Alternative B 1d - Allow Pelagic Longline Vessels to Fish under General Category Rules Alternative B 1f – Small Gulf of Mexico Gear Restricted Area	Longline
Gear Measures	No Action	Longline
Access to Closed Areas Using Pelagic Longline Gear	Alternative B 3b – Access to Closed Areas SubAlternative B 3b – Performance Criteria for Access to Closed Areas	Longline
Bluefin Tuna Quota Controls		
Individual Bluefin Quotas (IBQ)	Alternative C 2 - Individual Bluefin Quotas Alternative C 2i – Cost Recovery Alternative C 2j - Appeals of Quota Shares Alternative C 2k – Control Date Alternative C 2l - Measures Associated with an IBQ – Elimination of Target Catch Requirements, Mandatory Retention of Legal-Size Bluefin	Longline
NMFS Authority to Close the Pelagic	Alternative C 4b – NMFS Ability to Close the Pelagic Longline Fishery	Longline

	Preferred Alternatives in DEIS	**Regulated Quota Category**
Longline Fishery		
Enhanced Reporting Measures		
VMS Requirements	Alternative D 1b – VMS Requirements for the Purse Seine and Longline Categories	Longline, Purse Seine
Electronic Monitoring of Longline Category	Alternative D 2b –Electronic Monitoring of Longline Category	Longline
Automated Catch Reporting	Alternative D 3b - Automated Catch Reporting	General, Harpoon, Charter/Headboat
Deployment of Observers	Alternative D 4a – No Action	Longline, Purse Seine, General, Harpoon, Angling, Charter/Headboat
Logbook Requirement	Alternative D 5a - No Action	General, Harpoon, Angling
Expand the Scope of the Large Pelagics Survey	Alternative D 6a - No Action	Angling
Other Measures		
Modify General Category Time-Period Subquota Allocations	Alternative E 1c - Provide Additional Flexibility for General Category Quota Adjustment	General
NMFS Authority to Adjust Harpoon Category Retention Limits Inseason	Alternative E 2b - NMFS Authority to Adjust Harpoon Category Retention Limits Inseason	Harpoon
Angling Category Trophy Subquota Distribution	Alternative E 3b - Allocate a Portion of the Trophy South Sub-Quota to the Gulf of Mexico	Angling, Charter/Headboat
Change Start Date of Purse Seine Category to June 1	Alternative E 4b – Change Start Date of Purse Seine Category to June 1	Purse Seine

	Preferred Alternatives in DEIS	Regulated Quota Category
Rules Regarding Permit Category Changes	Alternative E 5b - Modify Rules Regarding Permit Category Changes	Longline, Purse Seine, General, Harpoon, Angling, Charter/Headboat, Trap
North Atlantic Albacore Tuna Quota	Alternative E 6b - Implement North Atlantic Albacore Tuna Quota	Longline, Purse Seine, General, Harpoon, Angling, Charter/Headboat, Trap
Transiting	Alternative E 7b – Pelagic and Bottom Longline Transiting Closed Areas	Longline

Summary of Ecological Impacts

The action can be expected to have moderate beneficial cumulative ecological impacts on bluefin in the short and long term, and neutral or minor beneficial cumulative ecological impacts on bluefin tuna and other specified species and protected resources in the short and long term. The preferred alternatives would reduce dead discards; provide strong incentives to avoid bluefin bycatch in the longline fishery; substantially increase the accountability of the quota system and improve quota management overall by reducing the risk that dead discards and landings will exceed the total U.S. quota; and enhance reporting through new requirements and incentives. The preferred alternatives would be consistent with ICCAT's bluefin rebuilding plan, Magnuson-Stevens Act requirements, and the 2006 Consolidated HMS FMP, and would support the elimination of overfishing and further stock rebuilding for bluefin.

Ecological Impacts of the Preferred Alternatives – Reallocation Measures (All Categories)

- The ecological impacts of allocation alternatives, including permanent reallocation, annual reallocation, and modification of the Reserve category, in conjunction with the quota control and enhanced reporting alternatives would be beneficial to bluefin because of the increased ability to account for bluefin dead discards within the quota system and the reduced risk that landings and dead discards will exceed the U.S. quota. There would be neutral or moderate beneficial impact on other HMS and protected species, as a result of changes in fishing effort. There would be shifts in quota among the various quota categories, but the alternatives would not affect the total amount of bluefin caught, which is set by the overall U.S. bluefin quota (and not an element of Amendment 7) as recommended by ICCAT and which implement the international bluefin rebuilding program. It is likely that a substantial portion of the revised Longline category baseline quota would not be landed, but would be used to account for dead discards.

Ecological Impacts of Preferred Alternatives – Longline Category Measures

- The Cape Hatteras Gear Restricted Area with Access based on Performance, and the Small Gulf of Mexico Gear Restricted Area would reduce pelagic longline interactions with bluefin and reduce dead discards. The number of dead discards would be reduced by approximately 29 percent and 3 percent, respectively, for a combined 'savings' of approximately 56 mt of bluefin. Minor benefits for other HMS, prohibited species, and protected resources are expected.
- The alternatives that would allow pelagic longline vessels limited, conditional access to closed areas would have neutral impacts on bluefin, other HMS, billfish, and protected species due to the limited number of potential trips, and performance criteria. All trips into the areas would be observed, there would be daily VMS reporting, and NMFS could close access to the area if it determines that bycatch of marine mammals, protected species, or HMS is inconsistent with the Marine Mammal Protection Act, Pelagic Longline Take Reduction Plan, the Pelagic Longline BiOp (2004), or the 2006 Consolidated HMS FMP.
- NMFS Closure of the Longline Fishery would prohibit the use of pelagic longline gear when the Longline category quota is attained, and the Individual Bluefin Quota (IBQ) system would provide accountability at the level of an individual vessel and effectively incentivize the avoidance of bluefin. IBQ allocations are likely to most severely constrain the fishing behavior of approximately 24 percent of these vessels. If no leasing of bluefin allocations were to occur, there could be a reduction of 2.4 million pounds of designated species landings per year. Because the Atlantic IBQ may not be used for bluefin caught in the Gulf of Mexico, the total proportion of the IBQ that may be used in the Gulf of Mexico is limited. Fifty-seven vessels (35% of the total vessels with bluefin shares) have Gulf of Mexico IBQ. If the quota controls constrain pelagic longline fishing effort, which is likely for at least some vessels in the short term, there would be additional beneficial impacts on other HMS and protected species as fishing effort with pelagic longline gear would decrease.
- Reporting of bluefin discards via VMS and electronic monitoring of the pelagic longline category fishery would improve the quality and timeliness of dead discard reporting, support the monitoring and enforcement of the IBQ system, create a more robust quota system with reduced management uncertainty, and facilitate compliance with ICCAT recommendations.
- Allowing pelagic longline and bottom longline vessels to transit through closed and restricted areas with gear stowed would have a neutral ecological impact.

Ecological Impacts of Preferred Alternatives – General Category Measures

- The requirement for General category vessels to report their bluefin catch (i.e., landings and discards) using an automated catch reporting system would provide data on the number of bluefin tuna discarded dead and alive and increase the accuracy of bluefin fishing mortality estimates.
- The alternative that would provide NMFS the flexibility transfer subquota from one time period to another time period, earlier in the calendar year would have a neutral ecological impact.

Ecological Impacts of Preferred Alternatives – Purse Seine Category Measures

- Reporting of bluefin discards via VMS would improve the quality and timeliness of dead discard reporting, create a more robust quota system with reduced management uncertainty, and facilitate compliance with ICCAT recommendations.
- The change of the start date of the Purse Seine category fishery from July 15 to June 1, and provide NMFS the authority to delay the season start date from June 1 to no later than August 15, would have a neutral biological impact as other commercial and recreational bluefin fisheries are typically open and active from June 1 through July 14, including in the areas and for the sizes that purse seine vessels would be targeting.

Ecological Impacts of Preferred Alternatives – Harpoon Category Measures

- The requirement for Harpoon category vessels to report their bluefin catch (i.e., landings and discards) using an automated catch reporting system would provide data on the number of bluefin tuna discarded dead and alive and increase the accuracy of bluefin fishing mortality estimates.
- Implementation of a daily retention limit of large medium bluefin tuna over a range of two to four bluefin, with a default large medium limit set at two fish, would have a neutral ecological impact.

Ecological Impacts of Preferred Alternatives – Angling Category Measures

- The alternative that would allocate a portion of the trophy south subquota specifically for the Gulf of Mexico by dividing the trophy subquota equally among the northern area, the southern area outside the Gulf of Mexico, and the Gulf of Mexico (33% each) would have neutral ecological impacts, as the effect of this measure would be to convert a small number of potential dead discards in the Gulf of Mexico to potential landings.

Ecological Impacts of Preferred Alternatives – Northern Albacore Quota

- The alternative that would implement the U.S. annual quota of northern albacore recommended by ICCAT and establish provisions for the accounting of overharvest and underharvest of the quota via annual specifications would result in moderate, beneficial ecological impacts.

Summary of Socio-Economic Impacts

For vessels that have a history of avoiding bluefin tuna, and continue to avoid bluefin tuna, the socio-economic impacts would be moderate and adverse, with the principal impact being the costs associated with electronic monitoring and VMS reporting. For pelagic longline vessels that have a history of interacting with many bluefin, and continue to interact with bluefin in the future, the cumulative socio-economic impacts would be major and adverse, due to the combined impacts of the IBQ, the gear restricted areas, and the enhanced reporting measures (See Chapters 5 through 8 for specific details). For the Purse Seine category, the cumulative economic impacts

would be minor adverse due to the potential reallocation of quota and the enhanced reporting requirements. For the General, Harpoon, Charter/Headboat, and Angling categories, the cumulative economic impacts would be neutral or minor adverse due to the modifications to the rules that dictate how the category specific quota is managed, and the enhanced reporting requirements.

Socio-Economic Impacts of Preferred Alternatives on the Longline Category

- The Codified Reallocation alternative would result in an additional 62.5 mt of quota for the Longline category on an annual basis (an 83.5% increase), which, under the current U.S. bluefin quota of 923.7 mt, would result in a revised baseline quota of 137 mt. If the Longline category were to land this additional 62.5 mt of bluefin quota, it would be worth approximately $1 million dollars; however, it is highly unlikely as a substantial portion of the revised baseline quota would not be landed, but would be needed to account for dead discards.
- The Annual Reallocation alternative would enable the agency to make additional quota available to all quota categories, including the Longline category. For example, it could increase the amount of quota available for use by the Longline category to 216.7 mt, assuming the permanent reallocation is finalized and 50% of the Purse Seine category quota were reallocated to the Longline category (under the current U.S. bluefin quota of 923.7 mt). If the Longline category landed this additional 79.7 mt of bluefin quota, it would be worth approximately $1.4 million, however it is highly unlikely as a substantial portion of the revised quota would not be landed, but would be used to account for dead discards.
- The Cape Hatteras Gear Restricted Area with Access Based on Performance would potentially reduce revenue for the 18 vessels that would not initially be allowed access, based on their historical catch of bluefin and designated species ratio, compliance with reporting, and/or compliance with observer requirements. Specifically, if the vessels do not redistribute any of their fishing effort to other areas outside the Cape Hatteras Gear Restricted Area, the loss in revenue would be approximately $419,000 ($288,000 from swordfish; $29,000 from bluefin; and $28,000 from yellowfin, among others). If 12 vessels of the 18 affected vessels are able to redistribute a portion of their fishing effort to other areas, the loss in revenue could be reduced to approximately $292,000 ($191,000 from swordfish; $21,000 from bluefin; and $25,000 from yellowfin, among others). If vessels affected by the Cape Hatteras Gear Restricted Area choose to fish under General category rules in this area using handgear, they may be able to regain a relatively small amount of this lost revenue.
- The Small Gulf of Mexico Gear Restricted Area would potentially reduce revenue for approximately 34 vessels that have historically fished in the Small Gulf of Mexico Gear Restricted Area during the months of April and May. Specifically, if the vessels do not redistribute any of their fishing effort to other areas outside the Small Gulf of Mexico Gear Restricted Area, the loss in revenue would be approximately $249,000 ($81,000 from swordfish; $35,000 from bluefin; and $129,000 from yellowfin). If some of the vessels are able to redistribute a portion of their fishing effort to other areas, the loss in

revenue could be reduced to approximately $92,000 ($11,000 from swordfish; $23,000 from bluefin; and $60,000 from yellowfin).

- Allowing pelagic and bottom longline vessels to transit closed and gear restricted areas after removing and stowing gear would result in direct short- and long-term beneficial economic impacts by potentially reducing fuel costs and time at sea for vessels that need to transit the closed or restricted areas.
- Conditional access of pelagic longline vessels to current closed areas could provide limited opportunities for additional revenue, although it is difficult to estimate the amount of revenue, and such opportunities would be limited.
- The IBQ alternatives would allocate bluefin shares to 161 active pelagic longline vessels ("active" is defined as having reported in the HMS Logbook successfully setting pelagic longline gear at least once between 2006 and 2011). Vessels would be allocated shares of 1.0%, 0.54%, or 0.34% of the Longline category quota, and based on the revised baseline Longline category bluefin quota of 137 mt, vessels would be allocated 1.37 mt, 0.74 mt, or 0.47 mt of bluefin, respectively. The IBQ quota shares based on 137 mt would constrain approximately 24 % of pelagic longline vessels (32% of vessels with Gulf of Mexico IBQ and 20% of vessels with Atlantic IBQ). In other words, 24 percent of vessels would need to lease additional bluefin quota in order to land their historical average amount of designated species (if they do not change their behavior to reduce their historical rate of bluefin interactions). In total, the vessels would need to lease an additional 62 mt of bluefin. Seventy-six percent of pelagic longline vessels would need no additional bluefin quota in order to land their historical average amount of designated species, and those vessel with a 'surplus' (or not fishing) would be able to lease allocation and obtain additional revenue (approximately 56 mt of bluefin allocation would be available for leasing). If no leasing of bluefin allocation were to occur, there could be a reduction of 2.4 million pounds of designated species landing per year with an associated reduction in revenue of approximately 24 percent ($9 million dollars, or about $51,000 per vessel).
- If NMFS prohibited the use of pelagic longline gear for the fishery as a whole under the alternative "NMFS Closure of the Pelagic Longline Fishery" when the entire Longline category quota is attained, the impact would depend principally upon the duration of the fishing season prior to the closure. For example, if the use of pelagic longline gear is prohibited at the end of March, approximately 18% of the annual revenue from all species would have been obtained by the fishery, but 82% of the annual revenue from fishing with pelagic longline gear would be foregone ($24 million). If the use of pelagic longline gear is prohibited at the end of August, approximately 59% of the annual revenue from all species would have been obtained, while approximately 41% of the annual revenue would be foregone ($12 million). This alternative could result in a major short-term adverse direct economic impact to the pelagic longline fishery and this economic impact would continue into the long-term if landings and dead discard rates continue along the current trend. Adverse economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries would likely occur when a closure happens.

- The requirement for Longline category vessels to install cameras and participate in an electronic monitoring program would cost vessels an average of about $ 5,500 a year, and a total of about $ 875,500 fleet-wide. This alternative would result in moderate direct and indirect adverse economic impacts to pelagic longline vessel owners in the short- and long-term.
- The requirement for Longline vessels to make various declarations and report bluefin through a VMS unit would cost vessels approximately $44 per month, however, the costs vary based on the E-MTU VMS unit and communication service provider selected, and the amount of vessel activity.

Socio-Economic Impacts of Preferred Alternatives on the General Category

- The Permanent Reallocation alternative would result in reducing the General category quota by approximately 32 mt as part of the 68-mt contribution to the Longline category. This would represent a 7.35% reduction in quota, and would reduce potential revenue by approximately $530,000.

- The Annual Reallocation alternative would make a portion of the Purse Seine category quota available to other categories, including the General category, and could result in direct, moderate, beneficial impacts in the short term. For example, under a U.S. bluefin quota of 923.7 mt, if 50% of the Purse Seine category quota were reallocated to other categories (i.e., 85.9 mt), and the General category were allocated 47.1 percent of the 85.9 mt, its gain in bluefin quota would be 40 mt (with a value of approximately $660,000 and enough to offset the 32-mt reduction in quota that would result from the "Permanent Reallocation Alternative").
- The alternative "Modifications to the Reserve Category" could provide minor to moderate beneficial economic and social impacts in the short term if the additional Reserve category quota could be used to offset any overharvests in another category.
- Allowing Longline category vessels to fish under General category rules would have minor, adverse economic and social impacts in short-term if the General category quota is met earlier than it otherwise would be, however, if NMFS transferred quota to January within the General category allocation and "restored" General category quota overall (from Purse Seine category annual reallocation alternative), impacts could be reduced or even neutral.
- The Automated Catch Reporting requirement would result in minor, long-term adverse, economic and social impacts associated with the burden of reporting all bluefin catch.
- Providing additional flexibility for General category quota adjustment would have neutral to minor, short-term impacts, with beneficial social and economic impacts for January fishery participants and negative impacts for those participating in June through December.
- The change in the Purse Seine category start date would result in neutral to minor adverse economic and social impacts to the General category associated with additional market competition and gear conflict.

Socio-Economic Impacts of Preferred Alternatives on the Harpoon category

- The Permanent Reallocation alternative would result in reducing Harpoon category quota by 2.6 mt as part of the 68-mt contribution to the Longline category. This would represent a 7.5% reduction in quota, and would reduce potential revenue by approximately $44,763. The Annual Reallocation alternative would make a portion of the Purse Seine category quota available to other categories, including the Harpoon category, and could result in direct, moderate, beneficial impacts in the short term. For example, under a U.S. bluefin quota of 923.7 mt, if 50% of the Purse Seine category quota were reallocated to other categories (i.e., 85.9 mt), and the Harpoon category were allocated 3.9% of the 85.9 mt, its gain in bluefin quota would be 3.4 mt (with a value of approximately $56,000 and would offset the 2.6 mt reduction in quota that results from the "Permanent Reallocation Alternative").
- The alternative "Modifications to the Reserve Category" could provide minor to moderate beneficial economic and social impacts in the short term if the additional Reserve category quota could be used to offset any overharvests in another category.
- The Automated Catch Reporting requirement would result in minor, long-term adverse, economic and social impacts associated with the burden of reporting all bluefin catch.
- The ability to adjust the Harpoon category retention limit of large medium bluefin inseason could result in minor, short-term adverse economic and social impacts, but to the extent that the result may be a longer season, this could be mitigated by increased ex-vessel price/lb.
- The change in the Purse Seine category start date would result in neutral to minor adverse economic and social impacts on the Harpoon category associated with additional market competition and gear conflict.

Socio-Economic Impacts of Preferred Alternatives on the Purse Seine category

- The Permanent Reallocation alternative would result in reducing Purse Seine quota by 12.6 mt as part of the 68-mt contribution to the Longline category. This would represent a 7.4% reduction in quota, and would reduce potential revenue by approximately $210,550.
- The Annual Reallocation alternative would make up to 75% of the Purse Seine category quota available to other categories and would result in direct, minor, adverse impacts in the short term. For example, under the U.S. bluefin quota of 923.7 mt, if 75% of the Purse Seine category quota (128.8 mt) were reallocated to other categories, the loss in potential revenue from bluefin would be approximately $2.1 million. This loss in potential revenue would not result in the reduction of actual revenue, however, because the Purse Seine category has had little or no revenue from bluefin in recent years. If the Purse Seine vessels increase their catch to specified threshold levels, the quota in the subsequent year would be increased and potential losses in revenue would be reduced accordingly.

- The IBQ alternative, which would include the opportunity to lease quota allocation from the Purse Seine category to the Longline category, would provide revenue for Purse Seine vessels. Even if 75% of the Purse Seine quota is reallocated to other categories under the "Annual Reallocation Alternative," the Purse Seine category would be allocated 25% of its baseline quota, which could then be leased by individual Purse Seine vessels to Longline category vessels (i.e., 42.9 mt, worth approximately $ 700,000; under a U.S. bluefin quota of 923.7 mt).

- The alternative "Modifications to the Reserve Category" could provide minor to moderate beneficial economic and social impacts in the short term if the additional Reserve category quota could be used to offset any overharvests in another category.

- The change in the Purse Seine category start date would result in neutral to minor beneficial economic and social impacts.

Socio-Economic Impacts of Preferred Alternatives on the Angling category

- The Permanent Reallocation alternative would result in reducing the Angling category quota by 13.4 mt as part of the 68-mt contribution to the Longline category. This would represent a 7.4% reduction in quota, and would reduce fishing opportunities and reduce revenue to businesses that support recreational angling.
- The Annual Reallocation alternative would make a portion of the Purse Seine category quota available to other categories, including the Angling category, and could result in direct, moderate, beneficial impacts in the short term. For example, under a U.S. bluefin quota of 923.7 mt, if 50% of the Purse Seine category quota were reallocated to other categories (i.e., 85.9 mt), and the Angling category were allocated 19.7% of the 85.9 mt, its gain in bluefin quota would be 16.9 mt (enough to offset the 13.4 mt reduction in quota that results from the "Permanent Reallocation Alternative").
- The alternative "Modifications to the Reserve Category" could provide minor to moderate beneficial economic and social impacts in the short term if the additional Reserve category quota could be used to offset any overharvests in another category.
- The Trophy category subquota redistribution could have minor, short-term, beneficial social impacts for Gulf of Mexico participants and minor, short-term, adverse economic (charter vessels) and social impacts for participants in the southern area outside the Gulf of Mexico.
- The change in the Purse Seine category start date would result in neutral to minor adverse and social impacts on the Angling category associated with gear conflict.

Socio-Economic Impacts of Preferred Alternatives on the Charter/Headboat category

- The impacts of the preferred alternatives would impact the Charter/Headboat category in a unique way, given the potential applicability of either the Angling category restrictions and the General category regulations on a particular trip, based on the fishing choices made by the vessel operator to target commercial-sized bluefin (measuring 73 inches or

greater) or recreational-sized bluefin (measuring 27 to less than 73 inches). The socio-economic impacts that would apply to Charter/Headboat category are described under the General and Angling category sections.

LIST OF COMMONLY USED ABBREVIATIONS AND ACRONYMS

ABC	Allowable biological catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACL	Annual Catch Limit
ACTs	Allowable catch targets
ALS	Accumulative Landings System
ALWTRP	Atlantic Large Whale Take Reduction Plan
ALWTRT	Atlantic Large Whale Take Reduction Team
AMs	Accountability Measures
ANPR	Advanced Notice of Proposed Rulemaking
AOCTRP	Atlantic Offshore Cetacean Take Reduction Plan
AOCTRT	Atlantic Offshore Cetacean Take Reduction Team
AP	Advisory Panel
APA	Administrative Procedure Act
ASA	American Sportfishing Association
ASMFC	Atlantic States Marine Fisheries Commission
ATCA	Atlantic Tunas Convention Act
B	Biomass
B_{MSST}	Biomass of the minimum stock size threshold
B_{MSY}	Biomass expected to yield maximum sustainable yield
B_{OY}	Biomass expected to yield optimum yield
BAYS	Bigeye, albacore, yellowfin, skipjack tunas
BFT	Bluefin tuna
BiOp	Biological Opinion
BLL	Bottom Longline
CAR	Caribbean Statistical Area
CBP	Customs and Border Protection
CEQ	Council on Environmental Quality
CFDBS	Commercial Fisheries Database System
CFMC	Caribbean Fishery Management Council
CFL	Curved fork length
CFR	Code of Federal Regulations
CHB	Charter/Headboat
CHSRA	Cape Hatteras Special Research Area
CIE	Center for Independent Experts
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CL	Carcass length
COASTSPAN	Cooperative Atlantic States Shark Pupping and Nursery Survey
COFI	Committee on Fisheries
CPI	Consumer Price Index
CPUE	Catch per unit effort
CV	Coefficient of Variation
CZMA	Coastal Zone Management Act

DEIS	Draft Environmental Impact Statement
DPS	Distinct Population Segment
dw	Dressed weight
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential fish habitat
EFP	Exempted fishing permit
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
F	Instantaneous fishing mortality
F_{MSY}	Instantaneous fishing mortality rate expected to yield maximum sustainable yield
F_{OY}	Fishing mortality rate expected to yield optimum yield
FAO	Food and Agriculture Organization
FEC	Florida East Coast Statistical Area
FEIS	Final Environmental Impact Statement
FL	Fork length
FLS	Fisheries Logbook System
FMP	Fishery management plan
FMU	Fishery management unit
FR	Federal Register
FRFA	Final regulatory flexibility analysis
GDP	Gross Domestic Product
GIS	Geographic Information System
GOM	Gulf of Mexico
GMFMC	Gulf of Mexico Fishery Management Council
GulfFIN	Gulf of Mexico commercial Fishery Information Network
HAPC	Habitat Area Of Particular Concern
HBS	Headboat Survey, Southeast
HMS	Highly migratory species: Atlantic sharks, tunas, swordfish, and billfish
HTS	Harmonized Tariff Schedule
ICCAT	International Commission for the Conservation of Atlantic Tunas
IBQ	Individual Bluefin Quota
IRFA	Initial regulatory flexibility analysis
ITP	International Trade Permit
ITQ	Individual transferable quota
kg	Kilogram
LAP	Limited access permit
LAPP	Limited access privilege program
LCS	Large coastal sharks
LOA	Letter of Acknowledgment
LOF	List of Fisheries
LPS	Large Pelagic Survey
M	Mortality

MAB	Mid-Atlantic Bight Statistical Area
MAFMC	Mid-Atlantic Fishery Management Council
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MFMT	Maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
MPA	Marine protected area
MRFSS	Marine Recreational Fishing Statistics Survey
MRIP	Marine Recreational Information Program
MSRA	Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
MSST	Minimum stock size threshold
MSY	Maximum sustainable yield
mt	Metric tons
NCA	North Central Atlantic
NEC	Northeast Coastal Statistical Area
NED	Northeast Distant Statistical Area
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center, NMFS
NEPA	National Environmental Policy Act
nm	Nautical mile
NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NOAA	National Oceanographic and Atmospheric Administration
NOI	Notice of Intent
NPOA	National Plan of Action
NS	National Standards
NWGB	National Working Group on Bycatch
OFL	Overfishing limit
OY	Optimum yield
PLL	Pelagic longline
PLTRP	Pelagic Longline Take Reduction Plan
PLTRT	Pelagic Longline Take Reduction Team
POP	Pelagic observer program
PPI	Producer price index
PRA	Paperwork Reduction Act
RBS	Recreational Billfish Survey
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
RFMO	Regional Fishery Management Organizations
SAB	South Atlantic Bight
SAFE Report	Stock Assessment and Fishery Evaluation Report
SAFMC	South Atlantic Fishery Management Council
SAR	Sargasso Sea
SBA	Small Business Administration
SBR	Spawning Stock Biomass Ratio

SBRM	Standardized Bycatch Reporting Methodology
SCRS	Standing Committee for Research and Statistics
SCS	Small coastal sharks
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center, NMFS
SERO	Southeast Regional Office, NMFS
SMART	selective magnetic and repellant treated
SRP	Scientific research permit
SSB	Spawning stock biomass
SSF	Spawning Stock Fecundity
SSN	Spawning Stock Number
SWO	swordfish
TAC	Total allowable catch
TL	Total length
TRP	Take Reduction Plan
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
VIMS	Virginia Institute of Marine Science
VMS	Vessel monitoring system
VTR	Vessel Trip Report, NMFS NER
ww	Whole weight
ZMRG	Zero Mortality Rate Goal

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1.0 INTRODUCTION

1.1 Brief Management History

This section provides a brief overview of Atlantic Highly Migratory Species (HMS) management and recent information on the Atlantic bluefin tuna fishery. More detail regarding bluefin tuna management can be found in Section 3.2.

1.1.1 Legal Authority

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, the National Marine Fisheries Service (NMFS) must, consistent with ten National Standards, manage fisheries to maintain optimum yield (OY) by rebuilding overfished fisheries and preventing overfishing. Under ATCA, NMFS is authorized to promulgate regulations, as may be necessary and appropriate to carry out binding recommendations of the International Commission for the Conservation of Atlantic Tunas (ICCAT). Additionally, any management measures must 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 1985 NMFS implemented a Fishery Management Plan (FMP) for Atlantic Swordfish and in 1988 an FMP for Atlantic Billfishes. On November 28, 1990, the President signed into law the Fishery Conservation Amendments of 1990 (Pub. L. 101-627). This law amended the Magnuson Fishery Conservation and Management Act (later renamed the Magnuson-Stevens Fishery Conservation and Management Act or Magnuson-Stevens Act) and gave the Secretary of Commerce (Secretary) the authority to manage HMS in the exclusive economic zone of the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea under authority of the Magnuson-Stevens Act (16 U.S.C. § 1811). This law also transferred from the Fishery Management Councils to the Secretary management authority for HMS in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea (16 U.S.C. §1854(f)(3)). At that time, the Secretary delegated authority to manage Atlantic HMS to NMFS. In 1993 NMFS implemented an FMP for Sharks of the Atlantic, and in 1999 Amendment 1 to the Atlantic Billfish Fishery Management Plan. In September 1997 and September 1998, NMFS declared the western Atlantic bluefin tuna “overfished” and in November 1998 adopted a rebuilding program.

In 1999, NMFS finalized the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks (NMFS 1999). The 1999 FMP was then amended in 2003 (NMFS 2003). NMFS then consolidated the Atlantic Tunas, Swordfish, and Sharks FMP and its amendments and the Atlantic Billfish FMP and its amendments in the 2006 Consolidated Atlantic HMS FMP (NMFS 2006). The Consolidated HMS FMP was amended in 2008 (NMFS 2008), 2009, 2010, and 2012. This amendment (7) further amends the Consolidated HMS FMP.

In managing Atlantic HMS through FMPs and implementing regulations, NMFS must comply with all applicable provisions of the Magnuson-Stevens Act (16 U.S.C. § 1852(a)(3)). The HMS regulations are located in Code of Federal Regulations (CFR) at 50 CFR Part 635. NMFS must

maintain optimal yield of each fishery while preventing overfishing (16 U.S.C. § 1851(a)(1)). When a fishery is determined to be in or approaching an overfished condition, NMFS must include in the FMP conservation and management measures to prevent or end overfishing and rebuild the fishery, stock or species (16 U.S.C. §§ 1853(a)(10); 1854(e)). NMFS must consider the National Standards in developing FMPs, including requirements to use the best scientific information as well as the potential impacts on residents of different States, efficiency, costs, fishing communities, bycatch, and safety at sea (16 U.S.C. § 1851 (a)(1-10)). The Magnuson-Stevens Act also has a specific section that addresses preparing and implementing FMPs for Atlantic HMS (16 U.S.C. §1854 (g)(1)(A-G)). This section of the Magnuson-Stevens Act includes, but is not limited to, requirements to:

- Consult with and consider the views of affected Councils, Commissions, and advisory groups.
- Evaluate the likely effects of conservation and management measures on fishery participants and minimize, to the extent practicable, any disadvantage to U.S. fishermen in relation to foreign competitors;
- Provide fishing vessels with a reasonable opportunity to harvest any allocation or quota authorized under an international fishery agreement;
- Diligently pursue, through international entities, such as the International Commission for the Conservation of Atlantic Tunas (ICCAT), comparable international fishery management measures; and,
- Ensure that conservation and management measures promote international conservation of the affected fishery, take into consideration traditional fishing patterns of fishing vessels, are fair and equitable in allocating fishing privileges among U.S. fishermen and do not have economic allocation as the sole purpose, and promote, to the extent practicable, implementation of scientific research programs that include the tagging and release of Atlantic HMS.

The 2006 Consolidated HMS FMP contains a broad range of management objectives including (but not limited to) preventing overfishing of Atlantic HMS; rebuilding overfished Atlantic HMS stocks; monitoring and controlling all components of fishing mortality so as to ensure long-term sustainability of the stocks and promote Atlantic-wide stock recovery; minimizing bycatch; managing for continuing optimum yield so as to provide the greatest overall benefit to the Nation; minimizing, to the extent practicable, adverse social and economic impacts; providing a framework to take necessary action under ICCAT recommendations; and simplifying HMS management and regulatory requirements to assist the regulated community.

1.1.2 Bluefin Tuna Quota Management

Under the 2006 Consolidated HMS FMP, the bluefin fishery is quota-managed. An annual U.S. bluefin quota is established by ICCAT and allocated domestically among seven domestic quota categories. The amount of quota allocated to each category is expressed as a percentage of the U.S. quota, through an allocation scheme first established in the 1999 FMP. In fisheries management, “total catch” usually refers to landings *and* dead discards. In the 1999 FMP,

however, only landings (based on data from 1983-1991) were factored into the percentage allocation analysis because, at the time, dead discards were accounted for under a separate allowance per ICCAT recommendations then in effect.

While the allocation percentages continued unchanged in the 2006 Consolidated HMS FMP, ICCAT has since discontinued the separate dead discard allowance (ICCAT recommendation 06-06), and dead discards now must be accounted for within each country's annual quota. In 2010, ICCAT implemented Recommendation 10-03, which reiterated that ICCAT parties "shall monitor and report on all sources of bluefin fishing mortality, including dead discards, and shall minimize dead discards to the extent practicable." The combined effect of the domestic quota allocation system and ICCAT requirements have resulted in an annual allocation/accounting challenge: Using the limited amount of available quota, how do we optimize fishing opportunity for all categories and account for anticipated dead discards in a way that meets our fishery management obligations. As explained in more detail in the "Background" section of this document, NMFS has some limited flexibility in carrying out quota management annually. For example, NMFS may transfer quota among quota categories in certain ways. NMFS also has some flexibility in how and when it accounts for dead discards.

In 2011, during the annual bluefin quota specifications or "quota rule" process setting out the quota allocations domestically for the year, it became apparent that the adjusted quota for 2011 was insufficient to account for anticipated 2011 dead discards while also providing full base allocations to the directed fishing categories per the established allocation percentages. (See 76 FR 39019; July 5, 2011.) For example, the total U.S. baseline quota was 923.7 mt, the baseline quota for the Longline category was 74.8 mt, and the estimated amount of 2011 Longline category dead discards was 122.3 mt, based on the most recent information available at that time (i.e., 2010 estimated dead discards). Three factors made accounting for anticipated discards in the 2011 Quota Rule more challenging than in previous years: 1) Adjustments to the ICCAT western Atlantic bluefin tuna management recommendations, including reductions in Total Allowable Catch (TAC) and the amount of underharvest that can be carried forward ("carry-forward") paired with the earlier elimination of the dead discard allowance; 2) increases in the estimates of domestic pelagic longline dead discards due to changes in estimation methodology (2007 change noted above) and an increase in bluefin interactions in the pelagic longline fishery; and 3) recent increases in landings of bluefin caught in the directed categories.

After extensive public comment on the proposed 2011 quota rule, NMFS accounted for half of the estimated dead discards "up front," deducting half the expected dead discards directly from the Longline category quota, to provide some incentive for fishermen to reduce interactions that may result in dead discards. NMFS then applied half of the underharvest that was allowed to be carried forward to the Longline category and maintained the other half in the Reserve category to provide maximum flexibility in accounting for 2011 landings and dead discards. Full and final accounting for dead discards would occur at the end of the fishing year, and would be possible due to the likelihood of unharvested quota at the end of the fishing year.

Figure 1.1 Bluefin Tuna Landings, Base Quota, and Adjusted Quota, 1996 – 2011 (mt).

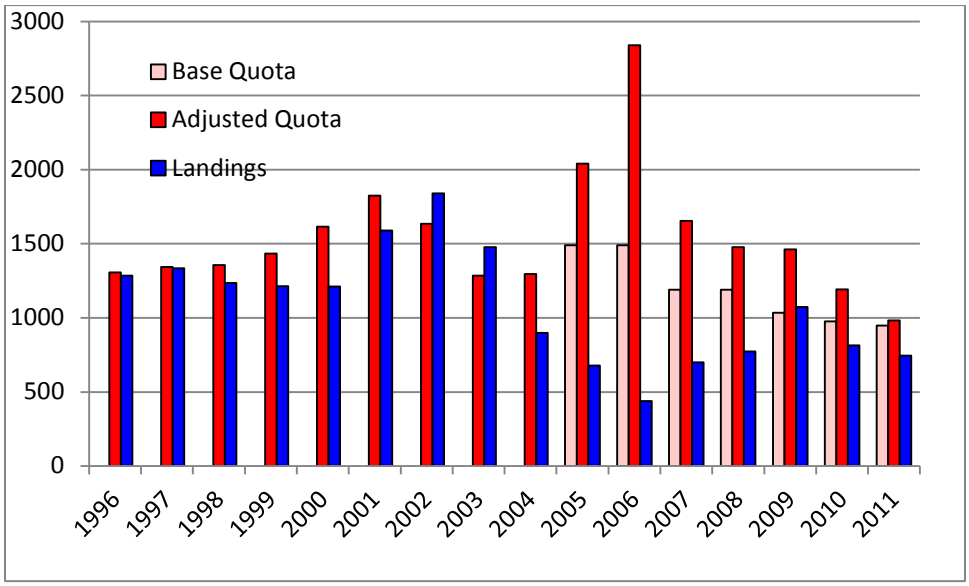

Figure 1.1 shows information on recent landings compared to base and adjusted quotas. The recent trend is a larger percentage of the adjusted quota being landed than during the mid-2000's.

The range of comments received on the proposed 2011 Quota Rule (March 14, 2011; 76 FR 13583) and discussions at HMS Advisory Panel meetings demonstrated the need for a comprehensive review of bluefin quota management and associated measures. Many comments raised issues that were outside the scope of that rulemaking and would require additional analyses because of the potential impacts on the fisheries and fishery participants. Some of the issues raised included holding each quota category accountable for its own dead discards and revisiting the methodology used for estimating dead discards; the accounting for bluefin landings relative to the 2006 Consolidated HMS FMP percentage allocations; changing domestic allocations among fishing categories; reducing bluefin bycatch; modifying the permit structure for the fisheries; improving monitoring of catch in all bluefin fisheries; providing incentives to the Longline category to reduce interactions with bluefin; and reducing dead discards in the pelagic longline fishery.

In the final 2011 Quota Rule, NMFS stated that "in light of the issues involving U.S. quotas and domestic allocations, pelagic longline discards, the need to account for dead discards that result from fishing with other gears, and bycatch reduction objectives, as well as public comment, NMFS intends to undertake a comprehensive review of bluefin management in the near future to determine whether existing management measures need to be adjusted to meet the multiple goals for the bluefin fishery."

NMFS began to more formally address some of the quota accounting issues described in Section 1.1 at the September 2011 meeting of the HMS Advisory Panel by presenting summary of recent issues and a white paper on bluefin bycatch in the HMS fisheries. The HMS Advisory Panel discussed issues related to the Longline category as well as issues in the bluefin fishery as a whole and offered an array of suggested measures for consideration as potential solutions. In

preparation for the formal process of evaluating potential amendments to the fishery management plan, NMFS presented a preliminary version of a scoping document ("Preliminary White Paper") to the HMS Advisory Panel meeting at its March 2012 meeting for its consideration (NMFS, March 2012). The HMS Advisory Panel expressed qualified support for further exploring and analyzing the range of measures in the Preliminary White Paper, and suggested several additional measures which were incorporated into a final scoping document (NMFS, April 2012).

1.2 Purpose and Need and Objectives

On April 23, 2012, NMFS published a Notice of Intent (NOI) in the Federal Register (78 FR 24161), which announced our intent to hold public scoping meetings to determine the scope and significance of issues to be analyzed in a Draft Environmental Impact Statement (DEIS), and a potential amendment to the Consolidated HMS FMP. The NOI stated that NMFS is examining the regulations that affect all bluefin fisheries, both commercial and recreational, to determine if existing measures are the best means of achieving current management objectives and providing additional flexibility to adapt to management needs in the future. The NOI also announced the availability of the scoping document and notified the public of scoping meetings and consultations with regional fishery management councils. During May and June of 2012, NMFS conducted public meetings to present the scoping document and receive public comments in Toms River, New Jersey; Gloucester, Massachusetts; Belle Chasse, Louisiana; Manteo, North Carolina; and Portland, Maine. During June 2012, NMFS consulted with the Mid-Atlantic Fishery Management Council, the New England Fishery Management Council, and the South Atlantic Fishery Management Council, while the scoping document was shared with the Gulf of Mexico Fishery Management Council and the Caribbean Fishery Management Council. NMFS accepted public comment on the scoping document through July 15, 2012. Details regarding the specifics of the scoping hearings and consultations, and a summary of the public comments, are contained in Section 1 of the Appendix of this DEIS.

On September 20, 2012, NMFS presented a Predraft document to the HMS Advisory Panel (NMFS, September 2012). A Predraft, which is a precursor to a DEIS, allowed NMFS to obtain additional information and input from Consulting Parties and the public on potential alternatives prior to development of the formal DEIS and proposed rule. As such, NMFS requested comments on the Predraft from the HMS Advisory Panel, and made the document available to the public through the HMS website (http://www.nmfs.noaa.gov/sfa/hms).

Proposed Action

Based on the recent history of the bluefin fishery described above, NMFS is proposing to amend the 2006 Consolidated HMS FMP in conformance with applicable requirements under the Magnuson-Stevens Act to prevent overfishing, achieve optimal yield, and minimize bycatch to the extent practicable.

Purpose

The purpose of the proposed measures is to manage the Atlantic HMS resources in a manner that maximizes resource sustainability and fishing opportunity, while minimizing, to the greatest extent possible, the socioeconomic impacts on affected fisheries.

Need

An amendment to the 2006 Consolidated HMS FMP is needed to address bluefin tuna management due to the recent trends and characteristics of the bluefin fishery and the need to continue to comply with both domestic and international management objectives and obligations identified below. Annual implementation of the existing domestic allocation quota system has become more difficult due to a change in calculation methodology that resulted in increases in calculated bluefin dead discards, a larger percentage of the adjusted quota being landed within certain segments of the fishery, and changed ICCAT requirements regarding accounting for dead discards and allowable carryforward of unused quota. Public comment has supported the need for substantive changes to the 2006 Consolidated HMS FMP, and it is important to rebuild the fishery, end overfishing, ensure long-term sustainability, and optimize fishing opportunity for all categories in an equitable manner. To achieve the above purpose, NMFS needs to consider a suite of actions designed to reduce dead discards, account for dead discards, enhance monitoring, and optimize fishing opportunity.

Addressing the specific objectives listed below directly supports achievement of the more broad goals of the Consolidated HMS FMP including: To prevent overfishing of Atlantic tunas, rebuild overfished Atlantic HMS stocks, monitor and control all components of fishing mortality also as to ensure long-term sustainability of the stocks and promote Atlantic wide stock recovery, minimize bycatch, manage for continuing optimum yield so as to provide the greatest overall benefit to the Nation, minimize to the extent practicable adverse social and economic impacts, provide a framework to take necessary action under ICCAT recommendations, and simplify HMS management and regulatory requirements to assist the regulated community.

<u>Objectives</u>: NMFS identified the following objectives with regard to this proposed action:

- Prevent overfishing and rebuild bluefin tuna, achieve on a continuing basis optimum yield, and minimize bluefin bycatch to the extent practicable by ensuring that domestic bluefin tuna fisheries continue to operate within the overall TAC set by ICCAT consistent with the existing rebuilding plan;
- Optimize the ability for all permit categories to harvest their full bluefin quota allocations; account for mortality associated with discarded bluefin in all categories; maintain flexibility of the regulations to account for the highly variable nature of the bluefin fisheries; and maintain fairness among permit/quota categories;
- Reduce dead discards of bluefin tuna and minimize reductions in target catch in both directed and incidental bluefin fisheries, to the extent practicable;
- Improve the scope and quality of catch data through enhanced reporting and monitoring to ensure that landings and dead discards do not exceed the quota and to improve accounting for all sources of fishing mortality;

- Adjust other aspects of the 2006 Consolidated HMS FMP as necessary and appropriate.

1.3 Social and Economic Considerations

The mandates of subsections 303(a)(9), 301(a)(8), and 304(g)(1)(C) of the Magnuson-Stevens Act are consistent with the requirements under NEPA to identify and evaluate the direct, indirect and cumulative impacts of the proposed action on the social and economic elements of the human environment. These requirements are summarized below and the effects of the alternatives are analyzed and discussed in Chapters 4, 5, and 6.

The Magnuson-Stevens Act subsection 303(a)(9) requires any FMP to include a fishery impact statement which shall assess, specify, and analyze the likely effects, if any, including the cumulative conservation, economic, and social impacts, of the conservation and management measures on, and possible mitigation measures for:

- Participants in the fisheries and fishing communities affected by the plan or amendment;
- Participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants; and
- The safety of human life at sea, including whether and to what extent such measure may affect the safety of participants in the fishery.

A similar analysis using much of the same economic and social data is included to ensure consistency with the Magnuson-Stevens Act National Standard 8, which requires that conservation and management measures, including those developed to end overfishing and rebuild fisheries:

- Take into account the importance of fishery resources to fishing communities in order to provide for their sustained participation; and
- To the extent practicable, minimize the adverse economic impacts on such communities.

Additionally, subsection 304(g)(1)(C) requires the Secretary to:

- Evaluate the likely effects, if any, of conservation and management measures on participants in the affected fisheries; and
- Minimize, to the extent practicable, any disadvantage to U.S. fishermen in relation to foreign competitors.

1.4 Scope and Organization of this Document

In considering the proposed management measures outlined in this document, NMFS is responsible for complying with a number of Federal statutes, including NEPA. Under NEPA,

the purpose of an EIS is to provide an environmental analysis to support the Secretary's regulatory decision and to encourage and facilitate involvement by the public in the environmental review process.

This DEIS assesses potential impacts on the biological and human environments associated with the establishment under Federal regulation of various management measures for fisheries that catch and interact with bluefin tuna and other HMS species. In this document, NMFS evaluates the potential impacts of management-based alternatives on the fishery, along with other impacts (e.g., biological, social, and economic - see Chapters 4 and 5). The chapters that follow describe the proposed management measures and potential alternatives (Chapter 2), the affected environment as it currently exists (Chapter 3), the probable consequences on the human environment that may result from the implementation of the proposed management measures and their alternatives and any mitigating measures (Chapters 4, 5, and 6).

In developing this document, NMFS adhered to the procedural requirements of NEPA; the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations (CFR) 1500-1508) 28, and NOAA's procedures for implementing NEPA. NOAA Administrative Order (NAO) 216-6 identifies NOAA's procedures to meet the requirements of NEPA to:

- Fully integrate NEPA into the agency planning and decision making process; fully consider the impacts of NOAA's proposed actions on the quality of the human environment;
- Involve interested and affected agencies, governments, organizations and individuals early in the agency planning and decision making process when significant impacts are or may be expected to the quality of the human environment from implementation of proposed major Federal actions; and
- Conduct and document environmental reviews and related decisions appropriately and efficiently.

The following definitions were generally used to characterize the nature of the various impacts evaluated with this EIS.

- Short-term or long-term impacts. These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period. Long-term impacts are those that are more likely to be persistent and chronic.
- Direct or indirect impacts. A direct impact is caused by a proposed action and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action. For example, a direct impact of erosion on a stream might include sediment-laden waters in the vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of spawning and result in lowered reproduction rates of indigenous fish downstream.

- Minor, moderate, or major impacts. These relative terms are used to characterize the magnitude of an impact. Minor impacts are generally those that might be perceptible but, in their context, are not amenable to measurement because of their relatively minor character. Moderate impacts are those that are more perceptible and, typically, more amenable to quantification or measurement. Major impacts are those that, in their context and due to their intensity (severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (40 CFR 1508.27) and, thus, warrant heightened attention and examination for potential means for mitigation to fulfill the requirements of NEPA.
- Adverse or beneficial impacts. An adverse impact is one having adverse, unfavorable, or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.
- Cumulative impacts. CEQ regulations implementing NEPA define cumulative impacts as the "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." (40 CFR 1508.7) Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time within a geographic area.

In addition to NEPA, NMFS must comply with other Federal statutes and requirements such as the Magnuson-Stevens Act, Executive Order 12866 and the Regulatory Flexibility Act. This document comprehensively analyzes the alternatives considered for all these requirements. Chapter 5 provides the economic analyses; Chapter 6 meets the requirements under Executive Order 12866; Chapter 7 provides the Initial Regulatory Flexibility Analysis required under the Regulatory Flexibility Act; Chapters 8 and 9 also provide additional information that is required under various statutes. While some of the chapters were written in a way to comply with the specific requirements under these various statutes and requirements, it is the document as a whole that meets these requirements and not any individual chapter.

1.5 Public Review and Comment

NMFS held scoping meetings in May and June 2012 and collected public comment on the scoping document through July 15, 2012. The contents of the scoping document and this DEIS are based largely upon those comments, suggestions, and discussions regarding bluefin management by various members of the bluefin tuna fisheries, the HMS Advisory Panel, interested organizations, members of the public, and NMFS staff since 2009.

NMFS is requesting comments on the alternatives and analyses described in this document and/or the accompanying proposed rule. Comments on the proposed rule may be submitted via http://www.regulations.gov, mail (Highly Migratory Species Management Division, National Marine Fisheries Service, 55 Great Republic Drive, Gloucester, MA 01930), or fax (978) 281-9340. If mailing the comments, please mark the outside of the envelope "Comments on

Amendment 7 to the HMS FMP." Comments may also be submitted at a public hearing. Once the Notice of Availability and the proposed rule are public in the Federal Register, NMFS will provide at least 60 days for public comment. NMFS will announce the dates and locations of public hearings in a future Federal Register notice. Additionally, NMFS will request time to present a summary of the draft amendment and its proposed rule to the five Atlantic Regional Fishery Management Councils (the New England, Mid-Atlantic, South Atlantic, Gulf of Mexico, and Caribbean Fishery Management Councils) and the Atlantic and Gulf States Marine Fisheries Commissions during the public comment period.

2.0 MANAGEMENT ALTERNATIVES

Development of Management Alternatives

As described in detail in Chapter 1, NMFS is considering various alternatives to address several issues with current management of the directed (handgear/purse seine) and incidental (pelagic longline) bluefin tuna fisheries and to meet the objectives of the Magnuson-Stevens Act and the 2006 Consolidated HMS FMP. The management alternatives described below and analyzed in Chapters 4.0 through 6.0 were developed as part of an iterative process based upon HMS Advisory Panel input, public suggestions and comments, and the Amendment 7 scoping and predraft documents, (as noted in this Section, and in the Appendix). Chapter 1 contains the sequence of events in developing these alternatives. As a result of this process, this DEIS considers a wide range of management tools. Most of the alternatives are not mutually exclusive and are combined with one another to fully address the Amendment 7 objectives. Because there are a large number of management tools, as well as numerous alternatives for the specific design of each management tool, many combinations of alternatives are possible, not all of which were considered. Alternatives are organized and analyzed in combinations that would best achieve the objectives and simplify understanding of the alternatives. The preferred alternatives are management tools selected for inclusion in the proposed rule, and are designed to achieve the objectives in a balanced manner. In some cases where there are many elements of a management alternative, the elements are described individually but are analyzed together.

Among the alternatives, some consider management tools that could be implemented in the future via subsequent proposed rulemaking. NMFS included broad descriptions and general analyses of these alternatives in this rulemaking, although they are largely conceptual at this point and may lack specific details. These are not proposed actions. Preliminary consideration of these concepts in this Amendment are intended to help facilitate their future development and provide additional context for the alternatives analyzed and the actual proposed measures NMFS is considering for implementation with this action. The effects of these alternatives are discussed but are not analyzed as proposed measures. Development and implementation of such alternatives would not be undertaken at this time as a result of this action. A complete effects analysis for these actions would be completed when and if the actions are actually proposed (through separate rulemaking) in the future.

NEPA requires that any Federal agency proposing a major Federal action consider all reasonable alternatives in addition to the proposed action. A DEIS evaluates alternatives to help the Secretary ensure that any unnecessary impacts are avoided by assessing alternative ways to achieve the project's purpose of the project that may result in less environmental harm.

To warrant detailed evaluation by NMFS, an alternative must be reasonable and meet the action's purpose and need (see Chapter 1; Section 1.2). NMFS considered the following screening criteria to determine whether an alternative is reasonable: (1) Consistency with the Magnuson-Stevens Act including the ten National Standards; (2) administrative feasibility (i.e., the costs associated with implementing an alternative cannot be prohibitive or require unattainable infrastructure, for NMFS, the fishing industry or both); (3) enforceability; and (4) consistency with other applicable laws (e.g., ATCA, ESA, MMPA). This chapter includes a full

range of reasonable alternatives designed to meet the purpose and need for action described in Chapter 1 and address public comments received during the scoping process.

The descriptions of management alternatives in this chapter are organized by type of management tool. For example, the chapter first considers alternatives that involve how bluefin quota is allocated ("Allocation Alternatives"). Next it considers alternatives that would restrict the use of certain gears in certain areas ("Area Alternatives"). All of the alternatives are grouped this way (by 'management tool type') to help the reader understand the alternatives in relation to the Purpose and Need for the action. In contrast, the Executive Summary contains summary tables of management alternatives arranged by quota category to help the reader see which management alternatives are being considered for each quota category. Similarly, the chapters that discuss the environmental impacts of the measures (Chapters 4, 5, and 6) provide information by quota category to help the reader understand and evaluate the alternatives. In the case where multiple alternatives are listed as 'preferred" within an alternative grouping, all of the preferred alternative would be implemented if finalized.

2.1 Allocation Alternatives

Objectives and Considerations

These alternatives would either modify the base allocations (percentages of the U.S. quota for bluefin quota categories) and remain the same until and if changed by future amendment, or would set up a regulatory mechanism for modifying the quotas annually or in certain years based on defined criteria. As described in detail in Chapter 1, under the 2006 Consolidated HMS FMP, each bluefin quota category is allocated a percentage of the total U.S. quota.

The reallocation alternatives were designed to be consistent with all National Standards, including National Standard 4 (which requires management measures to be fair and equitable, but which recognizes that fishing privileges may need to be allocated among fishermen), and National Standard 8 (requiring management measures to minimize adverse economic impacts, to the extent practicable, on fishing communities) as well as work in concert with the other alternatives, and provide a balance among the Amendment 7 objectives. The objectives of quota reallocation alternatives, which stem from the current challenges associated with bluefin quota management (as briefly described above, and described in more detail in Chapter 1) are the following:

- Account for bluefin dead discards within the Longline category quota;
- Reduce uncertainty in annual quota allocation and accounting;
- Optimize fishing opportunity by increasing flexibility in the current bluefin quota allocation system;
- Ensure that the various quota categories are regulated fairly in relation to one another.

The objectives and design of the reallocation alternatives ensure the United States continues to operate within the ICCAT recommend quota, which was established consistent with the rebuilding plan for the species, and to improve management of and accounting in the administration current domestic bluefin quota system . Immediate quota reallocation (described

below) would provide more long-term predictability in carrying out the fisheries, whereas annual reallocation (described below) would provide more flexibility.

Increased allocation for the Longline category would align the quota allocation more closely with recent levels of catch, provide a means to account for levels of catch that exceed the current allocation, reflect the 2007 change in methodology used to calculated dead discards, and address the issue of fairness among user groups. The different quota categories represent diverse fisheries with unique characteristics, which as a result, are subject to different regulations. NMFS considers whether the regulations are fair with respect to the amount of fishing opportunity and burden they impose on the different categories. Quota allocations for the categories were originally (1999) based on historical bluefin landings, with a separate allowance, for dead discards. As of 2006 (Recommendation 06-06), the ICCAT quota recommendations no longer included a dead discard allowance. Instead, dead discards must be accounted for within a country's quota. The inconsistency between the basis of the quotas (landings) and the need to account for both landings *and* dead discards is one of the reasons for considering reallocation alternatives.

As described under each alternative, the different reallocation alternatives utilize different strategies. Alternative A 2a, Codified Reallocation, relies upon the historic ICCAT dead discard set-aside to account for bluefin discards by the pelagic longline fishery; Alternative A 2b is based on recent catch; and Alternative A 2c focuses on reallocation from the Purse Seine category.

The annual reallocation alternatives (A 3a and A 3b) provide other strategies that may be used in conjunction with a codified reallocation alternative. These annual reallocation alternatives would provide NMFS the ability to make specific, formulaic modifications to quota allocations annually, based upon specific criteria, in order to optimize quota allocations in a flexible, but predictable manner to account for variability in the fishery. A combined strategy relying on both codified and annual reallocation alternatives (i.e., implementing both codified and annual reallocation alternatives) may achieve the objectives, but also minimize any negative economic impacts.

It is important to note that the quota reallocation alternatives that would increase the amount of quota available to the Longline category are not designed to be implemented in isolation. Quota allocation alternatives would be combined with alternatives that would increase quota accountability, reduce discards, and provide incentives for pelagic longline vessels to reduce the number of interactions with bluefin.

2.1.1 Alternative A 1 - No Action

The No Action alternative would make no changes to the current percentages that each quota category is allocated (General: 47.1 percent; Harpoon: 3.9 percent; Purse Seine: 18.6 percent; Longline: 8.1 percent; Trap: 0.1 percent; Angling: 19.7 percent ; Reserve: 2.5 percent). Dead discards would continue to be accounted for separately from the quota allocations through the annual specifications process.

2.1.2 Alternative A 2 – Codified Reallocation

2.1.2.1 Alternative A 2a - Codified Reallocation to Longline Category Reflecting the Historical 68 mt Dead Discard Allowance) (Preferred)

This Alternative would codify an increase of 62.5 metric tons (mt) whole weight to the Longline category reflecting the historical 68 mt dead discard allowance and the current allocation percentages (based on the current 8.1 percent allocation, the Longline category portion of the 68 mt is 5.5 mt; 68 mt – 5.5 mt equals 62.5 mt, hence an increase of 62.5 mt). (Note: Unless otherwise indicated, all references to metric tons hereafter are in whole weight). NMFS based this number on ICCAT Recommendation 98-07's dead discard allowance of 79 mt for all of the countries with a share of the western Atlantic bluefin quota, of which the United States' portion was 85.72 percent, or approximately 68 mt. This dead discard allowance was in effect when NMFS calculated the 1999 FMP allocation percentages. Figure 2.1 shows that the 68 mt allowance was separate from the quota allocations. Beginning with Recommendation 06-06, the ICCAT recommendations no longer included a separate allowance for dead discards and stipulated that dead discards must be accounted for within a country's quota. Chapter 1 contains a full discussion of the accounting issues that resulted in the need for modifications to the 2006 HMS Consolidated FMP.

Thus, this alternative would increase the Longline category allocation by 62.5 mt based on the 68 mt dead discard allowance that existed when the category allocation percentages were first established to more accurately account for that category's incidental bluefin catch while also considering the historic basis of the category allocation percentages.

Under this alternative, the 68 mt would be subtracted from the U.S. quota prior to allocation to each quota category, with the effect of reducing the allocations of all categories except the Longline category in accordance with its current allocation percentages of the total U.S. bluefin quota.

For example, using the General category allocation of 47.1 percent and reflecting the 68 mt historical dead discard allowance, the General category would experience a reduction of 32 mt (multiply 68 by 0.471). Note that the 68 mt would be subtracted from the U.S. quota prior to the individual allocation to each quota category, resulting in reductions to the allocations to all categories, except the Longline category. Procedurally, this would be codified in the regulations and the resulting allocations (in mt) would be codified; this process therefore would be independent of annual quota adjustments conducted via annual specifications. If the 68 mt were treated as a percentage instead of a fixed amount, the Longline category allocation could increase beyond 68 mt if the U.S. quota increased. However, by treating the 68 mt as a fixed amount and subtracting the 68 mt from the U.S. quota prior to allocation to the categories, the historical allowance of 68 mt would not expand, or contract, into the future. This concept is illustrated in the right side of Table 2.1 and in Figure 2.1. This would be a codified reallocation without annual variation to the base quotas, unless later changed by an FMP amendment.

Table 2.1 Codified Reallocation – Allocations reflecting 68 mt of dead discards

Category	Current Allocation (%)	Current Allocation (mt)	Contributions to 68 mt	Revised Allocation[1] after Deducting (or Adding) Portion of 68 mt
General	47.1	435.1	32.1	403.0
Harpoon	3.9	36.0	2.6	33.4
Purse Seine	18.6	171.8	12.7	159.1
Longline	8.1	74.8	5.5	137.3[2]
Trap	0.1	0.9	0.1	0.9
Angling	19.7	182.0	13.4	168.6
Reserve	2.5	23.1	1.7	21.4
Totals		923.7	68.0[3]	923.7
Net Reallocation			62.5[4]	

1 based on a U.S. quota of 923.7; subject to rounding error

2 also reflects the addition of the 68-mt amount

3 Totals subject to rounding errors

4 Actual reallocation equates to 62.5 mt as Longline category portion of 68 mt is 5.5mt (68 - 5.5 = 62.5)

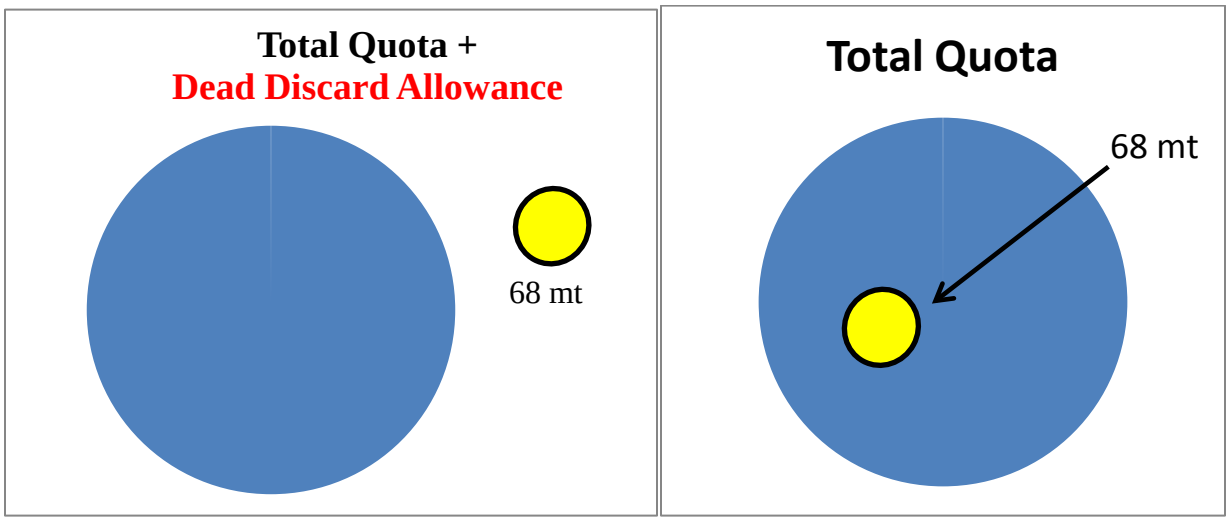

Figure 2.1 Where Does the 68 mt Come From? (historical vs. Alternative A 2a)

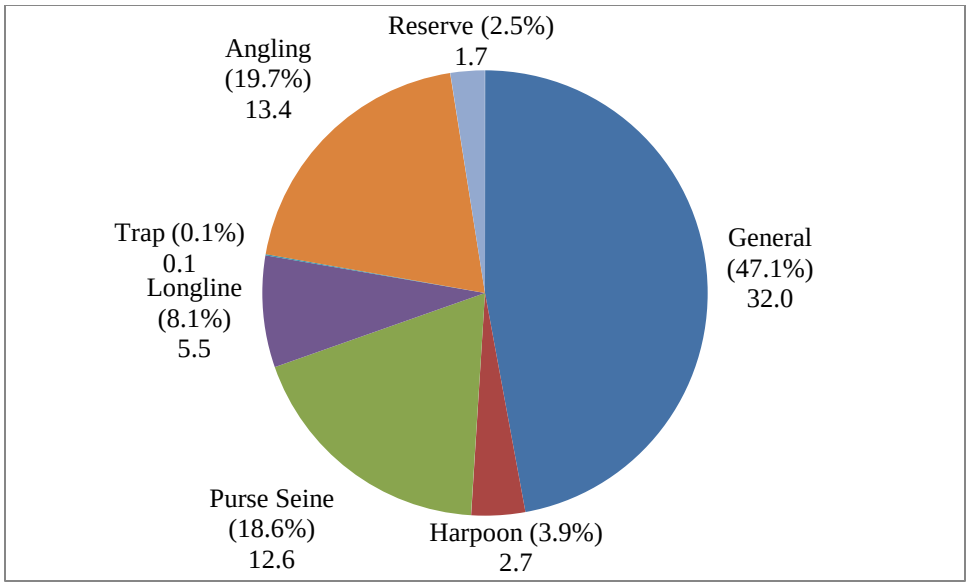

Figure 2.2 Proportions of 68 mt by Quota Category

2.1.2.2 Alternative A 2b - Reallocation Incorporating Recent Catch Data

This alternative would revise the quota allocation percentages for all categories basing the new allocations on both the current codified allocations (50%) and recent catch (50%) as applicable to each quota category. Equal weighting of the two elements was selected in order to address the objectives of reallocation (by incorporating recent catch), but also minimize divergence from the current allocation system in order to strike a balance between National Standard 4 and National Standard 8 concerns by just using recent catch. Recent landings (and pelagic longline dead discards) for each quota category are expressed as the average percentage of the total catch from 2008 through 2010. The years 2008 to 2010 were selected as the appropriate time period because it is within the six- year period covered by most of the analyses in this document and for consistency with the Amendment 7 Predraft analyses. Table 2.2 contains the proportion of total catch (landings and dead discards) by each category, and Table 2.3 shows the resulting allocations, based on the data in Table 2.2, and the current allocation percentages.

Table 2.2 Proportion of Total Bluefin Landings and Dead Discards by Category & Year (%)

Category	2008	2009	2010	Average
General	26	28	57	37
Harpoon	2	3	2	3
Purse Seine	0	1	0	.3
Longline*	24	20	21	22
Trap	.03	0	0	.01
Angling	48	48	19	38
Total	100%	100%	100%	100%

*not including NED data

An example of how the revised allocation would be calculated follows:

The Longline category, as illustrated in Table 2.2, averaged 22 percent of the total bluefin landings and dead discards. Under equal weighting, the allocation formula is: (.5 X current allocation) + (.5 X average recent catch) = revised allocation. Therefore, using the Longline category, the current Longline allocation is 8.1 percent and the average bluefin catch from 2008 through 2010 represents 22 percent of the average total U.S. catch. Therefore the revised allocation for the Longline category under equal weighting would be: (.5 X .081 + (.5 X .22) = .149, or 14.9 percent (Table 2.3).

Due to the influence of recent catch, the Longline and Angling categories would have an increased allocation (compared with the current allocation), while the General, Purse Seine, and Harpoon categories would have a decreased allocation. Data from 2006 through 2011 were also analyzed as the basis for this alternative, and the resulting allocation percentages differed by only one percent (at most) from those based on the period 2008 through 2010, (because when weighted 50 percent, differences in the average catch had relatively little influence). This alternative is intended to account for dead discards by more closely aligning allocations with recent catch. The total amount of dead discards accounted for under this alternative heavily depends upon the weighting of the two factors (and the time period selected to represent recent catch). Equal weighting of the currently codified allocation percent and recent catch provides a balanced approach by recognizing the need to fair and equitable, consistent with National Standard 4, while also taking into account the variability in recent catch resulting from variability in bluefin availability to the different categories, consistent with National Standard 6.

Table 2.3 Reallocation of Quota based upon Recent Catch and Current Allocations

Category	Current Allocation (%)	Revised Allocation (%)	Current Allocation (mt)	Revised Allocation* (mt)
General	47.1	42.0	435.1	387.9
Harpoon	3.9	3.3	36.0	30.4
Purse Seine	18.6	9.5	171.8	87.6
Longline	8.1	14.9	74.8	137.5
Trap	0.1	.05	0.9	0.4
Angling	19.7	29.0	182.0	267.8
Reserve	2.5	1.3	23.1	12.0
Total	100	100	923.7	923.7

*based on a U.S. quota of 923.7 (i.e., not including NED)

2.1.2.3 Alternative A 2c - Reallocation from Purse Seine to Longline Category

This alternative would reallocate two-fifths (40 percent) of the Purse Seine category quota to the Longline category. Under current regulations, the Purse Seine category is allocated 18.6 percent of the U.S. quota. Each year, the Purse Seine category quota is divided equally among Purse Seine vessel permit holders that have requested in writing an allocation for that year. A permit that is not associated with a vessel is not eligible to be allocated quota. Vessels that request quota and are deemed eligible are issued a Letter of Authorization by NMFS. Because two of the five Purse Seine permits are no longer associated with vessels, they have not been to actively harvest their allocated quota for a number of years. Under this alternative, the Purse Seine category base allocation percentage would be reduced (by two fifths) from 18.6 percent to 11.2 percent of the U.S. quota, while the Longline base allocation would be increased from 8.1 percent to 15.5 percent of the U.S. quota.

For example, with respect to a total U.S. quota of 923.7 mt, the Purse Seine quota would decline from 171.8 to 103.1 mt, while the Longline quota would increase from 74.8 to 143.5 mt.

The rationale for this strategy is based upon two factors: (1) There has been very low or no catch of bluefin by the purse seine fishery since 2006; and (2) although there are currently five limited access permits in the Purse Seine category, two of the permits are not associated with active or readily available purse seine fishing vessels. The permits have not been associated with purse seine vessels for several years, and the vessels that were permitted in the past have exited the bluefin fishery entirely. The reduction of base quota for the Purse Seine category may result in different impacts than the codified reduction of base quota from other quota categories due to the recent low fishing activity vessels in the Purse Seine category and the two purse seine vessels that have exited the fishery.

2.1.3 Alternative A 3 - Annual Reallocation

2.1.3.1 Alternative A 3a - Annual Reallocation of Bluefin Quota from Purse Seine Category (Preferred)

Under this alternative, 25 percent of the Purse Seine category bluefin quota would be guaranteed to be available to that category, but beyond that, quota projected to be unused (based on the previous year's landings and dead discards), would be reallocated to the Reserve category annually. Consistent underutilization of quota by a particular quota category is inefficient; it limits the Agency's ability to provide reasonable opportunities to harvest the U.S. quota and thereby runs counter to optimizing fishing opportunities by decreasing flexibility in the bluefin quota allocation system. By moving portions of the unused Purse Seine quota to the Reserve category annually, this alternative would give NMFS more flexibility in administering the quota system each year. With this increased flexibility, NMFS would be able to respond better to variability in bluefin interactions and catch across the different fisheries across years. This would also give NMFS some additional discretion to more efficiently distribute and utilize the bluefin quota while ensuring it is done in a fair and equitable manner.

Under this Alternative, the quota available for use by tuna purse seine vessels would be either 25 percent, 50 percent, 75 percent, or 100 percent of the base Purse Seine quota, depending upon the level of bluefin catch in the previous year, as indicated in Table 2.4 and Figure 2.3. By assuring the Purse Seine category receives a minimum amount of quota (25 percent), purse seine fishermen are assured some level of fishing opportunity each year while using the 50, 75, and 100 percent thresholds provides opportunity to increase the available Purse Seine quota allocation in the subsequent years and not lock-in low, or high, levels of allocation.

Annually, NMFS would make a determination regarding the quota available for the Purse Seine category for the year, based on the catch by purse seine vessels in the previous year. If catch were high (i.e., greater than 70 percent), no Purse Seine category quota would be reallocated to the Reserve category. Conversely, if catch were low (i.e., between 0 and 20 percent), 25 percent of their baseline allocation would be available to reallocate to the Reserve category. Any quota not allocated to the Purse Seine category would be allocated to the Reserve category to support other objectives, based on the authority and criteria described in Section 2.1.4 (Modifications to Reserve Category). This annual adjustment is independent of the codified allocation alternative, Alternative A 2a.

If an Individual Bluefin Quota system (IBQ) is implemented and trading is authorized between the limited access categories (i.e., Purse Seine and Longline categories (Alternative C 2c)), quota traded to the Longline category from the Purse Seine category would not count as quota used by the Purse Seine category for the purpose of determining the subsequent year's quota allocation. This alternative is designed to provide quota to the Purse Seine category based on bluefin tuna catch in the previous year, not based on trading of IBQ during the previous year.

Table 2.4 Annual Reallocation of Bluefin Quota from Purse Seine Category (using a Purse Seine quota of 171.8 mt as an example)

Amount of Purse Seine Base Quota *Caught* by Purse Seine Category in Year X	**Amount of Purse Seine Base Quota *Allocated* to Purse Seine Category in Year X + 1**	**Amount of Purse Seine Base Quota *Available for Reallocation* to other Categories in Year X + 1**
0 to 34.4 mt (0 to 20%)	43.0 mt (25% (minimum quota))	128.8 mt 75%
>34.4 to 77.3 mt (>20% to 45%)	85.9 mt 50%	85.9 mt 50%
>77.3 to 120.3 mt (>45% to 70%)	128.9 mt 75%	42.9 mt 25%
>120.3 mt to 171.8 (>70% to 100%)	171.8 mt 100%	0 mt 0%

For example, if the Purse Seine category does not catch any bluefin in year A, then the following year, they would be allocated 25 percent of the baseline quota (i.e., if year A catch is 0 – 20% of the base quota, then year A + 1 quota would be 25% of base quota). Following the same logic, if the Purse Seine category were to catch 21 – 45% of the base quota in year A, then they would be allocated 50% of the base in year A + 1; if 46 – 70% of the base was caught in year A, then 75% would be allocated in year A + 1, and lastly, if 71% or greater was harvested, then 100 percent of the Purse Seine category baseline allocation would be available to catch in year A + 1. Figure 2.3 depicts the various scenarios graphically while Table 2.4 shows the various allocation levels based on the previous year's catch (i.e., Year A). To ensure the Purse Seine category is not locked-in to low, or high, levels of allocation, the amount of catch needed to move to a different allocation bracket has been staggered (5%) with the allocation itself. To demonstrate this let's look at the first row in Table 2.4. If catch is between 0 and 34.4 mt the category would remain at the 43 mt allocation in the following year, however if catch were to be between 34.5 mt and 43.0 mt, then the subsequent year's allocation would jump a level and become 85.9 mt. Staggering the catch and allocation brackets allows for movement in the next year's allocation without the Purse Seine category needing to exceed their current allocation.

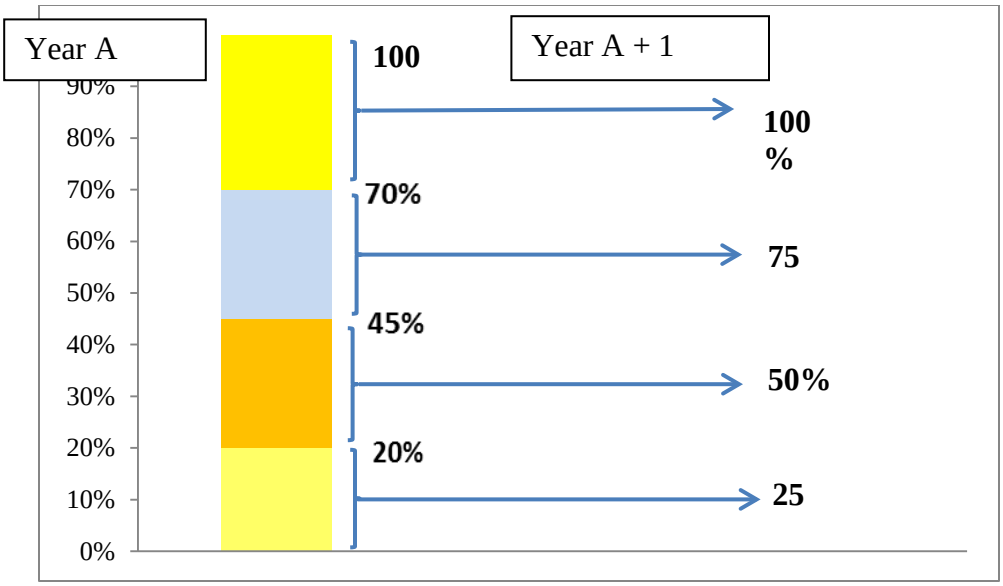

Figure 2.3 Annual Reallocation: Relationship Between Year A Catch and Year A + 1 Quota

2.1.3.2 Alternative A 3b – Annual Purse Seine Allocation Commensurate with the Number of Purse Seine Vessels

This alternative would make Purse Seine category quota available annually to that category based on the number of active Purse Seine vessels and would reallocate the remainder to the Reserve category. Under current regulations, all Purse Seine category permit holders must request their allocation in writing prior to April 15 each year and 100 percent of the Purse Seine category quota allocated, even if only three of the five Purse Seine category permits holders make the request, thus each vessel would receive 33.3% of the entire Purse Seine category quota.

In contrast, under this alternative, only those requests from active Purse Seine category permitted vessels would receive an annual allocation. An active Purse Seine vessel would be defined as a vessel with a valid Purse Seine category permit, has requested and received an allocation in accordance with the regulations (§ 635.27 (a)(4)) and is capable of fishing purse seine gear (defined at § 635.21 (e)(vi)) to harvest Atlantic bluefin tuna. The net result would be only those Purse Seine category permit holders with active vessels would receive Purse Seine quota and individually they would be allocated one fifth of the overall Purse Seine base quota. This alternative would address the fact that the Purse Seine allocation of 18.6 percent of the U.S. quota was intended to be an amount for five limited access permitted purse seine vessels. The allocation would be prorated downward to reflect the actual size of the active purse seine fishery. Table 2.5 below shows how the number of permitted Purse Seine vessels would affect the allocation.

Table 2.5 Purse Seine Category Allocation Based on Number of Permitted Vessels

Number of Permitted Purse Seine Vessels	Purse Seine Allocation (% of total quota)	Purse Seine Quota (based on example of 923.7 mt U.S. quota	Quota Available for Transfer to Reserve Category from the Purse Seine Category
1	3.7	34.2	137.6
2	7.4	68.3	103.5
3	11.2	103.5	68.3
4	14.9	137.6	34.2
5	18.6	171.8	0

2.1.4 Alternative A 4 - Modifications to Reserve Category

2.1.4.1 Alternative A 4a - No Action

Under the No Action alternative, there would be no changes to the allocation to the Reserve category or the determination criteria that are considered prior to making any adjustments to/from this category. The Reserve category would be allocated the current 2.5 percent of the U.S. annual quota, and NMFS could allocate any portion of the Reserve category quota for inseason or annual adjustments to any other quota category provided NMFS considered the current determination criteria and other relevant factors first. The current determination criteria are: (1) The usefulness of information obtained from catches in the particular category for biological sampling and monitoring of the status of the stock; (2) the catches of the particular category quota to date and the likelihood of closure of that segment of the fishery if no adjustment is made; (3) the projected ability of the vessels fishing under the particular category quota to harvest the additional amount of bluefin before the end of the fishing year; (4) the estimated amounts by which quotas for other gear categories of the fishery might be exceeded; (5) effects of the adjustment on bluefin rebuilding and overfishing; (6) effects of the adjustment on accomplishing the objectives of the fishery management plan; (7) variations in seasonal distribution, abundance, or migration patterns of bluefin; (8) effects of catch rates in one area precluding vessels in another area from having a reasonable opportunity to harvest a portion of the category's quota; and (9) review of dealer reports, daily landing trends, and the availability of bluefin on the fishing grounds. NMFS would publish a Notice in the Federal Register as well as provide other public notification of any such inseason or annual adjustment.

2.1.4.2 Alternative A 4b - Modify Reserve Category (Preferred)

This alternative would increase the amount of quota that may be put into the Reserve category and increase the potential uses of Reserve category quota. Specifically, it would potentially increase the Reserve category quota beyond the current baseline allocation of 2.5 percent and broaden the determination criteria considered in making adjustments to/from the Reserve category. The potential sources of additional quota that could be put into the Reserve category are the following: (1) Unharvested U.S. quota from the previous year (to the extent carryforward is allowable); (2) available quota from the Purse Seine category under the annual reallocation alternative (Alternative A 3a); and/or (3) quota not allocated to the Purse Seine category when fewer than five of the permitted? Purse Seine vessels are active (Alternative A 3b).

For example, under the annual reallocation alternative (A 3a), during November or December, NMFS may determine that less than 45 percent of the Purse Seine quota had been caught during that year and therefore in the subsequent year, 50 percent of the Purse Seine quota would be reallocated into the Reserve category (see Figure 2.3 or Table 2.5).

To broaden the potential uses of Reserve category quota, this alternative would add the following five criteria to the current list of nine criteria located in 635.27(a)(8), and described in Alternative A 4a, as relevant factors NMFS considers when making inseason or annual quota adjustments: (10) optimize fishing opportunity; (11) account for dead discards; (12) facilitate quota accounting; (13) support other fishing monitoring programs through quota allocations and/or generation of revenue; and (14) support research through quota allocations and/or generation of revenue. By including these additional criteria, NMFS could, transfer Reserve bluefin quota to the General category if pelagic longline vessels were authorized to fish under General category rules (Sub-Alternative B 1b), or bluefin quota from the Reserve category could be used to support research, account for dead discards, etc. With the new criteria, NMFS could also, use the reserve to "restore" quota that was reallocated pursuant to Alternative A 2a (Codified Reallocation to Longline category Reflecting the Historical 68 mt Dead Discard Allowance). These six additions to the quota adjustment criteria are intended to provide additional flexibility to enhance and facilitate the management of the fishery.

2.2 Area Based Alternatives

The management alternatives in this section are geographically based and rely principally upon either restricting the use of pelagic longline gear in specific areas or providing vessels that possess pelagic longline gear conditional access to current closed areas. This document refers to the currently existing area-based restrictions as “closed areas,” and refers to the alternatives under consideration as “gear restricted areas.” If no action is taken the status quo existing closed areas would be maintained in their current state.

2.2.1 Alternative B 1 – Pelagic Longline Gear Restricted Areas

The primary objectives of considering pelagic longline gear restricted areas is to reduce bluefin interactions, thereby decreasing the potential for dead discards, and to optimize fishing opportunity consistent with National Standard 8 by taking into account the importance of fishery resources to fishing communities, National Standard 9 by reducing bycatch and bycatch mortality, to the extent practicable, and National Standard 4 which provides that measures do not discriminate between residents of different states. Reducing bluefin dead discards would support the goals of the 2006 Consolidated HMS FMP by reducing bycatch and bycatch mortality while also minimizing the economic and social impact on the pelagic longline fishery.

The gear restricted area alternatives are designed based upon the identification of areas with elevated bluefin interaction rates with pelagic longline gear based on HMS logbook and observer data. Because there are consistent patterns of interactions (i.e., particular vessels having a high number of bluefin interactions over several years), some of the alternatives focus on specific high-interaction vessels in order to reduce the potential economic impacts of the gear restricted area as a whole, while achieving meaningful reductions in bluefin interactions.

Discussion of the Use of Gear Restricted Areas

The effectiveness of these alternatives would depend upon the defined area and time of the restriction(s) coinciding with the presence of bluefin in the area(s), the availability of the target species outside of the gear restricted area(s), the presence of bluefin outside the gear restricted area(s), and other factors that affect the feasibility of fishing for the target species outside of the gear restricted area(s).

For example, fishing opportunities may be reduced in gear restricted areas if vessels cannot relocate to nearby areas during that time (e.g., nearby areas are already heavily fished, or are inaccessible due to cost or safety concerns).

Restrictions on the use of pelagic longline gear within a specific geographic area during a period when there is a high likelihood of bluefin catch could effectively reduce dead discards, while potentially minimizing disruption of the pelagic longline fishery. A successful gear restricted area would balance the ecological benefits of the restriction (reduction in interactions resulting in dead discards and minimizing interactions with protected/restricted resources) with the economic costs (e.g., reduction in pelagic longline fishing opportunity for target species, increased costs of accessing other areas).

2.2.1.1 Alternative B 1a – No Action

This alternative would maintain the existing time/area closures applicable to all permitted HMS vessels fishing with pelagic longline gear and not implement additional pelagic longline gear restricted areas (i.e., a defined area and time period in which the use of pelagic longline gear is prohibited). The current closures are depicted in Figure 2.4.

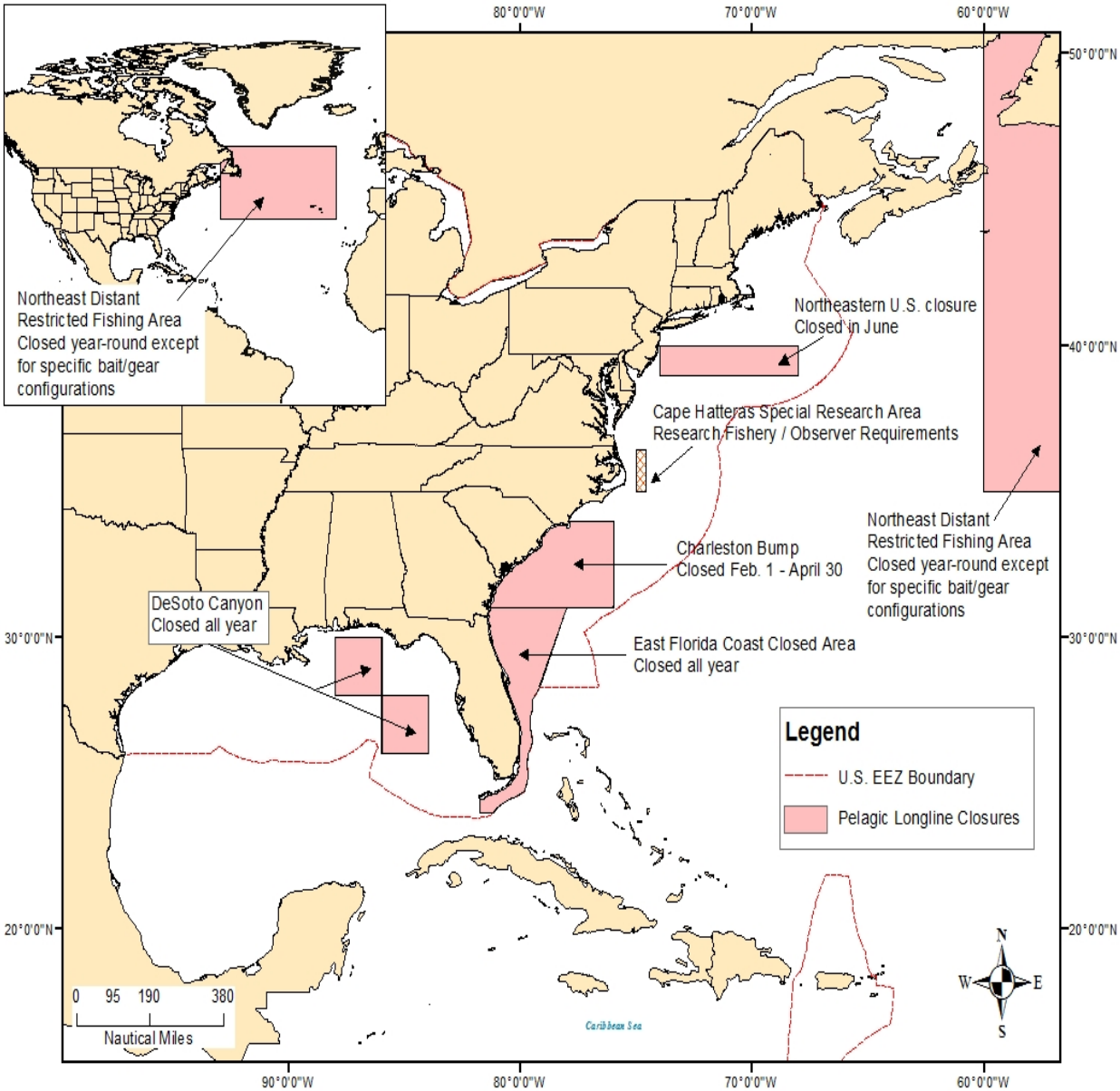

Figure 2.4 Current Highly Migratory Species Pelagic Longline Closed Areas

2.2.1.2 Alternative B 1b – Cape Hatteras Pelagic Longline Gear Restricted Area

This alternative would define a modified rectangular area off Cape Hatteras, NC, and prohibit the use of pelagic longline gear annually during the five-month period from December through April. Other gear types authorized for use by pelagic longline vessels, such as buoy gear, green-stick gear, or rod and reel, would be allowed. Alternative B 2b would provide additional flexibility for such vessels to use buoy gear. The Cape Hatteras Gear Restricted Area would be the area defined by straight lines connecting the following points, in the order stated:

Point	N. lat.	W. long.
CH1	34°50’	75°10’
CH2	35°40’	75°10’
CH3	35°40’	75°0’
CH4	37°10’	75°0’
CH5	37°10’	74°20’
CH6	34°50’	74°20’
CH1	34°50’	75°10’

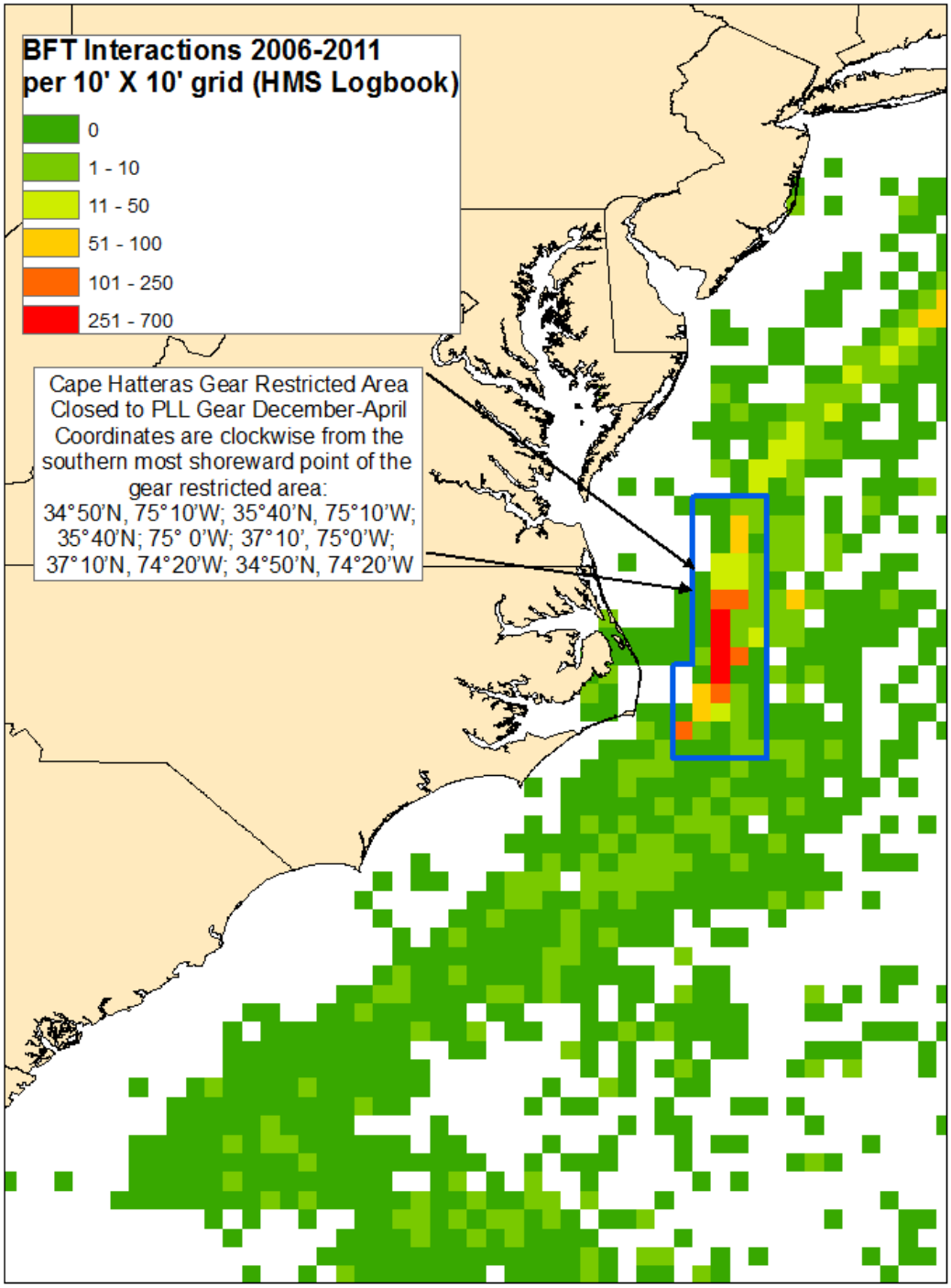

Figure 2.5 Cape Hatteras Gear Restricted Area, Showing Number of Bluefin Interactions with Pelagic Longline Gear, 2006 – 2011.

This region off North Carolina contains seasonally consistent concentrations of bluefin tuna and catches by the pelagic longline fleet. Logbook and observer data indicate that historically there

have been relatively high catches and catch rates of bluefin by pelagic longline vessels in this region. The specific time and area of the Cape Hatteras Gear Restricted Area represents a time and area combination likely to result in reduced interactions based on past patterns of interactions.

2.2.1.3 Alternative B 1c – Cape Hatteras Pelagic Longline Gear Restricted Area with Access based on Performance (Preferred)

Under this alternative, NMFS would annually review pelagic longline vessels using three performance metrics and, based on that review, authorize some vessels fishing with pelagic longline gear to have access to the Cape Hatteras Gear Restricted Area. As described in more detail below, the performance metrics are: (1) level of bluefin interactions/avoidance; (2) Observer program participation; and (3) Logbook submissions. Each of these metrics would use objective statistics from the respective programs. NMFS would notify vessel owners by mail whether or not there are authorized to fish in the area. This alternative would use the same area off Cape Hatteras, North Carolina, and, as in Alternative B 1b, define criteria for access by HMS permitted vessels fishing with pelagic longline gear during the five-month period from December through April. Vessels that are determined by NMFS to have relatively low rate of interactions with bluefin based on past performance, and that are compliant with reporting and monitoring requirements would be allowed to fish in the area using pelagic longline gear. Vessels that have not demonstrated their ability to avoid bluefin would not be allowed to fish with pelagic longline gear in this area; or if a vessel has demonstrated its ability to avoid bluefin, but has had poor compliance with reporting and monitoring requirements, it would not be allowed to fish with pelagic longline gear in this area, from December through April. Individual vessel data would be evaluated annually for the purpose of determining access, and results would be communicated to the individual permit holders via a permit holder letter. This evaluation would be based on the most recent information available in order to provide future opportunities and accommodate changes in fishing behavior, both positively and negatively based on performance.

The use of other authorized gear types such as buoy gear, green-stick gear, or rod and reel, would be allowed in the Cape Hatteras Gear Restricted Area by all pelagic longline vessels. NMFS could stop access by all pelagic longline vessels to the area via inseason action to address issues including: (1) Failure to achieve or effectively balance the objective of reducing dead discards with the objective of providing fishing opportunity ; (2) bycatch of bluefin tuna or other HMS species that may be inconsistent with the objectives or regulations or the 2006 Consolidated HMS FMP or ICCAT recommendations; or (3) bycatch of marine mammals or protected species that is inconsistent with the MMPA, Pelagic Longline Take Reduction Plan (PLTRP), or relevant biological opinions.

The principal objective of conditional access would be to balance reducing dead discards with providing reasonable fishing opportunity. The secondary objective would be to provide strong incentives to avoid bluefin tuna and to reduce dead discards by modifying fishing behavior, as well as incentives to comply with reporting and monitoring requirements. This approach would address the fact that relatively few vessels have consistently been responsible for the majority of the bluefin dead discards. Compliance with reporting and monitoring requirements reflects the critical importance of fishery data to the successful management of the fishery. NMFS decided

that performance metrics should be simple, objective, and quantifiable in order to be easily understood and relatively straightforward to implement.

NMFS would revise the conditions for access through proposed and final rulemaking in the future to ensure that the performance metrics continue to support the objectives of the gear restricted area. Specifically, NMFS would define a numerical measure of vessel performance) that would reflect the rate of interactions with bluefin and compliance with logbook reporting and observer monitoring requirements.

Bluefin Interactions Performance Metric

NMFS would score vessels on their ability to avoid bluefin. As detailed below, NMFS would define a numeric system that would reflect a vessel's bluefin avoidance history, which would contribute toward the vessel's overall performance score. The initial bluefin avoidance history would be based upon a vessel's rate of interactions during 2006 through 2011, and future scores would be based upon the most recent three-year period. Specifically, the ratio of the number of bluefin interactions (number of fish; landings, dead discards, and live discards) to the weight of designated target species landings (in pounds) would be used to reflect the level of bluefin interactions. These designated species would consist of the more common marketable catch by pelagic longline such as, swordfish, yellowfin tuna, bigeye tuna, albacore, skipjack, dolphin, wahoo, and porbeagle, shortfin mako and thresher sharks. The use of a ratio incorporating both designated target species landings and bluefin interactions provides a metric that is intended to eliminate bias resulting from the differences among vessels in size or fishing effort. The ratio would utilize the vessels' designated species landings (expressed as weight) from NMFS's dealer data (weigh-out slips) and logbook information, and the bluefin tuna logbook catch data. The ratio of bluefin discards to designated species landings enables the identification of specific vessels that have not demonstrated the ability to avoid bluefin at the level exhibited by the majority of the fleet.

Levels of bluefin interactions would be scored and would serve as one of the determining factors for access to the Cape Hatteras Gear Restricted Area. To develop this alternative, NMFS analyzed and ranked the data at the vessel level to determine the overall distribution (i.e., the pattern) of the ratios in the fishery. In order to select the thresholds for scoring, NMFS considered both the Amendment 7 objective of reducing dead discards and the objective of optimizing fishing opportunity. The bluefin tuna interactions to designated species landings (x 10,000) ratio performance metric scoring system is below in Table 2.6.

Table 2.6 Bluefin Tuna Interactions to Designated Species Landings (x 10,000) Ratio Performance Metric Scoring

Ratio of Bluefin Interactions to Designated Species Landings (X 10,000)					
Data Range	0	> 0 to < 1	≥ 1 to < 2	≥ 2 to < 3	≥ 3
Score	5	4	3	2	1

This scoring system would enable the majority of vessels to continue to fish in the gear restricted areas, yet would substantially reduce bluefin dead discards by precluding those with high

designated species to bluefin interaction ratios. Figure 2.6 shows the distribution of the bluefin interactions to designated target species landings ratio among vessels. The first two vertical bars illustrate the number of vessels with a ratio of zero, and a ratio of between zero and less than one, respectively.

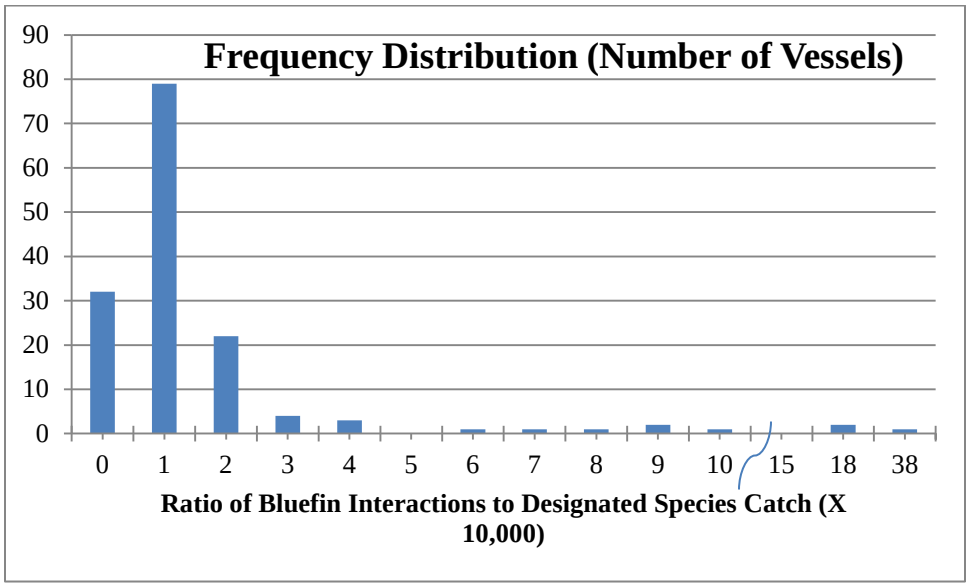

Figure 2.6 Frequency Distribution of Ratio of Bluefin Interactions to Designated Target Species Catch (x 10,000) (Note scale shift after ration of 10)

Pelagic Observer Program Compliance Performance Metric

Under this performance metric, NMFS would score vessels based on their compliance with POP requirements. Specifically, NMFS would utilize POP data to define a numeric scoring system that would reflect compliance with the POP requirements. The scores would be associated with the compliance with the communications, and timing of those communications, with POP; presence/absence of a USCG safety decal; life raft capacity, bunk space, vessel selection and observer deployment. The scoring system is designed to be neutral with respect to valid reasons that a vessel may have been selected by the observer program, but did not take an observer (e.g., no observer was available, or the vessel did not fish using pelagic longline gear (for a variety of reasons)). The scoring system is also designed to weigh the communication elements/requirements more heavily than the safety aspects, as well as consider evidence of fishing activity. This performance metric would contribute toward the vessel's overall performance score (used to determine access to the gear restricted area).

Table 2.7 Final POP Scoring Reference Table – (full description in the Appendices)

Percent Compliant	100%	80 - 100%	80 - 100%	< 80%	NA
Percent Observed	90-100%	> 60-90%	> 33-60%	0 - 33%	NA
Initial Score	5	4	3	2	1
Final Scores: Equal to initial score unless evidence of fishing activity after either refusing to take an observer or non-communication with Pelagic Observer Program, which reduced the initial score by one. Vessels with a composite score less than 1 receive a final score of 1.					

Logbook Compliance Performance Metric

Vessels with an Atlantic Tunas longline permit are required to submit logbooks, including a separate form for each longline set. Fishermen are required to report the numbers of each species caught, the numbers of animals retained or discarded alive or discarded dead, the location of the set, the types and size of gear, and the duration of the set. The vessel owner/operator is required to submit the logbook forms postmarked within seven days of offloading the catch, and, if no fishing occurred during a month, a no-fishing form must be submitted postmarked no later than 7 days after the end of that month.

NMFS would define a numeric system that would reflect compliance with the logbook requirements, which would contribute toward the vessel's overall performance score. The initial logbook compliance score would be based upon the rate of interactions during 2006 through 2011, and future scores would be based upon the most recent three-year period

The logbook performance metric would reflect the timeliness of the submission of the logbooks, and not address other aspects such as completeness and accuracy. NMFS could modify the performance metric through future rulemaking to incorporate other elements. Specifically, the following scoring system was developed (Table 2.11).

Table 2.8 Logbook Compliance Performance Metric Scoring

Logbook Compliance					
Data Type	Days Between Offload and Mail Opening				
Data Range	≤ 7	>7 to $\leq$30	> 30 to $\leq$60	>60 to $\leq$90	> 90
Score	5	4	3	2	1

Combining Scoring Elements into a Single Performance Score

Using the bluefin interactions performance metric, the POP compliance metric, and the logbook compliance performance metric, an overarching performance formula was developed in order to derive a "yes" or "no" answer with respect to whether a vessel is granted access to the proposed Gear Restricted Area, as well as being a component of granting access to areas currently closed to longline gear. Vessels that have not demonstrated their ability to avoid bluefin would not be allowed to fish with pelagic longline gear in these areas; or if a vessel can avoid bluefin but has

poor compliance with reporting and monitoring requirements, it would not be allowed to fish with pelagic longline gear in these areas. Specifically, vessels would be scored annually using data averaged from the most recent three consecutive-years to determine their ability to access these areas in the upcoming year.

The first performance metric is that vessels with a bluefin tuna interaction score of 1 may not fish in the proposed Gear Restricted Area using pelagic longline gear, nor would they qualify to enter current closed areas and fish with pelagic longline gear regardless if they are observed. This metric supports the objective of reducing dead discards of bluefin by excluding vessels with a history of a substantial number of interactions with bluefin. The second performance metric is if a vessel's POP Compliance score is 2 or less, a vessel may not have access to the area, unless the third performance metric of vessel's logbook compliance score is 4 or 5. The second and third performance metrics reflect the importance of compliance with the POP requirements as well as logbook reporting requirements. The performance formula includes these three metrics in order to provide some flexibility and incentives for vessels to comply with the POP and logbook requirements.

Annual Revision of Performance Metrics

Due to potential delays in the availability of data, the three consecutive-year period used during the annual qualification process may not align precisely with calendar years, if data on a calendar year basis are not available at the time NMFS is making the access determination. For example, data from the most recent months of the most recent year may not be available at the time NMFS is compiling such data. Vessels owners would be notified annually of the status of the relevant vessel via a permit holder letter, and only aggregate information would be made available to the public. NMFS would not make the score of an individually identified vessel public to remain compliant with the Privacy Act NMFS would have the ability to modify the performance metrics and the performance formula via a subsequent regulatory action,, in order to optimize the achievement of the objectives of the gear restricted area, via the annual specifications.

Appeals and the Use of Historical Data:

Vessels owners would be able to appeal their performance scores to the National Appeals Office of NMFS by submitting a written request to appeal, indicating the reason for the appeal and providing supporting documentation for the appeal (e.g., copies of landings records and/or permit ownership, etc.). The appeal would be evaluated by National Appeals Office staff in concert with HMS Management Division staff and would be based upon the following criteria: 1) The accuracy of NMFS records regarding the relevant information; and 2) correct assignment of historical data to the vessel owner/permit holder. The current owner of a permitted vessel may also appeal on the basis of a potential inequity based upon historical changes in vessel ownership or permit transfers. Appeals based on hardship factors will not be considered.

In general, the use of historical data as part of management criteria can be complex due to historical transfers of the limited access permit from one vessel to another or changes in vessel ownership. It is therefore helpful to designate the relevant historical 'platform' (i.e., vessel or permit). Theses performance metrics (as well as Alternative C 2b) are based upon historical data

associated with a permitted vessel. We determined that the historical 'platform' upon which to base the quota share should be the vessel history instead of the permit history for the reasons discussed under Alternative C 2b.

Data Accuracy Performance Metric

NMFS considered a performance metric that would address the issue of data accuracy, and indicate how closely the vessel's HMS logbook information reflects observer information, but decided not to include this metric among the criteria for access in order to simplify the overall criteria, and due to the variability in the number of observed trips in the fleet. NMFS may incorporate this metric into the overall criteria for access in the future.

2.2.1.4 Alternative B 1d - Allow Pelagic Longline Vessels to Fish under General Category Rules (Preferred)

This alternative would let vessels that are not allowed to fish in the Cape Hatteras Gear Restricted Area, to instead fish for bluefin tuna under General category rules. Currently, permitted pelagic longline vessels cannot retain bluefin unless they are caught incidentally on longline gear. Specifically, this alternative would allow vessels with valid HMS longline permits (Atlantic Tunas Longline category permit, Swordfish and Shark) that are not allowed to fish in the Cape Hatteras Gear Restricted Area using pelagic longline gear (based on its Performance Metric score under Alternatives B 1b or B 1c), to fish under the rules/regulations applicable to the General category. Such vessels would be able to target bluefin tuna with gear authorized under the General category, including: rod and reel, handline, harpoon, etc., in the area defined as the Cape Hatteras Gear Restricted Area, during the time of the restriction (December through April), when the General category is open. The vessels would be subject to the bluefin retention limits in effect for the General category. The bluefin landed with authorized handgear would be counted against the General category quota.

The objective of this measure is to provide additional fishing opportunity for pelagic longline vessels and mitigate the potential negative economic impacts of the Cape Hatteras Gear Restricted Area, particularly for pelagic longline vessels that may not be able to fish in other areas during the time of the restriction. Prior to each trip, vessels would be required to declare through VMS their intent to fish under the General category rules, and report their catch daily through VMS.

2.2.1.5 Alternative B 1e – Gulf of Mexico Exclusive Economic Zone (EEZ) Pelagic Longline Gear Restricted Area

This alternative would prohibit the use of pelagic longline gear in the Gulf of Mexico, defined as Federal waters west of 82° West longitude, for three months each year (March through May). Other gear types authorized for use by permitted HMS pelagic longline vessels such as buoy gear (see Alternative B 2b), greenstick gear, or rod and reel would be allowed, provided the vessel abides by any rules/regulations that accompany those gear types, for example bluefin tuna cannot be retained in the Gulf of Mexico if caught on rod and reel.

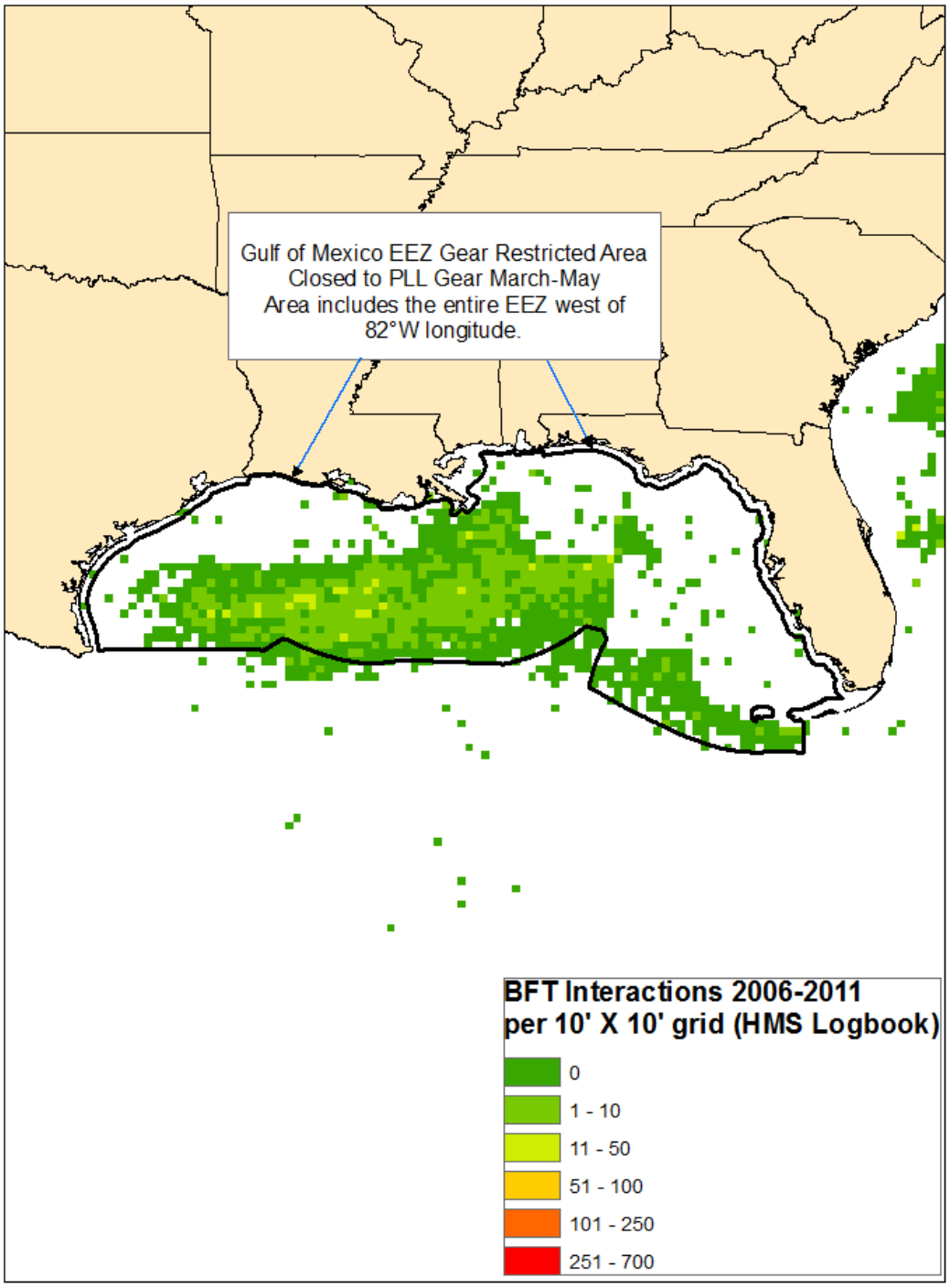

Figure 2.7 Gulf of Mexico Exclusive Economic Zone Gear Restricted Area (Alternative B 1e). Number of Bluefin Interactions with Pelagic Longline Gear, 2006 – 2011.

The Gulf of Mexico is one of the areas where there are seasonal concentrations of bluefin tuna, as well as consistent catches by the pelagic longline fleet. Pelagic longline logbook and observer data indicate that historically there have been relatively high catch and catch rates between

pelagic longlines and bluefin tuna. Because bluefin tuna in the Gulf of Mexico consist of large fish that may be sexually mature or spawning individuals, reducing interactions with pelagic longline gear in the Gulf of Mexico may also enhance spawning potential and stock growth. The specific time and area of the Gulf of Mexico EEZ Gear Restricted Area represents a time and area combination likely to reduce interactions based on past patterns of interactions, as indicated by logbook and observer data. The large area would maximize the likelihood that the gear restricted area would account for the variability of bluefin location and result in reduced interactions (and dead discards).

2.2.1.6 Alternative B 1f – Small Gulf of Mexico Pelagic Longline Gear Restricted Area (Preferred)

This alternative would define the Small Gulf of Mexico Gear Restricted Area and prohibit the use of pelagic longline gear in that area during the two-month period from April through May. Other gear types authorized for use by permitted HMS pelagic longline vessels such as buoy gear (see Alternative B 2b), greenstick gear, or rod and reel would be allowed provided the vessel abides by any rules/regulations that accompany those gear types. The Small Gulf of Mexico Gear Restricted Area would be the area defined by straight lines connecting the following points, in the order stated:

Point	N. lat.	W. long.
GOM1	26°30’	94°49’
GOM2	27°40’	94°49’
GOM3	27°40’	90°40’
GOM4	26°30’	90°40’
GOM1	26°30’	94°49’

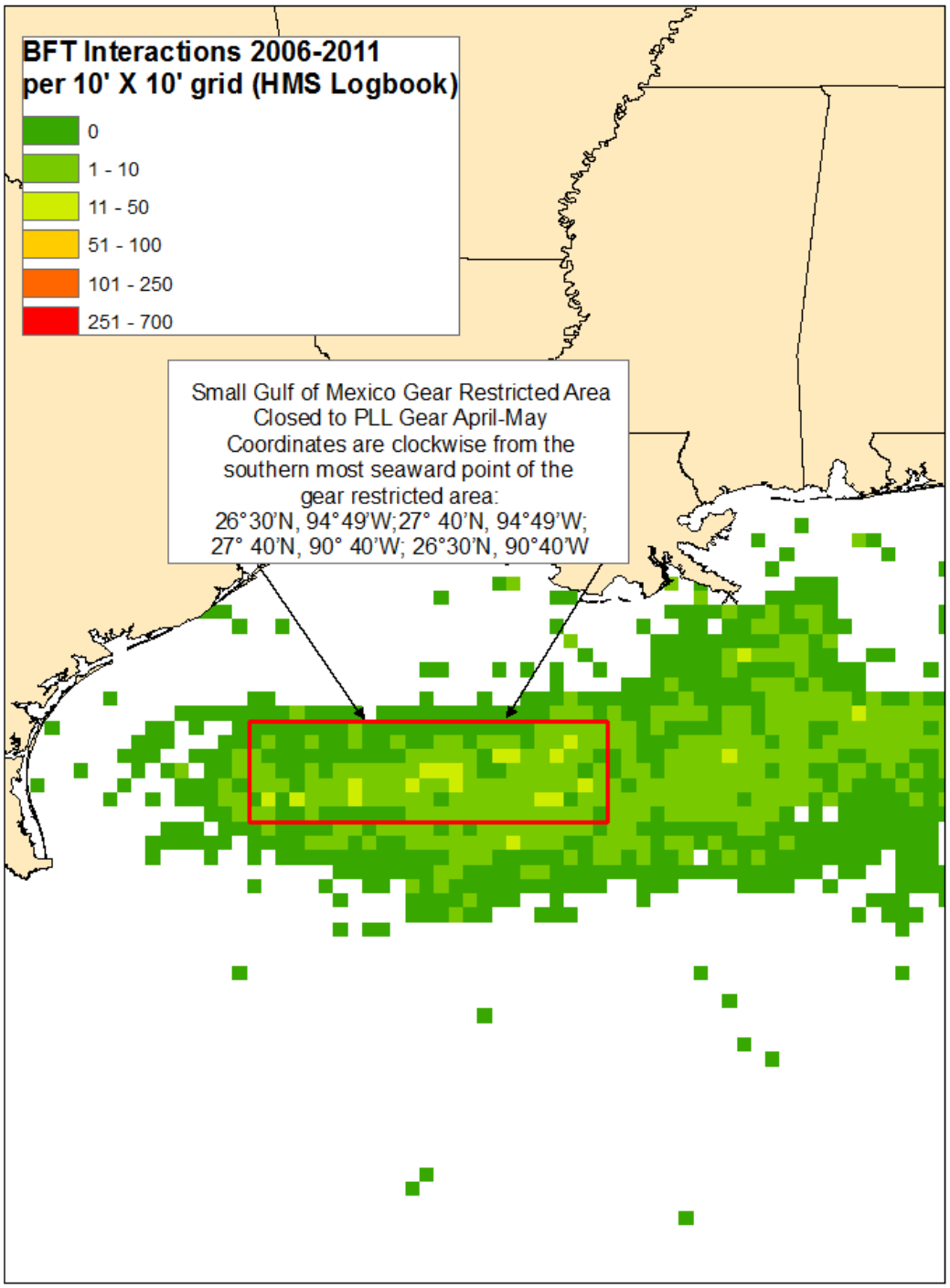

Figure 2.8 Small Gulf of Mexico Gear Restricted Area (Alternative B 1f). Number of Bluefin Interactions with Pelagic Longline Gear, 2006 – 2011.

The Gulf of Mexico is one of the areas where there are seasonal concentrations of bluefin, as well as consistent catches by the pelagic longline fleet. Pelagic longline logbook and observer data indicate that historically there have been relatively high bluefin catches and catch rates of

bluefin by pelagic longline vessels in this region. Because bluefin tuna in the Gulf of Mexico are comprised of large fish that may be sexually mature or spawning, reducing interactions with pelagic longline gear in the Gulf of Mexico may also enhance spawning potential and stock growth.

The specific time and area combination of the Small Gulf of Mexico Gear Restricted Area is likely to result in reduced interactions based on past patterns of interactions. The Small Gulf of Mexico Gear Restricted Area would provide a narrower restriction temporally and geographically, than the Gulf of Mexico EEZ Gear Restricted Area. The Small Gulf of Mexico Gear Restricted area encompasses the larger levels of bluefin interactions based on the historical concentrations of bluefin interactions, and would provide a different balance of achieving the principal objectives of this amendment by reducing the time and areas closed but reducing the potential for bluefin and longline gear interactions.

2.2.1.7 Alternative B 1g – Gulf of Mexico Pelagic Longline Gear Restricted Area (year-round)

This alternative would prohibit the use of pelagic longlines in the same area as in the Gulf of Mexico EEZ Gear Restricted Area (Alternative B 1e) (i.e., anywhere in the Gulf of Mexico), year-round. This comprehensive gear restricted area would provide the maximum amount of reduction in bluefin discards in the Gulf of Mexico. The Gulf of Mexico is one of the areas where there are seasonal concentrations of bluefin, as well as consistent catches by the pelagic longline fleet. Pelagic longline logbook and observer data indicate that historically there have been relatively high catches and catch rates between pelagic longlines and bluefin tuna in this region. Because bluefin in the Gulf of Mexico are comprised of large fish that may be sexually mature or spawning, reducing all interactions with pelagic longline gear in the Gulf of Mexico may also enhance spawning potential and stock growth.

2.2.2 Alternative B 2 - Gear Measures

2.2.2.1 Alternative B 2a– No Action

The “no action” alternative would not change current authorized gear requirements (with respect to the use of buoy gear and associated restrictions on possession of bigeye, albacore, yellowfin, and skipjack tunas (BAYS) and bluefin) applicable to those vessels with an Atlantic Tunas Longline category permit and either a Swordfish Directed or Swordfish Incidental permit. Currently, vessels with an Atlantic Tunas Longline category permit must also have both a Swordfish Directed or Incidental permit, and a Shark Directed or Incidental permit.

The following aspects of the current gear restrictions under the No Action Alternative that are most relevant to the management measures analyzed in this amendment are the following: (1) Vessels with the Atlantic Tunas Longline category permit are allowed to fish for BAYS using a variety of gears, including handgear (e.g.; rod and reel, handline, and harpoon), but are only allowed to retain bluefin when fishing with pelagic longline or greenstick gear; (2) vessels with the Atlantic Tunas Longline category permit and a Swordfish Directed permit are allowed to use buoy gear to harvest swordfish, but may not retain tuna (BAYS or bluefin) using buoy gear; and (3) vessels with the Swordfish Incidental permit may not fish with buoy gear at all.

These restrictions are illustrated by the two following scenarios created by two potential permit combinations. In the first scenario, a vessel is issued an Atlantic Tunas Longline category permit and a Swordfish Directed permit. If vessel operators wish to retain incidentally caught tuna, they may not use buoy gear. Although the Swordfish Directed permit allows a vessel to fish with buoy gear, the retention of tunas when fishing with buoy gear is not allowed by the Atlantic Tunas Longline category permit because buoy gear is not an authorized gear type for Atlantic tunas. Vessels with the Swordfish Directed permit may fish with buoy gear north of 5 degrees North latitude, but may deploy no more than 35 buoys, and may only retain swordfish when using buoy gear (and must discard tunas). In the second scenario, a vessel is issued an Atlantic Tunas Longline category permit and a Swordfish Incidental permit. Under this scenario, the vessel operator may not use buoy gear to harvest swordfish or BAYS tunas because buoy gear is not authorized for use under either permit.

Table 2.12 shows when pelagic longline, buoy, and greenstick gear may be used to harvest tunas and swordfish depending upon what permits a vessel has.

2.2.2.2 Alternative B 2b – Authorization of Vessels with a Swordfish Incidental Permit to Use Buoy Gear

This alternative would authorize vessels with a Swordfish Incidental permit to fish with buoy gear, except vessels fishing in the East Florida Coast Closed Area, defined in §635.2 Under this alternative, vessels would still be limited to 35 buoys. The rationale for this alternative is to provide increased flexibility and encouragement for pelagic longline vessels to utilize gears other than pelagic longline to maintain and enhance fishing opportunities. There is currently a 35 buoy limit for the commercial sector, which was implemented to prevent excessive amounts of unattended floating gear from being lost while allowing vessels to possess spare gear onboard.

Not authorizing the use of buoy gear in the East Florida Coast Closed Area under a Swordfish Incidental permit is preferred in order to not increase fishing effort in the area and reduce potential gear conflicts that could occur due to the large number of fishermen in proximity to the area. The amount of fishing effort in the region is an important management consideration because this area is a unique migratory corridor, which provides important habitat for many highly migratory species and protected species, including swordfish, marlin, sailfish, sea turtles, and marine mammals. The east coast of Florida, and in particular the Florida Straits, contains one of the richest concentrations of marine life in the Atlantic Ocean. A 2003 United Nations Food and Agriculture Organization study stated that the Florida Straits had the highest biodiversity in the Atlantic Ocean, and is home to 25 endemic species.

2.2.2.3 Alternative B 2c – Allow Vessels with a Swordfish Directed or Incidental Permit and an Atlantic Tunas Longline Permit to Retain BAYS and Bluefin when Fishing with Buoy Gear

This alternative would allow vessels with an Atlantic Tunas Longline category permit and the Swordfish Incidental permit to retain BAYS and bluefin when fishing with buoy gear. The rationale for this alternative is the same as for Alternative B 2b: to provide increased flexibility and encouragement for pelagic longline vessels to utilize gears other than pelagic longline to

maintain and enhance fishing opportunities in the context of new restrictions that may be implemented by Amendment 7. This alternative would have no effect on vessels with a Swordfish Incidental permit, unless Alternative B 2b is adopted. On its own, this alternative would provide additional flexibility for vessels with a Swordfish Directed permit and an Atlantic Tunas Longline permit.

Because vessels with pelagic longline gear on board have many associated restrictions that are triggered by the possession of this gear type (i.e., closed areas, hook, gangion, bait restrictions; Protected Species Workshop attendance, observer coverage, etc.), this alternative would affect such restrictions.

For example, if a vessel affected by this alternative removes the pelagic longline gear and fishes instead with buoy gear, it would no longer be subject to the closed areas that apply to vessels fishing with pelagic longline gear, or the pelagic longline gear hook and bait restrictions.

Table 2.9 No Action Compared to Increased Flexibility to Use Buoy Gear

Valid Permits Issued to Vessel	No Action		Alternative	
	Allowed Gear*	**Allowed Tunas and Swordfish**	**Allowed Gear**	**Allowed Tunas and Swordfish**
Atlantic Tunas Longline Swordfish Directed [Shark Directed or Incidental]	Pelagic longline Greenstick	Bluefin Swordfish BAYS	Pelagic longline Greenstick Buoy gear	Alternative B 2b Bluefin Swordfish BAYS
	Buoy gear	Swordfish		
Atlantic Tunas Longline Swordfish Incidental [Shark Directed or Incidental]	Pelagic longline Greenstick	Bluefin Swordfish BAYS	Alternative B 2a Pelagic longline Greenstick Buoy gear	30 Swordfish

* The scope of this table only includes Pelagic longline, Greenstick, and Buoy gear.

2.2.3 Alternative B 3 - Access to Closed Areas Using Pelagic Longline Gear

Background

NMFS has closed a number of areas to fishermen who have pelagic longline gear on board to reduce bycatch by longline gear. The Northeastern closure was designed to reduce bluefin tuna discards; the Charleston Bump, East Florida Coast, and DeSoto Canyon closures were designed to reduce the discards of undersized swordfish, billfish, sharks, and other species; and the NED restrictions are designed to reduce interactions with leatherback and loggerhead turtles. NMFS continues to explore methods of reducing bycatch in all HMS fisheries and for all gear types.

Alternatives

These alternatives would annually allow a small number of vessels to fish commercially in the current closed areas. The alternatives include various conditions including carrying an observer, reporting catch via VMS, and other vessel-specific criteria. Specifically, the alternatives in this section consider allowing some limited, conditional access to these areas to provide some limited additional fishing opportunities and to collect commercial fishery data that may inform future management decisions and stock assessments and help to evaluate the effects of the closure. The limits and conditions of the alternative (described below) would ensure the continuation of the protective effects of the closures. These alternatives will be considered in conjunction with the Gear Restricted Area alternatives (Section 2.2.1) and would help mitigate negative economic impacts that could result from those restrictions. The collection of commercial fishery data from closed areas is important because many areas have been closed for a long time, and regulations and the stock status of some species have changed since the areas were closed to pelagic longline gear.

For example, in the time since the existing closed areas were implemented, circle hook, bait, and weak hook restrictions have been implemented and North Atlantic swordfish have been rebuilt. Because the regulatory and ecological context of the closed areas has changed, commercial data from within the areas would be informative.

Although Exempted Fishing Permits (EFPs) currently allow research in these areas, commercial fishing behavior is different from field research based on an experimental design. Commercial data would further augment NMFS's understanding of closed areas.

2.2.3.1 Alternative B 3a – No Action

This alternative would maintain the current regulations that do not allow vessels to enter a closed area with pelagic longline gear during the time of the closure, unless issued an Exempted Fishing Permit.

2.2.3.2 Alternative B 3b – Limited Conditional Access to Closed Areas (Preferred)

This alternative would allow restricted and conditional access to the following closed areas: Charleston Bump closed area (February through April), a portion of the East Florida Coast closed area (year-round), the DeSoto Canyon closed area (year-round), and the Northeastern U.S. closed area (June). This alternative would provide some access to the portion of the East Florida Coast closed area north of 28° 17' 10" North latitude, east of the 100 fathoms curve. The area south of 28° 17' 10" North. latitude, and west of the 100 fathoms curve would be precluded due

to south Florida's unique importance as a swordfish and tuna migratory corridor and as juvenile swordfish habitat that is easily accessible to a large population center with many fishermen (also see discussion under Alternative B 2b).

The objectives of this alternative are to maintain the relevant conservation aspects of closure areas, balance the objectives of the closures, provide commercial data from within the closures, provide additional fishing opportunities for permitted pelagic longline vessels, and mitigate the potential negative economic impacts of other draft Amendment 7 alternatives that may be implemented. Commercial data from within the closed areas may be used to evaluate the effectiveness and/or impacts of closed areas as well as for stock assessments or other management measures.

Vessels selected to take an observer in a given statistical area and that qualify under the proposed performance formula would be eligible to access closed areas and fish using longline gear provided the closed area fell within the statistical area they were selected for and an observer is deployed for that trip. Vessels would be informed annually whether they qualify via a permit holder letter, and about the status of the access program. Current NMFS POP vessel selection procedures would be used to select vessels using the current strata (i.e., the procedures that select vessels to obtain observer coverage each calendar quarter, and deploy in each of various geographic (statistical) areas).

For example, if a vessel was selected to take an observer for the Mid-Atlantic Bight statistical area or the Northeast Central statistical area, and the vessel qualified under the performance formula, the vessel would be able to fish in the Northeastern U.S. closed area in June as long as an observer is onboard (the Northeastern U.S. closed area straddles two statistical areas). If the vessel were selected to take an observer for the Gulf of Mexico and again the vessel qualified under the performance formula, the vessel would be able to fish in the DeSoto Canyon closed area during the quarter selected for observer coverage as long as an observer is on board.

The scope of the alternative and its effects would depend upon the level of observer coverage. Currently, a minimum of eight percent of fishing effort is covered and funded wholly by NMFS. Due to the limits on the level of observers, observer coverage would serve as the principal constraint to the amount of access. If an industry-funded observer program is developed and implemented, in a subsequent regulatory action, the procedures for observer deployment may be modified and access could potentially increase. Participating vessels would be required to "declare in" to the area via their VMS unit and report species caught and effort daily via VMS.

NMFS would have the ability to terminate access to each closed area overall if warranted, , in order to address issues including: (1) Bycatch of marine mammals or protected species that is inconsistent with the MMPA, Pelagic Longline Take Reduction Plan, or the relevant BiOp; (2) failure to achieve or effectively balance the objective of reducing dead discards with the objective of providing fishing opportunity; or (3) bycatch of bluefin tuna or other HMS species that may be inconsistent with the objectives or regulations or the 2006 Consolidated HMS FMP, or ICCAT recommendations. Depending on when NMFS becomes aware new information as it pertains to the issues listed above, terminating an individual vessel's access, or access to each closed area overall, could be conducted annually or inseason.

When considering whether or not to terminate access to a closed area, NMFS would evaluate the following criteria and other relevant factors relating to issues one through three above: (a) The usefulness of information on catch obtained from observers, logbooks, VMS reporting, and dealer reports; (b) the type of species caught, numbers caught, rate of catch, animal length, weight, condition, and location; (c) variations in the seasonal distribution, abundance, or migration patterns of a bycatch species or target species; (d) condition or status of the stock or species of concern and impacts of continued access to the closed area on all species; (e) catch data on comparable species from outside the closed area (both target species and bycatch); (f) implications on quota management of relevant stocks; (g) relevant data regarding the effectiveness of other closed areas and their individual or cumulative impacts in relation to the objectives of the closed areas, and the 2006 Consolidated HMS FMP; and (h) the criteria listed under § 635.27(a)(8), plus any proposed new criteria. NMFS would consider relevant data and criteria and notify the public in the Federal Register (and through other means) that access to the area with pelagic longline gear would be prohibited for the duration of the relevant time period (depending upon the closed area).

2.3 Bluefin Tuna Quota Controls

Background

Under current regulations, target catch requirements for pelagic longline vessels limit the number of bluefin that can be retained on a particular trip, but do not limit the number of bluefin that can be interacted with, and thus discarded dead on a trip. Once the annual Longline category quota has been reached (based on the amount of bluefin landed), vessels using pelagic longline gear are prohibited from retaining bluefin but may continue to fish for other species. These vessels will likely continue to have bluefin interactions, and some portion will be discarded dead. The current regulations have the net effect of limiting the amount of bluefin landed, and thus include an incentive to avoid bluefin, but ultimately have not effectively limited the number of bluefin interactions. Therefore, bluefin may continue to be discarded dead as a result of filling the bluefin quota.

Bluefin Quota Controls are Closely Related to Quota Monitoring and Accounting

Both landings and dead discards need to be accounted for within the quota. If quota controls were implemented, landings and dead discards of bluefin would need to be monitored and accounted for by NMFS in real-time during the season. NMFS would develop inseason estimates of dead discards based on one or more sources of data, and in conjunction with bluefin landings information, estimate total longline catch. Alternatives below include reporting and monitoring alternatives in support of a quota control system. If accounting for dead discards were to occur at the end of the season, there may be insufficient quota remaining to account for all bluefin discarded dead. If accounting for dead discards were to occur wholly at the beginning of the season, the estimate may be too high or too low. Alternatives below include management tools that are designed to work in conjunction with quota controls.

Common Aspects of the Bluefin Quota Control Alternatives

These alternatives include management to limit the total annual amount of bluefin landings and dead discards in the Longline category by prohibiting the use of pelagic longline gear when the quota has been, or is projected to be, reached. Limiting fishing mortality of bluefin caught by the pelagic longline vessels would enhance the measures of the 2006 Consolidated HMS FMP designed to achieve stock rebuilding and end overfishing. Both bluefin landings and dead discards would count toward the Longline category quota. Alternatives analyzed would control landings and dead discards at the level of the individual vessel and at the level of regions, or groups of vessels. In support of the concept limiting bluefin landings and dead discards at the scale of individual vessels, there are detailed alternatives regarding quotas for individual vessels, referred to in this context as Individual Bluefin Quotas (IBQs). Because annual quota control would involve a threshold amount of landings and dead discards triggering a prohibition on pelagic longline use, implementation of quota controls would require additional reporting by vessel owners and additional monitoring by NMFS.

One means of quota control that may be used in combination with several alternatives would be for NMFS to prohibit vessels from fishing with pelagic longline gear once the threshold amount of bluefin catch (landings and dead discards) has been attained, and therefore limit the level of landings and dead discards on an annual basis (see Alternative C 5). When the quota is reached (or a threshold portion of the quota), the use of pelagic longline gear would be prohibited for the remainder of the year, or until more bluefin tuna quota is procured via leasing or trading, if allowed (see Alternative C 2). A successful quota control system would increase the accountability of individual pelagic longline vessels by limiting the amount of bluefin landings and dead discards, but also provide flexibility for the vessels to remain operational, although it may be with other gears such as described in Section 2.2.2.

2.3.1 Alternative C 1 - No Action

Under this alternative, there would be no change to the current regulations that restrict pelagic longline vessel *retention* of bluefin once the Longline category quota has been reached; hence, the total amount of dead discards would not be restricted. Under current regulations, when the incidental landings of bluefin reaches the Longline quota, permitted pelagic longline vessels are prohibited from retaining and landing bluefin, but may continue to fish for their target species and must discard all bluefin. The amount of bluefin that are caught (landed or discarded dead) by vessels fishing with pelagic longline gear would not be capped. Although there are many factors that influence the amount of fishing effort in the pelagic longline fishery, there would not be a specific limit on the amount of bluefin the fishery could catch. The amount of bluefin that this gear interacts with would be indirectly restrained by other regulations and factors.

2.3.2 Alternative C 2 - Individual Bluefin Quotas (Preferred)

This alternative would implement IBQs for vessels permitted in the Atlantic tunas Longline category (provided they also hold necessary limited access swordfish and shark permits) that would result in prohibiting the use of pelagic longline gear when the vessel's annual pelagic longline IBQ has been caught. This alternative would make minor alterations to the Purse Seine category quota system in conjunction with some of the IBQ subalternatives. The allocation of an IBQ share to individual vessels/permits as well as a provision for trade of IBQ would reduce

bluefin tuna dead discards by capping the amount of catch (landings and dead discards); provide strong incentives to reduce interactions and flexibility for vessels to continue to operate profitably; accommodate different fishing practices within the pelagic longline fleet; and create new potential for revenue (from a market for tradable IBQ). Trading of IBQ is important because the catch of bluefin among pelagic longline vessels is not evenly distributed geographically or amongst the fleet (i.e., most of the interactions with bluefin are by relatively few vessels). It would be very difficult to allocate quota to vessels in a way that vessels would have the amount of quota that they 'need' to account for their bluefin tuna landings and dead discards. The ability to lease, or sell, quota and augment the amount of quota a vessel (or the pelagic longline fishery as a whole) has available provides flexibility to account for different levels of catch (landings and dead discards). Sale of shares can directly affect the ability of the resulting IBQ management program to respond to any initial allocation anomalies; control future entry and exit to the fishery; help achieve goals for reducing overcapacity and improving economic efficiency; and achieve other established biological, economic and social objectives established (NOAA, Catch Share Policy, 2010).

Both bluefin landings and dead discards would count toward the IBQ. Various aspects and elements of an IBQ program are described separately as different alternatives below. The relationship of a particular alternative to another alternative is discussed where relevant. The specific objectives of the IBQ program are the following:

(1) Limit the amount of bluefin landings and dead discards in the pelagic longline fishery;

(2) Provide strong incentives for the vessel owner and operator to avoid bluefin tuna interactions, and thus reduce bluefin dead discards;

(3) Provide flexibility in the quota system to enable pelagic longline vessels to obtain bluefin quota from other vessels with available individual quota in order to enable full accounting for bluefin landings and dead discards, and minimize constraints on fishing for target species;

(4) Balance the objective of limiting bluefin landings and dead discards with the objective of optimizing fishing opportunities and maintaining profitability; and

(5) Balance the above objectives with potential impacts on the directed permit categories that target bluefin tuna, and the broader objectives of the 2006 Consolidated HMS FMP and MSA.

The alternatives for the IBQ program listed below relate closely to the four objectives of the program, as well as the characteristics of the bluefin tuna quota system.

For example, as discussed below in Alternative C 2c, the scope of the sub-alternatives regarding trading is limited because only two bluefin quota categories are associated with limited access permits. NMFS is not considering the creation of additional limited access permits at this time.

In the IBQ alternative below, the scope of the IBQ program does not include the NED subquota because it is managed under a separate quota allocation under ICCAT. Inclusion of the NED subquota would complicate the IBQ program and management of the NED area, without commensurate benefits, due to the limited nature of the NED fishery.

Individual Fishing Quotas (IFQs) are defined in Section 3(23) of the Magnuson-Stevens Act as "a Federal permit under a limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by a person." An IBQ would be an IFQ specifically for Western Atlantic Bluefin tuna. Like an IFQ, and IBQ would not confer any right to compensation and there would be no rights, title, or interest in any bluefin until it is landed or discarded dead. IBQs represent a quantity of catch expressed as a percentage (catch share) of the overall Total Allowable Catch. The components of the alternatives below are based upon the requirements of the Magnuson-Stevens Act regarding Limited Access Privileges Programs (LAPPs). In developing these IBQs, NMFS has outlined the initial allocation procedure to ensure it is fair and equitable as it relates to the initial allocations by reviewing and considering the current and historical bluefin interactions, dependence on the fishery, and the level of participation in the fishery at the individual vessel level. The IBQs were also designed after considering if they provide for and promote sustainable participation in the pelagic longline fishery and the businesses/communities that depend on this fishery. Lastly, NMFS has proposed a phased-in approach regarding tradability of IBQs, whether leasing annually or allowing the sale, to ensure there are no inequitable consolidations of IBQs during the programs implementation or in its continued operation.

On an annual basis, a permit/vessel's quota share, expressed as a percentage, would be applied to the relevant annual Longline category bluefin quota to determine the amount of annual IBQ (measured in weight (mt) or numbers of fish) associated with that vessel. As explained in some of the alternatives below, the IBQ would depend upon the scope of the program and its restrictions, as well as any quota set-aside program and other factors that influence the quota allocations as part of the annual specifications process.

Quota Transactions: Nomenclature

The term "IBQ" is a generic term that applies to the overall regulatory program, and may be used to refer to bluefin quota associated with a particular vessel. However, more precise terms are "quota share" and "quota allocation". For the purpose of this amendment, these terms are defined as follows:

Quota Share

A quota share is the *percentage* of the Longline category quota that is associated with a permitted vessel, based upon the quota share formula and the relevant vessel history (Alternative C 2b).

Quota Allocation

A quota allocation is the *amount* (mt) of bluefin quota that is associated with a permitted vessel, based upon the relevant quota share(s), and the annual Longline category quota.

Calculation of Quota Allocation

As described above, based upon an individual vessel's quota share (%), and the size of the Longline category quota (mt), a specific amount of bluefin quota (mt) would be allocated annually to a vessel.

For example, If vessel A has a quota share of 0.33 percent, and the Pelagic longline quota for the year were 74.8 mt, the vessel's annual allocation would be 0.25 mt (i.e., .0033 X 74.8 mt = 0.25 mt).

Sale of Quota Shares

Sales of quota share (percentage) between vessels are formal trades of fishing privileges. Once a quota share is sold, the buyer of the quota share holds it across multiple years or until he/she sells it. If Vessel A sold its entire quota share (0.33 percent) to Vessel B, Vessel A subsequently would have no quota share (0 percent). The sale of quota share from one vessel to another thus would result in a standing decrease in the amount of quota share associated with the vessel selling the quota share, and a fixed increase in the amount of quota share associated with the purchasing vessel.

Leasing of Quota Allocations

In contrast, a "quota allocation" is expressed in weight (lb, or mt), and transactions between vessels are temporary (i.e., leases). The lease of a quota allocation by one vessel from another could increase the amount of quota available for use by the receiving vessel during a single calendar year.

For example, Vessel A could lease 0.25 mt of its quota allocation to Vessel B for a particular calendar year without affecting either vessel's allocated quota shares. The next year, if the Longline quota is still 74.8 mt, Vessel A would still have an annual allocation of 0.25 mt. Its quota share, would not change.

In order to fish with pelagic longline gear for any HMS species, a vessel with limited access permits for Atlantic tunas, swordfish and shark would be required to have minimum quota allocation of bluefin to reduce the risk that vessels would land or discard dead Bluefin without an allocation (to account it). The minimum bluefin allocation required in order to depart on a trip would be either 0.25 mt whole weight (approximately 551 lb) if fishing in the Gulf of Mexico, or 0.125 mt whole weight (approximately 276 lb) if fishing in the Atlantic. A larger minimum quota allocation would be required for the Gulf of Mexico because the average size of the bluefin encountered by pelagic longline gear in the Gulf of Mexico is larger than the average size of the bluefin tuna encountered in the Atlantic. The two minimum increments reflect the historical patterns of bluefin catch in the pelagic longline fishery in the Gulf of Mexico. If a vessel has insufficient bluefin allocation to account for bluefin that have been retained or discarded dead, they must obtain additional quota allocation from another vessel (via lease) prior to departing on a subsequent trip.

Example A:

If a vessel has quota allocation of 0.25 mt, it would be able to start a trip and fish with pelagic longline gear in the Gulf of Mexico. If the vessel caught 0.25 mt of bluefin it would be used to account for the bluefin caught, and the vessel would have a quota allocation balance of zero. If the vessel intended to fish on a second trip in the Gulf of Mexico, it would have to lease an additional 0.25 mt of Bluefin before leaving on a subsequent trip.

Example B:

If a vessel has an allocation of 0.25 mt, and caught 0.50 mt of legal-sized bluefin on its trip, it could land the 0.50 mt of bluefin, but would be required to lease 0.25 mt of bluefin to repay the 'quota debt'. If the vessel planned to take a subsequent trip, it would then need to lease an *additional* 0.25 (before leaving on the next pelagic longline trip) to meet the minimum departure requirement. The same rules would apply if the bluefin is discarded dead, instead of landed.

If the vessel owner satisfies its quota debt, but is not able to obtain additional quota (i.e., the minimum amount of 0.25 mt required to depart on a pelagic longline trip), the vessel would not be able to fish with pelagic longline gear. If a vessel has not satisfied its quota debt and is not able to obtain the requisite amount of bluefin quota by an annual deadline specified by NMFS, their quota allocation would be reduced accordingly in the subsequent year. If that vessel has insufficient quota during the following fishing year to account for the previous year's quota, they would not be able to fish using pelagic longline gear until the quota debt is settled and they have the minimum quota share that is required to fish. If a vessel does not use its quota allocation, it may not carry forward the unused quota for its own use the following year. Consistent with the 2006 Consolidated HMS FMP and ICCAT recommendations, NMFS would annually adjustment and implement quotas and carry forward any underharvest as allowable.

The ability to buy, sell, and/or lease allocation enables a longer planning horizon for vessel owners, and flexibly in acquiring quota is generally considered more economically efficient than a fixed term quota. Also, the longer the duration of privileges, the greater the fishermen's stake in the fishery and the stronger the desire to conserve and protect the resource (Anderson and Holliday, 2007). Alternatives and sub-alternatives of the IBQ program are listed below inTable 2.6.

Table 2.10 Individual Bluefin Quota (IBQ) Alternatives

Alternative	**Sub-Alternatives (read across rows)**			
C 2a – Vessels eligible to receive bluefin allocation	C 2a.1 Any permitted Atlantic tunas longline vessel	C 2a.2 Active permitted Atlantic tunas longline vessels (preferred)		
C 2b – Bluefin quota allocations	C 2b.1 Equal quota	C 2b.2 Based on HMS	C 2 b.3 Based on HMS	C 2b.4 Regional

	shares of bluefin	landings	Landings and the Ratio of Bluefin Catch to HMS Landings (preferred)	designations and restrictions (preferred)
C 2c – Defining the scope of trading	C 2c.1 Trade of Quota among Pelagic Longline Vessels Only	C 2c.2 Trade among Pelagic Longline and Purse Seine Vessels (preferred)		
C 2d – Duration of quota trades	C 2d.1 Quota Allocation Trades (Annual Leasing of Quota) (preferred)	C 2d.2 Quota Share Trades (Sale of Quota)	C 2d.3 Future Development of Quota Share Trades (Sale of Quota) (preferred)	
C 2e – Trade execution and tracking	C 2e.1 Vessel owner executed trades (preferred)	C 2e.2 NMFS executed trades		
C 2f – Vessel and category limits on trading	C 2f.1 No Vessel Limits on Quota Allocation Trades (preferred)	C 2f.2 No Category Limits on Quota Allocation Trades (preferred)	C 2f.3 Future Development of Limits on Quota Allocation Trades (preferred)	
C 2g – Monitoring and enforcement of IBQs	C 2g.1 VMS reporting (preferred)	C 2g.2 Electronic monitoring (EM) of Longline category (preferred)	C 2g.3 NMFS Extrapolation of observer data (preferred)	
C 2h – Program	C 2h.1	C 2h.2		

evaluation	Program evaluation after 3 years (preferred)	Program evaluation after 5 years		
C 2i – Cost recovery	Cost Recovery up to 3% of costs (preferred)			
C 2j – Appeals of quota shares	Administrative procedure for appeals of quota shares (preferred)			
C 2k – Control date	Implementation of a control date in conjunction with the IBQ program (preferred)			
C 2l – Measures associated with a catch cap	C 2l.1a Elimination of target catch requirement No Action	C 2l.1b Mandatory retention of legal-sized bluefin (dead) (preferred)	C 2l.2a Elimination of target catch requirement No Action	C 2l.2b Mandatory retention of legal-sized bluefin (dead) (preferred)

2.3.2.1 Alternative C 2a – Vessels Eligible to Receive Bluefin Quota Shares

These alternatives would define the pool of vessels that would be eligible to receive initial bluefin quota shares. There are two alternatives that address the question "What vessels would be eligible to receive initial bluefin quota shares?" because they represent the largest scope of vessels as well as the subset of vessels that are active. Development of a third alternative would require the development of another criterion other than vessel activity that would be somewhat arbitrary.

2.3.2.1.1 Sub-Alternative C 2a.1 – Any Permitted Atlantic Tunas Longline Vessel

This sub-alternative would define the scope of vessels eligible to be allocated bluefin quota shares. Any vessel with a valid Atlantic Tunas Longline permit would be eligible to receive bluefin shares. The rationale for sub-alternative C 2a.1 is to use a simple definition of eligible vessels without eligibility criteria beyond holding a valid Atlantic Tunas Longline permit. This would create a large pool of eligible vessels. When the analysis for this DEIS was initiated, complete information for the 2012 year was not available. In the final EIS we will include new

information as available. As of October 2011, 242 vessels had Atlantic Tunas Longline category permits. A permit that is not associated with a vessel, such as a permit characterized as "No Vessel ID," is not eligible to receive quota share pursuant to the alternatives described under Sub-Alternative C 2a.1, but would be eligible to receive quota allocation through a lease/sale, if and when it was reassociated with a vessel (with other required limited access permits, i.e., swordfish and shark).

New Entrants to the Fishery – Subalternative 2a.1 would not alter the status quo for non-participants interested in participating in the pelagic longline fishery. Because the pelagic longline fishery is currently a limited access fishery, with a fixed maximum number of permits issued, potential new entrants would have to obtain (purchase) the required limited access permits from a current permit holder. Any permitted vessel as of 2011 would qualify the vessel to receive an allocation of bluefin quota share.

2.3.2.1.2 Sub-Alternative C 2a.2 – Active Permitted Atlantic Tunas Longline Vessels Only (Preferred)

Subalternative C2a.2 would define the scope of vessels eligible to be allocated bluefin quota shares. Only vessels with a valid Atlantic Tunas Longline permit that are active would be eligible to receive bluefin tuna shares. Active vessels are those vessels that made at least one set using pelagic longline gear between 2006 and 2011 (based on pelagic longline logbook data). 161 vessels would qualify as active under this definition. This range of years (six) provides a reasonable representation of historical fishing activity, including recent years. Six years is long enough to prevent short-term circumstances from disproportionately impacting a vessel, but not so long so that it does not reflect current fishery participation. When the analysis for this DEIS was initiated, complete information for the 2012 year was not available, and therefore, the end of the time period (2011) coincides with the data used to analyze the impacts of the alternatives (see Chapter 4). The rationale for sub-alternative C 2a.2 (active Atlantic Tunas Longline vessels only) is to explore and analyze eligibility criteria that would result in the creation of a smaller pool of eligible vessels assigned larger quota shares. Secondly, by allocating only to active vessels, this alternative would facilitate continued participation in the fishery by active vessels. Vessels that do not meet the initial eligibility criteria necessary to receive bluefin quota share allocation would still be eligible to obtain quota through a trade of quota share or allocation, if implemented (Alternatives 2 c, 2d, 2e, and 2f). A permit that is not associated with a vessel, such as a permit characterized as "No Vessel ID," would not be eligible for an initial quota share pursuant to Alternative C 2b, but would be eligible to receive a share or allocation (through a trade) if and when it was reassociated with a vessel (and other required limited access permits).

New Entrants to the Fishery – This sub-alternative would alter the status quo for non-participants interested in participating in the pelagic longline fishery. Because the pelagic longline fishery is currently a limited access fishery, with a fixed maximum number of permits issued, potential new entrants must obtain (purchase) a limited access permit (this aspect would remain unchanged). This sub-alternative would mean that new entrants to the fishery would need to either obtain a limited access permit with associated quota share, or obtain bluefin quota through lease/sale in order to fish.

2.3.2.2 Alternative C 2b –Bluefin Quota Share Formulas

These alternatives analyze potential methods of determining how much quota share an eligible vessel would receive. IBQ shares represent a specific percentage of the total available pelagic longline quota. If the total pelagic quota is adjusted or modified, for under or overharvest, for example, such adjustments would be distributed proportionately among eligible IBQ shareholders based on the percentage of shares each holds at the time of the adjustment.

In general, the use of historical data as part of an individual quota share (or a performance criteria as in sub-alternative B 3b) can be complex due to historical transfers of the limited access permit from one vessel to another or changes in vessel ownership. The quota share formulas under Alternatives C 2b.2 and C 2b.3 are based upon historical data associated with a permitted vessel. We determined that the historical 'platform' upon which to base the quota share should be the vessel history instead of the permit history for the following reasons: 1) Vessel history reflects current and historical participation in the fishery; 2) The regulations regarding the transfer of Atlantic Tunas Longline permits do not address fishing history (i.e., do not specify whether when an Atlantic Tunas Longline permit is transferred from one vessel to another, whether the fishing history also transfers; and 3) the structure of the databases in which the logbook data resides uses the vessel as a key organizing feature, and therefore the compilation of data associated with a particular vessel is simpler and less prone to error (i.e., it is more complex to compile data based on an individual permit history.

2.3.2.2.1 Sub-Alternative C 2b.1 – Equal Quota Shares of Bluefin

This sub-alternative would provide equal shares of bluefin to the pool of eligible vessels defined under Alternative C 2a. The rationale for equal shares of bluefin is to create a simple share system that does not rely on formulas or criteria and provides all eligible vessels the same quota share regardless of differences in catch history or vessel characteristics. The amount of quota allocation (by weight) per vessel that the quota share results in would depend upon the number of vessels the total quota is split among as well as the size of the Longline category quota. Table 2.11 includes estimates of what the quota allocation (mt) per vessel would be under various scenarios, including splitting the total quota among active vessels, or permitted vessels, and the amounts of quota that would result from the reallocation alternatives (Codified and Annual).

Table 2.11 IBQ Allocation (mt) per Vessel Based Upon Equal Shares under Various Quota Alternatives

Longline Category Quota		**Number of Eligible Vessels**	
Alterative(s)	mt	161 (active vessels) (mt/vessel)	253 (permitted vessels) (mt/vessel)
No Codified Reallocation (A 1)	74.8	.46	< .01
68 mt Codified Reallocation (A 2a) or Incorporation of Recent Catch (A 2b)	137	.85	.54
Codified Reallocation from Purse Seine to	143.5	.89	.57

Longline category (A 2c)			
No Codified Reallocation (A 1) and *Annual Reallocation of Unused Purse Seine Quota (A 3a)	160.7	1.0	.64
Codified Reallocation from Purse Seine to Longline category (A 2c) and *Annual Reallocation of .Unused Purse Seine Quota (A 3a)	195	1.21	.77
68 mt Codified Reallocation (A 2a) or Incorporation of Recent Catch (A 2b) and *Annual Reallocation of Unused Purse Seine Quota (A 3a)	216.7	1.35	.86

*Under the Annual Realloation Alternative (A 3), for the purpose of analysis, the potential amount of quota available from the Purse Seine category that would be reallocated to the Longline category is toward the upper end of the range (zero to 128.8 mt; Table 2.4). The number of permitted vessels as of October 2012 (SAFE Report, 2012)

2.3.2.2.2 Sub-Alternative C 2b.2 – Based on Designated Species Landings

This sub-alternative would provide bluefin quota shares to the pool of eligible vessels (defined under alternative C 2a) based upon historical landings of "designated" species: yellowfin, bigeye, albacore, and skipjack tunas, swordfish, dolphin, wahoo, and porbeagle, shortfin mako and thresher sharks. Specifically, a quota share would be based upon a vessel's landings expressed as weight during the six-year period from 2006 through 2011, using NMFS's dealer data (weigh-out slips) and logbook information.

The rationale for sub-alternative C 2b.2 (bluefin quota shares based on landings of designated species) is to allocate quota to vessels using the past and recent pelagic longline activity levels. The creation of bluefin quota shares based on this criterion would result in larger bluefin quota shares to some vessels than others, and reflects that some vessels catch more bluefin than others, and may reflect dependence upon the HMS fishery, or level of employment in the fishery. Landings of "the designated species" are an indicator of both the level of fishing effort and activity as well as vessel success at targeting those species. This sub-alternative recognizes that greater levels of fishing activity are likely to be correlated with a greater number of bluefin interactions, and reasons that vessels landing higher levels of target species should be allocated more bluefin. The historical landings and/or catch of bluefin are not included as criteria in this sub-alternative in order to minimize the influence of historical bluefin catch and regulations on the future bluefin allocations. This would avoid creating a system that rewards vessel with historical dead discards that may have been avoidable or bluefin landings in excess of regulations with increased bluefin quota share. The designated species were utilized instead of a more narrow set of 'target species' (i.e., swordfish, yellowfin tuna, and bigeye tuna) to determine bluefin quota share because catch of these species reflects the scope of relevant fishery, as these species are commonly landed by pelagic longline fishermen. The underlying objective is to

develop a method to allocate bluefin to participants in the pelagic longline fishery defined as active vessels issued the Atlantic Tunas Longline permit that is using pelagic longline gear. From 2006 through 2011, these designated species were caught by close to 100 percent of vessels that kept the 'target species,' with many vessels catching half as many, if not more, of these species as 'target species.'

The 161 active vessels in the pelagic longline fleet (Sub-Alternative C 2a.2) were sorted according to the total designated specs landings from 2006 through 2011, and then divided into three equal groups ("bins"), based on percentiles of landings from lowest to highest:

Low: 0 to < 33 percent;

Medium: 33 to < 66 percent; and

High: 66 to 100 percent

Each vessel within a particular bin would be allocated the same (percentage) of bluefin quota share. The use of bins as it pertains to quota shares is preferable to assigning each vessel a unique percentage because this method is simpler, and it provides a fair way to take into account the potential for minor historical data omissions or errors. Minor errors in the data would in most cases not affect the designation of a vessel to a particular bin. The appeals process (Alternative C 2j) would address valid concerns regarding the data used. Table 2.12 shows the three bins, total designated species landings in each bin, the number of vessels in each category, and other relevant information. NMFS determined the distribution of bluefin among the three bins, based upon providing a least one bluefin tuna (of 0.25 mt) to each vessel. Based upon the number of vessels in the "low" bin, the total amount of bluefin allocated to that bin is 13.5 mt (i.e., 54 vessels times the minimum allocation of 0.25 mt = 13.5 mt). The remaining 82 percent of the quota was then divided up to provide approximately 2 bluefin to the medium bin and 3 bluefin to the high bin.

Table 2.12 IBQ Allocation (mt) per Vessel Based on Designated Species Landings

Total Designated Specie Landings Bins (percentiles and catch, lb)		# Vessels	% of Active Vessels	% of Total Quota	Individual % of quota (quota share)	Per Vessel's bluefin allocation*
High 100 – 66%	1,782,032 – 367,609	53	33 %	53 %	1.00 %	0.75 mt
Medium 66 – 33%	367,608 – 127,076	54	33.5 %	29 %	0.53 %	0.40 mt
Low 33 – 0%	127,075 - 386	54	33.5%	18 %	0.33 %	0.25 mt

*Based on 74.8 mt and a conversion of 0.25 mt = 1 bluefin tuna)

2.3.2.2.3 Sub-Alternative C 2b.3 – Based on Designated Species and the Ratio of Bluefin Catch to HMS Landings (Preferred*)*

In this sub-alternative the amount of bluefin caught in the past is considered, in addition to the amount of target catch (i.e., designated species landings). This allocation formula would reward past bluefin tuna avoidance. Past fishing that resulted in minimal bluefin interactions (for whatever reason) would result in larger future allocations of bluefin. NMFS calculated bluefin catch to designated species ratios to explore the development of an alternative based solely on the ratio of bluefin to target catch. NMFS determined that the bluefin to designated species landings ratio should not be used as the sole criterion because vessels that had low fishing activity often had lower than average bluefin tuna catch to designated species ratios, and thus would get higher allocations. An allocation formula based upon only bluefin catch is discussed in the Considered, but Not Analyzed Further section of this document (2.6.3).

This sub-alternative would utilize both historical designated species landings (described in detail in sub-alternative C b2) and the bluefin catch to designated species landings ratio as two factors to allocate bluefin quota. The use of the two factors is intended to ensure a fair and equitable initial allocation, and take into consideration the diversity in vessel and harvest characteristics. Specifically, the quota share would be based upon: 1) A vessel's designated species landings in weight during the six-year period from 2006 through 2011, using NMFS's dealer data (weigh-out slips) and logbook information, and 2) bluefin tuna catch, using logbook information. Because the bluefin interactions to designated species landings ratio is very small, landings were multiplied by 10,000 in order to derive a ratio that is more practical (i.e., 0.95 instead of 0.000095). In order to combine the two metrics, scores were assigned to each metric (historical designated species landings and the bluefin catch to HMS landings ratio) and then the two scores combined to form the basis of the allocation. As explained under sub-alternative B2, active vessels were assigned to quota share categories in order to simplify the quota share system and minimize the importance of potential imprecision in the data. The 161 active vessels in the

pelagic longline fleet (Sub-Alternative C 2a.2) were sorted into three categories, using total designated species landings from 2006 through 2011, and then divided into three equal categories, based on percentiles of landings from lowest to highest (low, medium, and high, 0 to < 33 percent; 33 to < 66 percent and 66 to 100 percent, respectively). Similarly, the active vessels were sorted according to the ratio of bluefin interactions to HMS landings, from lowest to highest.

Scores were assigned to each category (1 to 3, "Low" to "High") in order to allow the two metrics to be combined.

For example, as shown in Table 2.11, a vessel with a 2006 – 2011 weight of designated species landings of greater than or equal to 367,609 lb (the 66 to 100th percentile of landings) would be placed in the "High" category and assigned a score of 3. In contrast, a vessel with a total designated species landing of only 95,000 pounds for 2006 through 2011 would receive a designated species landings score of 1. A vessel with a bluefin to designated species landings ratio of less than 0.2884 (66 to 100th percentile of bluefin to designated species landings ratios), would place in the top category and receive a bluefin to designated species landings ratio score of 3. A low ratio indicates relatively few bluefin interactions and therefore receives a high score.

For each vessel, the score for designated species landings was added to the score for bluefin to designated species ratio.

For example, if a vessel scored in the "High" category for both designated species landings and bluefin to designated species landings its combined score would be 6 (3 + 3). For a vessel scored High for bluefin ratio, but Low for designated landings would be scored a 4 (1 + 3) and it would be placed in the Medium rating score bin (Table 2.17). Vessels assigned to a particular bin would get equal shares of bluefin tuna quota (i.e., each vessel in the Low category in Table 2.12 would be allocated a share of 0.33%).

Table 2.13 Scoring of the Two Factors That Determine IBQ Allocation in Sub-Alternative B3.

Bins **(Based on Percentiles)**	**Designated Species Landings (lb)**	**Bluefin / Designated Species Landings Ratio***
High (66 - 100%)	≥ 367,609 (Score 3)	< 0.2884 (Score 3)
Medium (33 - < 66%)	367,608 – 127,075 (Score 2)	0.2884 – 0.9427 (Score 2)
Low (0 - < 33%)	< 127,075 (Score 1)	>0.9427 (Score 1)

*times 10,000 to derive a ratio that is more practical (i.e., 0.95 instead of 0.000095).

Table 2.14 IBQ Allocation per Vessel (mt) Based on Designated Species Landings and the Ratio of Bluefin Catch to HMS Landings.

Categories (Based on Scores)	# Vessels	% of Active Vessels	% of Total Quota	Individual % of quota (quota share)	Per Vessel bluefin allocation*	Per Bin bluefin allocation*
High (6 – 5)	47	29 %	48 %	1.02 %	0.76 mt	35.72 mt
Medium (4)	71	44 %	38 %	0.53 %	0.40 mt	28.4 mt
Low (3 – 2)	43	27 %	14 %	0.33 %	0.25 mt	10.75 mt

*Based on 74.8 mt and a conversion of 0.25 mt = 1 bluefin tuna.

NMFS determined the how to divide the bluefin among the three categories based on the numbers of vessels in each category, and by first providing the lowest category allocations at least one bluefin tuna (i.e., 0.25 mt). This amount of quota (0.25 mt) is equivalent to 0.33% of the total quota, therefore the quota share for a vessel in the "Low" category would be 0.33%. By ensuring an allocation for all active vessels, rather than allocating zero bluefin for some vessels, the alternative would provide for sustained participation in the fishery. Based upon the number of vessels in the "Low" category (43), the total amount of bluefin allocated to the "Low" category is 10.75 mt (i.e., 43 vessels X 0.25 mt/vessel = 10.75 mt). The remaining 85.6 percent of the quota was then divided up to provide approximately two bluefin to the Medium category and three bluefin to the High category as an allocation.

2.3.2.2.4 Sub-Alternative C 2b.4 – Regional Designations and Restrictions (Preferred)

After allocating quota shares based upon the allocation formula (Alternatives C 2b.1, C 2b.2, or C 2b.3), this subalternative would then designate all pelagic longline quota shares and allocations as either "Gulf of Mexico" or "Atlantic" based upon the geographic location of sets (associated with the vessels fishing history used to determine the vessel's quota share). Gulf of Mexico quota allocation could be used in either the Gulf of Mexico or the Atlantic, but Atlantic quota allocation could only be used in the Atlantic (and not the Gulf of Mexico). For a vessel to fish in the Gulf of Mexico, the vessel would be required to have the minimum amount of bluefin quota to depart on a trip to fish with pelagic longline gear, but the quota would have to be Gulf of Mexico quota. This alternative would also designate all quota allocated to Atlantic Tunas Purse Seine vessels as "Atlantic", subject to the restriction that it may only be used in the Atlantic (by either a Purse Seine or via a trade to a pelagic longline vessel).

If a vessel had fishing history in both the Gulf of Mexico and Atlantic, it may receive quota shares of both the Gulf of Mexico and Atlantic, depending upon the amount of quota share and the proportion of fishing history in the two areas. A relatively small percentage of sets one area would not be reflected in the quota share. If, based on the allocation system described under sub-alternative C 2b.3, a vessel would be allocated less than a minimum share amount for a

particular area (i.e., less than 0.125 mt for the Atlantic or less than 0.25 mt for the Gulf of Mexico), the allocation would instead be designated the other of the two designations.

For example, if a vessel is qualifies for a quota share of 0.53 % (which in these examples equates to a quota allocation of 0.40 mt), and had historically fished 75 percent of its sets in the Gulf of Mexico, the vessel would not receive a separate quota share for the Atlantic. Splitting a 0.53% quota share between the Gulf of Mexico and the Atlantic reflecting the 75% history in the Gulf of Mexico and 25% history in the Atlantic is not possible, given minimum quota increments defined. Twenty five percent of a quota allocation of 0.40 mt is 0.10 mt, which is less than the minimum quota share increment of 0.125 mt. The vessel would be allocated a 0.53% Gulf of Mexico quota share and no Atlantic quota share. It should also be noted that Gulf of Mexico quota shares can be fished in the Atlantic and therefore under this example the vessel would be able to operate as they had historically.

This alternative is intended to prevent potential increases in bluefin catch in the Gulf of Mexico, which could occur if fishing effort was redistributed from the Atlantic to the Gulf of Mexico through either vessel or permit movement, or trade of quota allocation. This alternative would also reflect the regional differences in the fisheries between the Gulf of Mexico and the Atlantic. Because bluefin tuna in the Gulf of Mexico are comprised of large fish that may be sexually mature or spawning, limiting the potential for increases in fishing effort with pelagic longline gear in the Gulf of Mexico may also enhance spawning potential and stock growth. NMFS would have the ability to remove or alter this restriction through inseason action in accordance with the criteria that pertain to quota adjustment. For the purposes of this alternative, the Gulf of Mexico region includes all waters of the U.S. EEZ west and north of the boundary stipulated at 50 CFR 600.105(c) and the Atlantic region includes all other waters of the Atlantic Ocean.

2.3.2.3 Alternative C 2c –Defining the Scope of IBQ Trading

Only two subalternatives were analyzed because only two permit categories in the directed and incidental bluefin fishery are limited access systems. Only the Longline and Purse Seine categories have a limited number of fishing permits issued. The other permit categories such as General category or Angling category are open access, and there is not a limit to the number of vessels that may obtain a permit. Other categories (e.g., General category) would not be authorized to lease or sale bluefin quota. Allowing trading with the other permit categories would not be feasible because they are open access fisheries, without a defined pool of eligible participants. Furthermore, such fisheries do not have individual vessel allocations. Without a limited access system and the allocation of individual quotas, there is little justification for allowing the trading of quota. A limited access fishery and individual quota system are usually prerequisites for quota trading. The logistical and administrative aspects of leasing or selling quota, as well as the associated economic incentives require a known and stable universe of participating vessels. NMFS is not currently considering the creation of limited access fisheries for the open access permit categories.

2.3.2.3.1 Sub-Alternative C 2c.1 – Trade of Quota among Pelagic Longline Vessels Only

This sub-alternative would allow trading (leasing or selling) of bluefin quota shares or quota allocation among permitted Atlantic Tunas Longline category vessels only, and would not include trading with other limited access quota categories such as the Atlantic Tunas Purse Seine. The rationale for this sub-alternative is to provide flexibility for pelagic longline vessels to obtain, via lease or sale, quota as necessary, so that allocations may be aligned with catch (i.e., vessels that catch bluefin may be able to obtain quota from those that do not interact with bluefin, or have not used their full allocation of bluefin). This sub-alternative would constrain the amount of bluefin quota available to the Longline category vessels to the Longline category quota, and not make additional quota available. Quota trades would be allowed among all Longline category vessels with a valid limited access permit, regardless of whether they have been allocated quota under Alternative C 2b. If a vessel catches bluefin using quota that has been leased from another vessel, the fishing history associated with the catch of bluefin tuna would be associated with the vessel that catches the bluefin (the lessee, not the lessor vessel).

2.3.2.3.2 Sub-Alternative C 2c.2– Trade among Pelagic Longline and Purse Seine Vessels (Preferred)

This sub-alternative would allow trade of bluefin quota shares (sale) or quota allocation (lease) between those permitted in the limited access Atlantic Tunas Longline and Purse Seine categories. This sub-alternative would provide flexibility for pelagic longline vessels to lease, or buy/sell quota as necessary, so that allocations may be aligned with catch (i.e., vessels that catch bluefin may be able to obtain quota from those that do not interact with bluefin, or have not used their full allocation of bluefin). This sub-alternative would not constrain the amount of bluefin quota available to pelagic longline vessels (i.e., through the Longline category quota), but would make additional quota available if Purse Seine category permit holders are willing to lease/sell quota. This alternative would also modify the Purse Seine category regulations which currently restrict the trade of Purse Seine quota to vessels with Purse Seine category permits. Purse Seine quota would be tradable to vessels with an Atlantic tunas longline permit. Similarly, Purse Seine vessels would be able to lease/buy quota allocation from pelagic longline vessels. Quota trades would be allowed among all Longline category vessels with a valid limited access permit, regardless of whether they have been allocated quota under Alternative C 2b. If a vessel catches bluefin using quota that has been leased/bought from another vessel, the fishing history associated with the catch of bluefin tuna would be associated with the vessel that catches the bluefin (the lessee, not the lessor vessel). In other words, the lessee (vessel catching the fish) gets the ‘credit’ for the landings and dead discards, and not the lessor (the vessel that leased the quota allocation to the catching vessel).

2.3.2.4 Alternative C 2d – Duration of Quota Trades

2.3.2.4.1 Sub-Alternative C 2d.1 – Leasing Quota Allocation (Annual) (Preferred)

This sub-alternative would allow temporary leasing of bluefin quota among eligible vessels on an annual basis. Temporary quota leasing would give vessels flexibility to acquire quota, but as

a separate and distinct type of transaction versus the actual sale of quota share. Vessel owners would be able to obtain quota on an annual basis to facilitate their harvest of target species. Sub-leasing of quota would be allowed (i.e., quota leased from Vessel A to Vessel B, then to vessel C). This sub-alternative may be combined Sub-Alternative C 2d.2 (Sale of Quota share) if implemented. IBQ allocation leases of one year duration would coincide with the time period of annual quota allocation for the fishery as a whole. For a particular calendar year, an individual lease transaction would be valid from the time of the lease until December 31.

2.3.2.4.2 Sub-Alternative C 2d.2 – Sale of Quota Share

This sub-alternative would allow for the sale of quota share among eligible vessels. Through this sub-alternative, vessel owners would be able to purchase (or sell) quota share and perpetually increase (or decrease) their quota share percentage. Formal sale of quota share provides a means for vessel owners to plan their business and manage their quota according to a longer time scale than a single year. Vessel owners may be able to save money through a single quota share transaction instead of reoccurring annual quota allocation transactions. This sub-alternative may be combined with the temporary leasing of quota, but is a separate and distinct type of transaction. (Note, that elsewhere in this document NMFS considers measures for codified quota reallocation alternatives unrelated to an IBQ program; See Alternative A 2). To enable effective accounting and reduce program complexity, formal quota share sales would become effective in the subsequent year to the sale itself, and would have to be executed prior to the annual allocation of quota to quota shareholders. Annual allocation of quota needs to occur at one time, based on a fixed pool of quota share owners. Quota shares eligible for sale would be limited to the amount of quota an individual entity could trade in order to prevent the accumulation of an excessive share of quota.

2.3.2.4.3 Sub-Alternative C 2d.3 – Future Development of Sale of Quota Share (Preferred)

This sub-alternative would allow for the sale of quota shares among eligible vessel owners, in the future, after NMFS and fishery participants have multiple years of experience with the IBQ program. Until NMFS develops and implements an IBQ sale program, vessel owners would only be able to conduct temporary (annual) leasing of quota allocation, and therefore vessel owners would not be able to purchase (or sell) quota share in order to increase (or decrease) their quota share percentage. A phased-in approach would reduce risks for vessel owners during the initial stages of the IBQ program, when the market for bluefin quota shares would be new and uncertain. During the first years of the IBQ program, price volatility may be reduced, as well as undesirable outcomes of selling or buying quota shares at the “wrong” time or price. Furthermore, a stock assessment is scheduled for 2015 that could have implications regarding the implementation of the IBQ program. NMFS intends to develop a program to allow the sale of quota share in the future because it would provide a means for vessel owners to plan their business and manage their quota according to a longer time scale than a single year, in a manner that would be informed by several years of the temporary leasing market. NMFS may wait until a formal evaluation of the IBQ program before developing this alternative (see IBQ Program Evaluation Alternatives C 2h.1 and C 2h.2). This sub-alternative may be combined with the temporary annual leasing of quota allocation, but is a separate and distinct type of transaction.

In conjunction with the sale program, NMFS would establish a maximum share, and other limits on quota share accumulation as necessary in order to comply with the MSA § 303A requirement that limited access privilege holders do not acquire an excessive share of the total limited access privileges in the program. A limit on the accumulation of quota shares may reduce the likelihood of changes in the characteristics of the pelagic longline and/or Purse Seine fishery that have negative effects on participating vessels or fishing communities, or potential new participants (e.g., the number of active vessels, distribution of fishing effort, inequitable concentration of limited access privileges, etc.). A phased-in approach to the development of quota share accumulation limits would enable NMFS to develop a share accumulation limit that is based on relevant data from the IBQ program. NMFS would utilize data on the temporary leasing of bluefin allocation under the IBQ program, as well as related data on vessel ownership in order to effectively implement and enforce accumulation limits.

2.3.2.5 Alternative C 2e –Trade Execution and Tracking

NMFS is carefully considering the design of the administrative system that would support execution and tracking of bluefin quota allocation leasing and future quota share sales. The processes and tools for executing transactions affect if, how, and at what costs fishermen acquire the quota they need and trade the quota they do not need. If quota transactions occur fairly easily and quickly, fishermen have the flexibility needed to react to changing conditions and needs. (Cap Log Report, 2012). NMFS may consider one administrative system for the leasing of quota allocation and a second for the sale of quota shares. NMFS would be involved in the administration and tracking of any quota trade system. The essential difference between the two alternatives is whether the system is an automated system (administered by NMFS) with the trades executed by the vessel owner, or whether the system is a paper based system with applications submitted to NMFS for review.

2.3.2.5.1 Sub-Alternative C 2e.1 – Electronic IBQ Trade Monitoring (Preferred)

Under this sub-alternative, quota allocation leases and/or quota share sales would be executed by the eligible vessel owners, or their representatives via a web-bases system. For example, the two vessel owners involved in a lease of quota, or if implemented via a subsequent action the sale of quota, could log into a password protected web-based computer system (i.e., a NMFS database), and execute the trade. Owner-executed electronic trades would provide the quickest execution of a of leases, or sales, because any eligibility criteria would be verified automatically based on information loaded into that system, and would not involve the submission or review of a paper application, as well as the lag time associated with NMFS staff being directly involved in the approval process.

2.3.2.5.2 Sub-Alternative C 2e.2 – Paper based IBQ Trade Monitoring

Under this sub-alternative, quota allocation and quota share trades would be executed by NMFS staff via paper applications. A complete application for lease, or sale, of quota share could be submitted by the two vessel owners involved in the quota share transaction, and NMFS would review and approve/disapprove the transaction based on eligibility criteria as well as processing

the to track the various trades. This method would not include the use of an internet based system, but would rely upon mail or facsimile submission of applications by the vessel owners to NMFS.

2.3.2.6 Alternative C 2f – Vessel and Category Limits on Trades

2.3.2.6.1 Sub-Alternative C 2f.1 – No Individual Vessel Limits on Quota Allocation Trades (Preferred)

Under this sub-alternative, there would be no limit on the amount of quota allocation an individual vessel (Longline or Purse Seine) could lease annually, except for the sum of the Longline and Purse Seine categories collective allocations. This alternative would provide flexibility for vessels to purchase quota in a manner that could accommodate various levels of unintended catch of bluefin, and enable the development of an unrestricted market. Because the duration of a temporary lease would be limited to a single year and there is no rollover provision, the impacts on an unrestricted market for bluefin quota would be limited in duration. Information on this unrestricted market could be used to develop future restrictions (through proposed and final rulemaking) as they pertain to refining leasing restrictions and/or used to inform the development of future sales.

2.3.2.6.2 Sub-Alternative C 2f.2 – No Category Limits on Quota Allocation Trades (Preferred)

Under this sub-alternative, there would be no limit set on the total amount of quota that either the Longline or Purse Seine categories (in their entirety) could lease annually. This alternative would provide flexibility for vessels to purchase quota in a manner that could accommodate various levels of unintended catch of bluefin, and enable the development of an unrestricted market. Because the duration of a temporary lease would be limited to a single year, the impacts on an unrestricted market for bluefin quota would be limited in duration and by the amount of quota allocated to these two categories. Information on this unrestricted market could be used to develop future restrictions (through proposed and final rulemaking), if necessary.

2.3.2.6.3 Sub-Alternative C 2f.3 – Future Development of Limits on Quota Allocation Trades (Preferred)

Under this sub-alternative, NMFS would consider the development of limits on the amount of quota allocation an individual vessel (Longline or Purse Seine), or the Longline or Purse Seine categories (in their entirety) could lease annually. Although at the initiation of the IBQ program, NMFS does not believe there is justification for a limitation, it is possible that a limit may be deemed necessary in the future to reduce the likelihood of excessive allocation, or other potential problems such as the number of active vessels or the distribution of fishing effort. Such a restriction would be developed through proposed and final rulemaking.

2.3.2.7 Alternative C 2g – Monitoring and Enforcement of IBQs

The measures under this alternative are based on the premise that the success of an IBQ program rests upon the ability to: Track ownership of quota shares and quota allocation holders; allocate

the appropriate amount of annual harvest privileges (quota allocation); reconcile landings and dead discards against those privileges; and then balance the amounts against the total allowable quota. The current pelagic longline reporting requirements and the monitoring program that provide data on pelagic longline bluefin landings and dead discards were not designed to support inseason accounting of dead discards. More timely information on catch would be necessary in order to monitor a pelagic longline IBQ, inclusive of dead discards.

2.3.2.7.1 Sub-Alternative C 2g.1 – VMS Reporting (Preferred)

This sub-alternative is the same management alternative described in Alternative D 1b of this document. This alternative is intended to support the implementation of a pelagic longline IBQ.

2.3.2.7.2 Sub-Alternative C 2.g.2 - Electronic Monitoring (EM) of Longline category (Preferred)

This sub-alternative is the same management alternative described in Alternative D 2b of this document. This alternative is intended to support the implementation of a pelagic longline IBQ.

2.3.2.7.3 Sub-Alternative C 2g.3 – NMFS Extrapolation of Observer Data (Preferred)

Under this sub-alternative (which would not make any regulatory changes, but is intended to inform the public and solicit comment on a management method), in order conduct inseason quota monitoring and estimate total bluefin dead discards and landings, NMFS may extrapolate observer-generated data (in-season) regarding bluefin discards (rate, number, location, etc.) by pelagic longline vessels, based on reasonable statistical methods, and available observer data. This approach would not require a regulatory change, but would inform the public that NMFS would consider this as an acceptable management practice if warranted. NMFS could then use this observer information in conjunction with or in place of vessel-generated estimates of bluefin discards in order to develop inseason estimates of total bluefin landings and dead discards. NMFS may use this method to estimate dead discard rates of bluefin for individual vessels in the context of an IBQ program. This management approach would address the potential for uncertain dead discard data from the pelagic longline fleet that may result from challenges in the implementation of new regulations, technical problems relating to the reporting and monitoring system, or time lags in the availability of data.

2.3.2.8 Alternative C 2h – Formal IBQ Program Evaluation

2.3.2.8.1 Sub-Alternative C 2h.1 – IBQ Program Evaluation after 3 years (Preferred)

Under this sub-alternative, NMFS would formally evaluate the program after three years of operation and provide the HMS Advisory Panel with a publicly-available written document with its findings. NMFS would utilize its standardized economic performance indicators as part of its review (NMFS, Office of Science and Technology). The standardized economic performance indicators are listed in Table 2.13. NMFS developed standardized indicators in order to measure the success and performance of catch share programs. For example to evaluate the Amendment

7 IBQ program, NMFS would compare the revenues (performance measure) prior to implementation of the IBQ program to the revenues, during the first 3 years of the program. Specifically, in order to measure revenues, NMFS would use the indicators listed in Table 2.16 (e.g., aggregate revenue from target species). Most, but not all of the indicators in Table 2.16 are relevant to the evaluation of this IBQ program. The definitions of these indicators are included in the Appendix. Other indicators would include the number of and distribution of bluefin interactions.

Table 2.15 List of Tier I Performance Indicators for Catch Share Programs

Performance Measure	Indicator
Catch and Landing	Quota allocated to catch share program
	Aggregate landings
	Quota exceeded (Y/N)
Effort	Entities holding Quota share
	Active vessels
	Season length
	Trips
	Days at sea
Revenues	Aggregate revenue from catch share species (bluefin tuna)
	Aggregate revenue from non-catch share species (target species)
	Non-catch share species revenue
	Gini Coefficient
Accumulation	Share cap in place (Y/N)
Cost recovery	Cost recovery fee
Derived Indicators	
Prices	Average price
Revenues	Total revenue
	Revenue per active vessel
	Revenue per trip
	Revenue per day at sea
Catch and landings	% utilization

Source: NMFS Office of Science and Technology

2.3.2.8.2 Sub-Alternative C 2h.2 – IBQ Program Evaluation after 3 years (Preferred)

Under this sub-alternative, NMFS would conduct a formal evaluation of the IBQ program after three years of operation and provide the HMS Advisory Panel with a written document with its findings. As described above, NMFS would utilize its standardized economic performance indicators (and associated standardized definitions) as part of its review.

2.3.2.9 Alternative C 2i – Cost Recovery (Preferred)

Under this alternative, NMFS would develop and implement a cost recovery program of up to 3 percent of the costs of management, data collection and analysis, and enforcement activities. The Magnuson-Stevens Act provides NMFS the authority for cost recovery under § 303A(e). A cost recovery program would not be implemented until after the IBQ program evaluation described in Alternative C 2h. Immediate implementation of a cost recovery program without the information obtained from the operation of the fishery under an IBQ program would be very difficult, and increase costs and uncertainty for fishing vessels during a time period when the fishery would be bearing other new costs and sources of uncertainty.

2.3.2.10 Alternative C 2j - Appeals of Quota Shares (Preferred)

This alternative would implement an appeals process for administrative review of the Secretary's decisions regarding initial allocation of quota shares for the IBQ program. Vessels owners would be able to appeal their initial quota share to the National Appeals Office of NMFS by submitting a written request to appeal, indicating the reason for the appeal and providing supporting documentation for the appeal (e.g., copies of landings records and/or permit ownership, etc.). The appeal would be evaluated by National Appeals Office staff in concert with HMS Management Division staff. Specifically, the items subject to appeal would be: (1) Initial eligibility for quota shares based on ownership of an active vessel with a valid Atlantic Tunas Longline permit combined with the required shark and swordfish limited access permits; 2) the accuracy of NMFS records regarding that vessel's amount of designated species landings and/or bluefin interactions; and 3) correct assignment of target species landings and bluefin interactions to the vessel owner/permit holder. NMFS permit records would be the sole basis for determining permit transfers. As discussed under Alternatives C 2b.2 and C 2b.3, the quota share formulas are based upon historical data associated with a permitted vessel. Because vessels may have changed ownership or permits transferred during 2006 to 2011, the current owner of a permitted vessel may also appeal on the basis of a potential inequity based upon historical changes in vessel ownership or permit transfers. Appeals based on landings data would be based on NMFS logbook data, weighout slips, and other relevant information. Appeals based on bluefin interactions may be based on logbook, observer, or other NMFS data. Appeals based on hardship factors would not be considered. In order to appeal, the vessel owner would be required to submit a written request to appeal, indicating the reason for appealing and provide supporting documentation for the appeal (e.g., copies of landings records and/or permit ownership).

2.3.2.11 Alternative C 2k – Control Date (Preferred)

If an IBQ program is implemented, this alternative would implement a control date in conjunction with the implementation (effective date) of the IBQ program. The control date would serve as a reference date that may be utilized with future management measures. The implementation of a control date by itself would have no effect, but would provide NMFS with a potential management tool that may be utilized if necessary as part of a future management measure. A control date is typically used to discourage speculative fishing behavior or speculative entry into a fishery and notifies the public that a date may be used in conjunction with future management measures. With a control date, NMFS may implement management measures that give variably weighted consideration to vessels before and after the control date on

the basis of catch, fishing activity, or other criteria. It is possible that the implementation of an IBQ program could result in speculative fishing behavior or quota transactions, undesirable distributions of harvesting privileges, or other unintended consequences. If a regulatory response to such changes in the fishery is warranted, the existence of a control date coincident with implementation of the IBQ program would provide NMFS the flexibility to consider the control date as part of its regulatory response. The timing of a control date (i.e., implementation of a control date prior to potential changes in the fishery) may be important to the effectiveness of a future management measure. NMFS may also choose to take no future action with respect to the control date, or may choose a different control date in the future.

2.3.2.12 Alternative C 2l - Measures Associated with an IBQ (Preferred)

2.3.2.12.1 Sub-Alternative C 2l.1 – Elimination of Target Catch Requirement

2.3.2.12.2 Sub-Alternative C 2l.1a - No Action

Under this sub-alternative, the current target catch requirements would remain in effect. Currently, NMFS restricts the number of incidentally caught bluefin a pelagic longline vessel may retain in relation to the amount of target species retained and sold. Under current regulations, one large medium or giant bluefin (73” or greater) per vessel per trip may be landed, provided that at least 2,000 lb of species other than bluefin 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 bluefin may be landed incidentally to at least 6,000 lb of species other than bluefin; and three large medium or giant bluefin may be landed incidentally to at least 30,000 lb of species other than bluefin. These limits apply in all areas, including the NED.

2.3.2.12.3 Sub-Alternative C 2l.1b - Elimination of Target Catch Requirement (Preferred)

This sub-alternative would eliminate the current target catch requirements for pelagic longline vessels. This alternative is intended to work in conjunction with an IBQ. The objective of this alternative is to reduce bluefin dead discards and optimize fishing opportunity for target species. The target catch requirement acts at the level of an individual trip to limit bluefin retention, but does not prevent interactions potentially resulting in discarding bluefin dead (although it is intended to disincentivize interactions with bluefin by reducing any financial incentive for such interactions by limiting retention). The target catch requirement therefore contributes to the discarding of bluefin if the amount of target catch species is insufficient to retain the numbers of bluefin caught. If an IBQ program is implemented, elimination of the target catch requirement could reduce dead discards, and enable vessels to fish for target species in a more flexible manner. A vessel that has caught some bluefin but has insufficient target species to meet the target catch requirement would no longer have to choose between discarding bluefin or fishing for more target species; rather, the vessel would use the annual individual bluefin quota (IBQ). Thus, the IBQ would replace the target catch requirement as the means of limiting the amount of bluefin landed and discarded dead per vessel on an annual basis, instead of on a per trip basis.

Eliminating the target catch requirements in conjunction with a regional quota or group quota is not being considered. If the target catch requirement were eliminated in the context of a regional or group quota, there would be little incentive for vessels to reduce or avoid interactions with bluefin because there would be no limitation on bluefin landings or dead discards or accountability at the level of the individual vessel. Under a regional or group quota, if the target catch requirement were removed, a vessel could catch large amounts of bluefin, and have a disproportionate impact on 'filling' the overall quota. A relatively small number of vessels could cause the prohibition of the use of pelagic longline gear and end such fishing opportunities for the rest of a year. Elimination of the target catch requirement in the context of a regional or group quota may not achieve the objectives of Amendment 7.

2.3.2.12.4 Sub-Alternative C 2l.2 – Mandatory Retention of Commercial Legal-Sized Bluefin (dead)

2.3.2.12.5 Sub-Alternative C 2l.2a - No Action

This sub-alternative would maintain the status quo regarding retention of bluefin by pelagic longline vessels. There would be no requirement to retain commercial legal-sized fish. Vessels would be able to discard bluefin even if they are of commercial legal-size (i.e., 73" or greater) and dead. In the event the IBQ alternative is finalized, all dead discards would be accounted for under that program.

2.3.2.12.6 Sub-Alternative C 2l.2b - Mandatory Retention of Legal-Sized Bluefin (dead) (Preferred)

Pelagic longline vessels would be required to retain all legal-sized commercial bluefin tuna that are dead at haul-back. This measure is intended to function in conjunction with the IBQ system and elimination of the target catch requirements. Requiring the retention of all legal-sized commercial (i.e., 73" or greater) dead bluefin is intended to reduce dead discards and would eliminate the situation where it is legal to discard a legal-sized commercial bluefin, if dead at haul-back. Because these fish would be required to be retained, legal discards and the waste of fish would be decreased, and it would be more likely that such fish are accurately accounted for, and result in a positive use (marketed, used for scientific information, etc.). If necessary in the future (in response to ICCAT recommendations, changes in the size frequency distribution of bluefin, fishery changes, etc.), NMFS could reduce the minimum size further (under currently existing authority, through proposed and final rulemaking), and mandatory retention of legal-sized bluefin may continue to apply.

A requirement to retain all legal-sized commercial dead bluefin in conjunction with a regional or group quota is not considered. If a mandatory retention limit were implemented in the context of a regional or group quota, there would be little incentive for vessels to reduce or avoid interactions with bluefin because there would be no limitation on bluefin landings or dead discards or accountability at the level of the individual vessel. Under a regional or group quota, if there were a mandatory retention requirement, a vessel could catch large amounts of bluefin,

and have a disproportionate impact on 'filling' the overall quota. A relatively small number of vessels could cause the prohibition of the use of pelagic longline gear and end such fishing opportunities for the rest of a year. A mandatory retention requirement in the context of a regional or group quota may not achieve the objectives of Amendment 7.

2.3.3 Alternative C 3 – Regional and Group Quota Controls

2.3.3.1 Alternative C 3a – Regional Quotas

This alternative would implement annual bluefin quotas by region for vessels possessing the Atlantic Tunas Longline category permit (combined with the required shark and swordfish limited access permits) that would result in prohibiting the use of pelagic longline gear when a particular *region's* annual bluefin quota has been caught. Both bluefin landings and dead discards would count toward the regional quota. Annual bluefin quotas would be associated with defined geographic regions. The rationale for this alternative is that regional quotas may be simpler than an IBQ system and have advantages over a single quota allocated for the entire Longline category. Regional quotas associated with specified regions would be relatively independent from one another, and therefore reduce the potential for 'derby' fishing behavior (where there is the incentive for individual vessels to fish sooner rather than later). There is more accountability for those fishing in a particular region, because there would be limits in each region rather than a single limit for the entire category, with no restriction on the relative number of bluefin that could be landed or discarded dead in a particular region.

Specifically, the regions would be those currently defined to support the Longline category reporting requirements: Caribbean (CAR), Gulf of Mexico (GOM), Florida East Coast (FEC), South Atlantic Bight (SAB), Mid-Atlantic Bight (MAB), Northeast Coastal (NEC), Northeast Distant (NED), North Central Atlantic (NCA), Sargasso (SAR), and Southern Atlantic Tuna (SAT).

Figure 2.8 shows the regions. NMFS would be able to transfer quota between regions.

The design of a regional quota system in the above regions is complicated by the fact that the current Longline category quota is divided into northern and southern sub-quotas, allocated 40 and 60 percent of the overall quota, respectively. The latitudinal line that separates the regions to which the northern and southern quotas apply (31° 00' North Latitude) does not coincide with the junctions of the regions, but runs through the middle of the Sargasso Region and the North Central Atlantic Region, and is just north of the junction of the Florida East Coast Region and the South Atlantic Bight (at 30° 00' North Latitude). Furthermore, the Northeast Distant area would continue to be allocated a separate amount of bluefin (25 mt), consistent with ICCAT recommendations. When NMFS projects that the quota for a region is going to be reached, it would file a closure notice with the Office of the Federal Register for publication, and fishing with pelagic longline gear would be prohibited in that area. Vessels would be required to complete scheduled and ongoing trips prior to the closure date/time. Criteria for NMFS consideration for closure could include elements such as: total estimated bluefin catch in relation to the regional quota; the estimated amount by which the bluefin quota might be exceeded; usefulness of data relevant to monitoring the quota; relatively high uncertainty in the documented or estimated dead discards or total catch of bluefin; high amount of bluefin caught

within a short time; the effects of continued fishing on bluefin rebuilding and overfishing; provision of reasonable opportunity for pelagic longline vessels to pursue the target species; and variations in seasonal distribution, abundance or migration patterns of bluefin, etc. When fishing with pelagic longline gear has been prohibited, the use of other authorized gear such as green-stick or buoy gear may continue.

The relative size of each of each regional quota would be based on bluefin landings and dead discard data in each region, and expressed as a fixed percentage of each particular region's historical share of the north or south sub-quota. The Northeast Distant area quota would not be included in the calculation because it has its own specified ICCAT quota recommendation. Although the percentage allocated to each region would be a fixed percentage of a longline sub-quota, the amount (mt) of the regional quota would be specified annually. The percentages below were derived based only on numbers of bluefin interactions, and did not take into account weight of individual fish. Numbers of fish is a metric that can be more easily applied across the geographic regions, which differ in the average size of bluefin. Separation of regions into North and South would minimize any influence in numbers of fish that may result from differences in fish size among regions. The historical bluefin interactions data associated with the Sargasso or North Central Atlantic regions were not parsed out between the north and south when deriving regional catch caps that considered the northern and southern hierarchy. The North Central Atlantic region was not included because there were no bluefin interactions. The Sargasso region, which had very few bluefin interactions, was considered part of the Northern interactions.

Table 2.16 Regional Quotas (%), Based on the Annual Percentage of Northern or Southern Interactions, not including the Northeast Distant area quota of 25 mt.

Region	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**Regional Quota (% of Northern quota)**	**Regional Quota (mt) (% x 24.4 mt)**
MAB	58.8	93.8	89.8	61.5	66.8	39.2	68.3	16.7
NEC	36.7	3.6	6.4	30.6	28.0	51.5	26.1	6.4
NED	NA	NA	NA	NA	NA	NA	NA	25
SAB	1.1	0.8	2.1	4.1	2.6	5.9	2.8	0.7
SAR	3.4	1.4	1.4	3.9	2.7	3.4	2.7	0.7
SAT	0	0.4	0	0	0	0	.07	.02
Totals	100%	100%	100%	100%	100%	100%	100%	24.4*
Region	**2006 (%)**	**2007 (%)**	**2008 (%)**	**2009 (%)**	**2010 (%)**	**2011 (%)**	**Regional Quota (% of Southern quota)**	**Regional Quota* (mt) (% x 36.7 mt)**
CAR	0	0	0.8	0	0	0	0.1	.04
FEC	8.6	5.9	11.3	26.8	31.9	75.9	27.0	9.9
GOM	91.4	94.1	88.7	73.2	68.1	24.1	73.0	26.8
Totals	100%	100%	100%	100%	100%	100%	100%	36.7*

*Based upon southern area quota of 36.7 mt; *Based upon northern area quota of 24.4 mt (not including Northeast Distant area)

The Northeast Distant area is not included because it has its own specified ICCAT-recommended 25 mt or quota, which cannot be altered absent agreement at ICCAT. Two regions would be utilized in the initial calculation of the regional quotas due to the historical division of the quota into north and south as well as the fact that there are differences in the characteristics of the northern and southern fisheries (e.g., size of fish, seasonality, etc.).

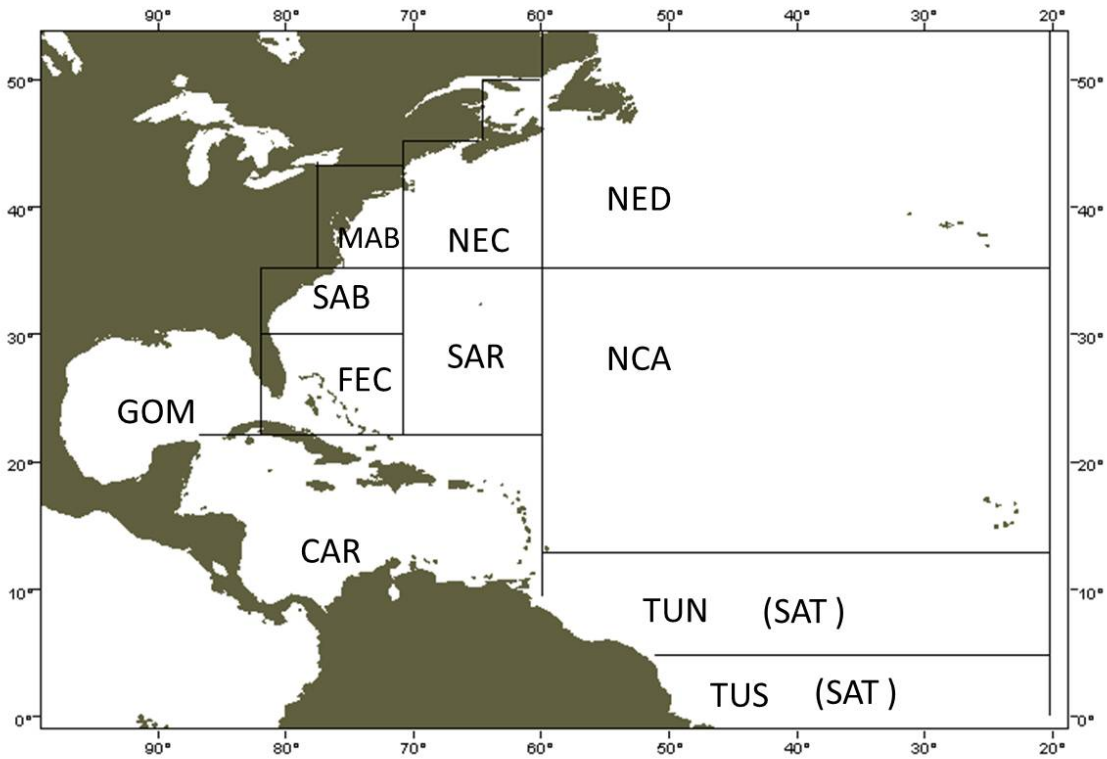

Figure 2.9 Pelagic Longline Reporting Areas

2.3.3.2 Alternative C 3b – Group Quotas

This alternative would implement a quota system for vessels possessing an Atlantic Tunas Longline category permit (combined with the required shark and swordfish limited access permits) that would define three bluefin quota groups and assign vessels with a valid permit to one of the three groups. Both bluefin landings and dead discards would count toward the group quotas. Each quota group would be allocated quota based upon the number of active vessels in the group. Active vessels (n = 161) would be defined as those vessels that made at least one set using pelagic longline gear between 2006 and 2011.

Each active vessel would be assigned to a quota group based upon the associated permit's historical bluefin interactions to "designated species" landings ratio. Active vessels with relatively high numbers of bluefin interactions would be assigned to one quota group, active vessels with a moderate level of bluefin interactions would be assigned to a second group, and the active vessels with a low level of bluefin interactions would be assigned to a third quota group. All vessels with a valid permit that are inactive (i.e., did not make a pelagic longline set from 2006-2011) would be assigned to the quota group with the lowest bluefin to designated species landings ratios. NMFS would have the ability to transfer quota inseason from one quota

group to another in order to optimize fishing opportunity**.** For purposes of quota monitoring, prior to each trip vessels would be required to make a VMS declaration indicating their quota group.

The rationale for proposing this alternative is that a group quota system may be simpler than an IBQ system and may have advantages over a single quota allocated for the entire Longline category. Group quotas would be relatively independent of one another, and therefore may reduce the potential for 'derby' fishing behavior (where there is the incentive for individual vessels to fish sooner rather than later) compared with a single quota for the entire category. Group quotas are different from regional quotas because vessels fishing under the same quota may be fishing in diverse regions, but would have a similar fishing history with respect to bluefin. Because some vessels have high interactions with bluefin (Section 3.6.1.2;Figure 3.19) creating quota groups of vessels with similar bluefin fishing histories may reduce the likelihood that vessels with high interactions with bluefin would disadvantage other vessels that do not tend to interact with bluefin. In other words, vessels that are able to avoid bluefin interactions may be insulated from the fishing behavior of vessels that do not avoid bluefin interactions (and cause the quota to be reached, with the resultant prohibition on the use of pelagic longline gear). The rate at which each quota is attained would result from the fishing behavior of the grouped vessels.

When NMFS projects that the quota for a group would be reached, it would file a closure notice with the Office of Federal Register for publication, and fishing with pelagic longline gear would be prohibited for vessels assigned to that group. Vessels would be required to complete scheduled and ongoing trips prior to the closure date/time. Criteria for NMFS consideration for closure could include elements such as: total estimated bluefin catch in relation to the regional quota; the estimated amount by which the bluefin quota might be exceeded; usefulness of data relevant to monitoring the quota; relatively high uncertainty in the documented or estimated dead discards or total catch of bluefin; high amount of bluefin caught within a short time; the effects of continued fishing on bluefin rebuilding and overfishing; provision of reasonable opportunity for pelagic longline vessels to pursue the target species; and variations in seasonal distribution, abundance or migration patterns of bluefin, etc. When fishing with pelagic longline gear has been prohibited, the use of other authorized gear such as green-stick, handgear, or buoy gear may continue.

Specifically, the quota groups would be based upon designated species landings information (dealer data and logbook data) expressed as weight during the six-year period from 2006 through 2011; and bluefin tuna interactions (landings, discarded live and discarded dead), using logbook information. NMFS would compile a list of vessels and the associated bluefin to designated species landings ratio, and put the vessel list in descending order from highest to lowest bluefin to designated species landings ratio. The vessels would be divided into three groups, based on percentiles of ratios from highest (low bluefin avoiders, medium bluefin avoiders, and high bluefin avoiders, at 0 to < 33 percent; 33 to < 66 percent and 66 to 100 percent, respectively). Table 2.15 shows some of the characteristics of the groups, and the amount of quota that would be allocated to each group under some of the quota alternatives. Note that the quota groups have similar amounts of quota because the amount allocated to each quota group is based on the number of vessels in the quota group.

Table 2.17 Quota Groups Characteristics and Quota (mt) for Each Quota Group under Three Quota Reallocation Scenarios

			** Quota Scenarios		
Quota Group	**Average # total bluefin interactions per year (2006 – 2011)**	**# of Active Vessels in Quota Group**	**74.8**	**137**	**216.7**
			Group Quotas		
Low Avoiders	1,342	53	24.6	45.1	71.3
Medium Avoiders	225	54	25.1	45.9	72.7
High Avoiders	16	54*	25.1	45.9	72.7

*plus inactive vessels;**Quota Scenarios: see Table 4.32 (Chapter 4)

2.3.4 Alternative C 4 - NMFS Closure of the Pelagic Longline Fishery

2.3.4.1 Alternative C 4a – No Action

Under this alternative, the current regulation would continue, in which NMFS does not have the ability to prohibit the use of pelagic longline gear when the Longline category bluefin quota is attained, except when executing emergency action authority. When the bluefin quota is projected to be reached, pelagic longline vessels may no longer retain, possess, or land bluefin, but may continue to fish for their target species, and must discard any bluefin caught.

2.3.4.1.1 Alternative C 4b – NMFS Closure of the Pelagic Longline Fishery (Preferred)

Under this alternative, NMFS would close the pelagic longline fishery (i.e., prohibit the use of pelagic longline gear) when the total Longline category quota is reached; projected to be reached; is exceeded; or, in order to prevent over-harvest of the Longline category quota and prevent further discarding of bluefin; or when there is high uncertainty regarding the estimated or documented levels of bluefin catch. When NMFS projects that the quota will be reached, it will file a closure notice with the Office of the Federal Register for publication. Vessels would be required to complete scheduled and ongoing trips prior to the closure date/time. Criteria for NMFS consideration would include elements such as: total estimated bluefin catch (landings and dead discards) in relation to the quota; the estimated amount by which the bluefin quota might be exceeded; usefulness of data relevant to monitoring the quota; uncertainty in the documented or estimated dead discards or landings of bluefin; amount of bluefin landings or dead discards within a short time; the effects of continued fishing on bluefin rebuilding and overfishing; provision of reasonable opportunity for pelagic longline vessels to pursue the target species; variations in seasonal distribution, abundance or migration patterns of bluefin; or other relevant factors.

This alternative may be implemented in conjunction with any of the other Bluefin Tuna Quota Control alternatives under Section 2.3. If implemented under the current quota system, or an individual quota system that does not have robust inseason reporting and monitoring, to proactively account for dead discards, NMFS could utilize an historical estimate for pelagic longline dead discards as a proxy for anticipated dead discards, and subtract an estimate of dead discards "off the top" of the quota, as necessary. This would result in a substantially lower quota for bluefin landings, and the pelagic longline fishery when the bluefin landings quota is attained. If the quota allocated to the Longline category represents both landings and dead discards, if an estimate of dead discards were subtracted "off the top", the remaining quota would represent only bluefin landings.

2.4 Enhance Reporting Measures

The objective of the alternatives to enhance reporting measures is to continue to improve the reporting and monitoring of the quota system, including its scope, timeliness and accuracy. Timely and accurate information is integral to successful management of fisheries.

2.4.1 Alternative D 1 - VMS Requirements

2.4.1.1 Alternative D 1a – No Action

Purse Seine Category

Under the No Action alternative, there would be no requirement under HMS regulations for an Atlantic Tunas Purse Seine category vessel to obtain an E-MTU VMS unit and there would be no change to the reporting requirements applicable to purse seine vessels.

Pelagic Longline Category

This alternative would make no changes to the current VMS reporting requirements applicable to vessels possessing pelagic longline gear.

2.4.1.1.1 Alternative D 1b – VMS Requirements for the Purse Seine and Longline Categories (Preferred)

This alternative would require vessels with an Atlantic Tunas Purse Seine category permit to have an E-MTU VMS unit installed by a qualified marine electrician in order to remain eligible for the Purse Seine category permit.

This alternative would require vessels fishing for Atlantic tunas with purse seine gear or pelagic longline gear to report daily the number of bluefin retained, and discarded dead, and fishing effort (number of sets, number of hooks, respectively). This alternative is intended to support the inseason monitoring of the purse seine and pelagic longline fisheries. Although NMFS currently has the authority to require logbook reporting for the purse seine fishery, NMFS has not exercised this authority (see Section 2.3.7). Current information on the catch of the purse seine fishery is limited to dealer data on sold fish, and does not include information of discarded bluefin or other species caught and/or discarded, although periodic observer coverage supports

that catches and discards of bluefin or other species is low. Inseason information on catch, including dead discards, would enhance NMFS' ability to monitor and manage all quota categories. The characteristics of the purse seine fishery are unique. Many bluefin may be caught in a relatively short period of time, and the proportion of discarded to retained fish may be high in some instances. More timely information on retained bluefin would improve the current monitoring of bluefin landings. This alternative would provide timely information on purse seine fishing effort, and improve NMFS' ability to interpret and utilize the bluefin data in the context of the fishery as a whole.

With respect to pelagic longline vessels, this alternative is intended to support the implementation of a pelagic longline catch cap, whether individual, regional, or group, described under Section 2.3. For example, under an IBQ program, each vessel must not catch more than is permitted by the total of his/her quota allocation . IBQ programs require the ability to track quota shares and quota allocations, reconcile landings and dead discards against individual quota allocations, and then balance the amounts against the total allowable quota for the Longline category. Although the current pelagic longline reporting requirements and the observer program provides data on pelagic longline landings and discards, and enables inseason monitoring and management based upon landings, the reporting requirements and monitoring requirements were not designed to support inseason monitoring of dead discards. More timely information on dead discards would be necessary in order to monitor and enforce a pelagic longline catch cap (IBQ, regional or group quotas). Although the current information on bluefin discards from the pelagic longline fishery obtained through logbook data (effort) and catches from the observer program (catches) is sufficient to estimate bluefin dead discards on an annual basis, the time lag associated with the current information is not useful for "real-time" in-season monitoring of a bluefin catch cap. Specifically, there is a time lag between the time logbooks are submitted or the field information is recorded by the observer during the fishing trip, the time the data are entered into a database, and the time the data are finalized (after a process of quality control) and available for use. A trip declaration requirement would provide NMFS with real-time information on pelagic longline catches and fishing effort, and support management of the fishery as a whole.

2.4.2 Alternative D 2 - Electronic Monitoring of Longline Category

2.4.2.1 Alternative D2a – No Action

Under this alternative, there would be no requirement to install or use electronic monitoring equipment.

2.4.2.2 Alternative D 2b –Electronic Monitoring of Longline Category (preferred)

This alternative would require the use of electronic monitoring, including video cameras, by all vessels issued an Atlantic Tunas Longline permit that intend to fish for HMS. Specifically, vessels would be required to install and maintain video cameras and associated data recording and monitoring equipment in order to record all longline catch and relevant data regarding pelagic longline gear retrieval and deployment. The objective of this alternative is for NMFS to use the recorded data as a principal source of information used to verify the accuracy of counts and identification of bluefin reported by the vessel owner/operator. Secondly, electronic

monitoring would enable the collection of video image and fishing effort data that may be used in conjunction with other sources of information to estimate bluefin dead discards. Lastly, electronic monitoring would augment the ability of an observer to fulfill their duties, by providing a record of catch during the time periods the observer may be unable to observer the catch directly.

More specifically, this alternative would require the installation of NMFS-approved equipment that may include one to four video cameras, a recording device, video monitor, hydraulic pressure transducer, winch rotation sensor, system control box, or other equipment needed to achieve the objectives. Vessel owner/operators would be required to install, maintain, allow inspection of the equipment by NMFS, and obtain NMFS approval of the equipment or vendors selling such equipment. There would be a requirement to install the camera(s) to provide a view of the area where the longline gear is retrieved and catch removed from the hook (prior to placing in the hold or discarding) and a requirement that such a system be connected to the mechanical hauling device so that recording is initiated by gear retrieval. The vessel owner/operator would be required to store and make the data available to NMFS for at least 120 days, and submit the data to NMFS. The vessel operator would be responsible for ensuring that all bluefin are handled in a manner than enables the electronic monitoring system to record such fish, and must identify a crew person or employee responsible for ensuring that all handling, retention, and sorting of bluefin occurs in accordance with the regulations.

The requirements associated with this alternative would be phased in over a period of time (approximately two years) due to the complexity, costs, and logistical constraints associated with the implementation of an electronic monitoring program. While the electronic monitoring program is being designed and implemented, NMFS would continue to use logbook, observer, and landings information to assess catch by the pelagic longline fleet. NMFS would communicate instructional information in writing with the vessel owners during all phases of the program to provide direction and assistance to vessel owners, and facilitate the provision of technical assistance.

The rationale for this sub-alternative is that under a new IBQ system, there is likely to be uncertainty regarding the quality of the data that will be obtained pursuant to new reporting requirements.

2.4.3 Alternative D 3 - Automated Catch Reporting

Automated catch reporting is the use of the internet or an interaction voice response telephone system to report catch (in contrast to a paper-based or VMS reporting system).

2.4.3.1 Alternative D 3a - No Action

Under this alternative, there would be no automated catch reporting requirement applicable to the commercial Atlantic Tunas General or Harpoon categories or the HMS Charter/Headboat category, when fishing commercially.

2.4.3.2 Alternative D 3b - Automated Catch Reporting (Preferred)

This measure would require Atlantic Tunas General, Harpoon, and HMS Charter/Headboat categories to report their bluefin catch through an automated catch reporting system (for example, via either a web-based, or an interactive voice response telephone system) at the end of each trip. NMFS currently operates a similar automated landings reporting system (ALRS) for recreational bluefin catch in the HMS Angling category. Although information on commercial bluefin landings as currently reported by dealers is sufficient for NMFS to monitor the landings (which count toward the relevant sub-quotas), NMFS does not obtain information on bluefin that may be discarded as a result of the capture of fish that are discarded (either because the fish is less than the required minimum size or for another reason) from all categories. Such discard information would enhance NMFS' ability to more fully and accurately account for all sources of fishing mortality, consistent with ICCAT recommendations. Additional catch information from all of these categories could result in more equitable data collection among the diverse participants in the bluefin and HMS fisheries and enhance management of all HMS fisheries. Automated catch reporting would enable NMFS to obtain information about the magnitude of discards. NMFS would be able to share such information, in aggregate, with the bluefin fishery participants with the objective of reducing regulatory discards. Information on discarding would enable NMFS to consider a wider range of information when making decisions regarding quota management, and bluefin tuna management in general. Verification of data through observer coverage of these fisheries would augment the value of this data (see Section 2.4.4).

2.4.4 Alternative D 4 - Deployment of Observers

2.4.4.1 Alternative D 4a - No Action (Preferred)

Under this alternative, there would be no changes to the current observer coverage in the Atlantic Tunas Longline, General, Purse Seine, Harpoon, or HMS Charter/Headboat categories. In the Longline category, the average percentage coverage in the pelagic longline fishery is approximately 8 percent (including a higher level of coverage in the Gulf of Mexico, particularly during the bluefin spawning period). None of the other quota categories (i.e., the directed bluefin fisheries) currently are selected to carry observers; however, NMFS has the authority to deploy observers in these categories.

2.4.4.2 Alternative D 4b – Increase NMFS-Funded Observer Coverage

This alternative would increase the level of NMFS-funded observers on a portion of trips by vessels fishing under the Atlantic Tunas Longline, General, Purse Seine, Harpoon, or HMS Charter/Headboat categories. NMFS currently has the regulatory authority to select all vessels in these categories to take observers if requested, but currently only the pelagic longline fishery is selected. This alternative is intended to enhance the quantity and precision of data obtained from the pelagic longline fishery above the requirements of the 2004 BiOp, and to provide observer data for the directed bluefin categories, especially discard data. Observer data are critical to meeting numerous NMFS mandates including the Magnuson-Stevens Act, ESA, and MMPA. Historically, NMFS has generally provided funding to support observers to meet these various mandates in U.S. fisheries. At the same time, there are also examples where industry has contributed funding to achieve a desired level of observer coverage. There are benefits and challenges associated with Federal funding.

2.4.5 Alternative D 5 - Logbook Requirement

2.4.5.1 Alternative D 5a - No Action (Preferred)

This alternative would make no changes to the current logbook requirements applicable to any of the permit categories.

2.4.5.2 Alternative D 5b - Logbook Requirement for Atlantic Tunas and HMS Category Permit Holders

This measure would require the reporting of catch by Atlantic Tunas General, Harpoon, or HMS Charter/Headboat category vessels targeting bluefin through submission of an HMS logbook to NMFS. Additional catch information from these categories could result in more equitable data collection among the diverse participants in the bluefin fisheries and enhance management. Logbooks provide a means to record and submit to NMFS a wide variety of fishery information. Logbook data would enable the submission of information on bluefin discards on a regular basis (e.g., weekly/monthly) and could support the submission of additional information in the future. NMFS would be able to share such information, in aggregate, to the bluefin fishery participants with the objective of reducing regulatory discards. Verification of data through observer coverage of these fisheries would augment the value of this data.

2.4.6 Alternative D 6 - Expand the Scope of the Large Pelagics Survey

2.4.6.1 Alternative D 6a - No Action (Preferred)

This alternative would make no changes to the scope of the Large Pelagics Survey, which is an important component of the data used to estimate landings of recreationally caught and landed HMS, including bluefin, and to monitor the Angling category quota. The Large Pelagic Survey collects data from June through October from Maine through Virginia. The data are used in conjunction with the North Carolina and Maryland census programs and the Automated Landings Reporting System to estimate recreational landings. NMFS's Office of Science and Technology is currently exploring the concept of expanding and/or modifying the Large Pelagics Survey, under its Marine Recreational Information Program (MRIP).

2.4.6.2 Alternative D 6b - Expand the Scope of the Large Pelagics Survey

This alternative would expand the scope of the Large Pelagics Survey. Specifically, the Large Pelagics Survey would be expanded to encompass states south of Virginia, inclusive of the Gulf of Mexico, and include the months of May, November, and December. This would be expected to increase the amount of data collected and improve landings estimates derived from these data. The Large Pelagics Survey is an important component of the data used to estimate landings of recreationally caught bluefin, as well as other HMS, and to monitor the Angling category quota. The data are used in conjunction with data from North Carolina and Maryland census programs, and the Automated Landings Reporting System to estimate catch and landings. Currently, the Large Pelagics survey collects data from June through October from Maine through Virginia.

2.5 Other Measures

2.5.1 Alternative E 1 - Modify General Category Time-Period Subquota Allocations

2.5.1.1 Alternative E 1a - No Action

The No Action alternative would make no changes to the current General category subquota allocations which allocate 5.3 percent of the General category quota to the January time-period; 50 percent to June through August; 26.5 percent to September; 13 percent to October-November, and 5.2 percent to December. Although it is called the "January subquota," the regulations allow the General category fishery under this quota to continue until the January time-period subquota is reached, or March 31, whichever comes first. Unused quota rolls forward within the year and is available for use in subsequent time periods. Underharvest from the previous fishing year also may be carried forward, but underharvest from the previous fishing year typically is not available to the January time-period due to the timing of the annual specifications (mid-year) that implement the annual quotas and distribute any underharvest that is carried forward.

2.5.1.2 Alternative E 1b - Establish 12 Equal Monthly Sub-Quotas

The alternative would establish 12 equal monthly subquotas and continue to allow unused quota to roll forward within the fishing year. The objective of this alternative is to optimize fishing opportunity. Modification of the current General category time-period allocations would alter the distribution of quota among seasons, may provide increased fishing opportunity for some vessels, and may decrease fishing opportunities for other vessels. General category participants in the January fishery perceive they are disadvantaged with respect to the amount of quota available because currently the January time-period benefits from neither the previous nor current fishing year underharvests. Currently, because unused quota rolls forward within a fishing (calendar) year, and because of the timing of the annual specifications (finalized mid-year), there are often greater opportunities to land bluefin tuna in the second half of the calendar year than in January, which occurs at the beginning of the calendar and fishing year.

2.5.1.3 Alternative E 1c – Allow Additional Transfers of General Category Quota Between Time-period Subquotas (Preferred)

Under this alternative, NMFS could proactively transfer quota from one or more of the time-periods that follow the January time-period to the January or other preceding sub-quota time periods, either during annual specifications or through inseason action. In other words, under this alternative NMFS could transfer subquota from one time period to another time period, earlier in the calendar year.

For example, subquota could be transferred from the June 1 through August 31 time period to the January time period, or from the October 1 through November 30 time period to the September time period.

The objective of this alternative is to optimize opportunities for the January fishery, but retain the current structure of the General category quota system. NMFS would add the following new

objective of "quota adjustment" to the current list of criteria and relevant factors NMFS considers when making inseason or annual quota adjustments: For the General category, proactively transfer quota from one or more of the time-periods that follow the January time-period to the January or other preceding sub-quota time periods.

2.5.2 Alternative E 2 - NMFS Authority to Adjust Harpoon Category Retention Limits Inseason

2.5.2.1 Alternative E 2a - No Action

In November 2011, NMFS published a final rule to address adjustments to the bluefin General and Harpoon category regulations. This final rule increased the General category maximum daily retention limit from three to five large medium or giant bluefin (measuring 73" CFL or greater), allowed the General category season to remain open until the January subquota was reached (or March 31, whichever was sooner), and increased the Harpoon category daily incidental retention limit of large medium bluefin from two to four fish per vessel (76 FR 74003, November 30, 2011). This action enabled more thorough utilization of the available U.S. bluefin quota for the General and Harpoon categories; minimized bycatch and bycatch mortality to the extent practicable; expanded fishing opportunities for participants in the commercial winter General category fishery; and increased NMFS' flexibility for setting the General category retention limit depending on available quota.

The No Action alternative would make no changes to the current retention limits applicable to the Harpoon category. The retention limit would remain at four large medium (73" CFL to less than 81" CFL) bluefin per vessel per day (and unlimited giants, 81" CFL or greater).

2.5.2.2 Alternative E 2b - NMFS Authority to Adjust Harpoon Category Retention Limits Inseason (Preferred)

Following implementation of the increased large medium retention limit applicable to the Harpoon category, NMFS has received requests from Harpoon category participants to manage the large medium size class retention limit over a *range*, similar to how NMFS manages the daily General category retention limit, for increased flexibility in setting the limit based on consideration of applicable factors.

Under this alternative, NMFS would have the ability to increase or decrease the daily retention limit of large medium bluefin (greater than 73" CFL and less than 81" CFL) within a range from two to four fish. This range is based on the former (i.e., two fish) and current (i.e., four fish) daily retention limit of large medium bluefin tuna for the Harpoon category. Any adjustment would be based upon the current regulatory determination criteria (with any adjustments make through Amendment 7) that apply to inseason bluefin tuna adjustments including: The usefulness of information obtained from catches in the particular category for biological sampling and monitoring of the status of the stock; effects of the adjustment on bluefin rebuilding and overfishing; effects of the adjustment on accomplishing the objectives of the fishery management plan; variations in seasonal distribution, abundance, or migration patterns of bluefin; effects of catch rates in one area precluding vessels in another area from having a reasonable opportunity to harvest a portion of the category's quota; and review of dealer reports,

daily landing trends, and the availability of the bluefin on the fishing grounds, as well as any other relevant factors. The default Harpoon category daily retention limit of large medium bluefin would be two fish per vessel (the large medium bluefin daily retention limit that applied prior to the 2011 regulatory change). The retention limit of giant bluefin would remain unlimited.

The objective of this alternative is to optimize fishing opportunity for the Harpoon category participants within the available quota. NMFS currently cannot adjust this retention limit via inseason action. In contrast, for the General category, NMFS can, increase or decrease the daily retention limit for large medium or giant bluefin within a specified range, via inseason action, following consideration of the regulatory determination criteria. This alternative would enhance NMFS' ability to more precisely manage the landing rate of large medium bluefin by the Harpoon category, thereby optimizing opportunities while preventing landings from exceeding the subquota. It would be appropriate that the determination criteria for inseason adjustments would be the same as for the General category because they are both commercial categories, with similar regulatory and fishery conditions.

2.5.3 Alternative E 3 - Angling Category Trophy Subquota Distribution

2.5.3.1 Alternative E 3a - No Action

Under the No Action alternative, there would be no change to the current Angling category trophy subcategory quota allocations. Trophy-sized bluefin (greater than 73" CFL) caught by recreational vessels in the Atlantic and Gulf of Mexico count against either the northern area subquota (for fish landed north of 39° 18' N. latitude; Great Egg Inlet, NJ) or the southern area sub-quota (for fish landed south of 39° 18' North latitude). Therefore, bluefin tuna from the Gulf of Mexico and the Atlantic south of 39° 18' North latitude count toward the same recreational sub-quota (the southern quota). The dividing line was intended to provide an equitable geographical and temporal distribution of recreational fishing opportunities. The 2012 sub-quotas are 2.8 mt (66.7%) for the southern area and 1.4 mt (33.3%) for the northern area.

Pursuant to ICCAT recommendations, targeting of bluefin in the Gulf of Mexico by either commercial or recreational vessels has been prohibited for many years. Therefore, recreational vessels fishing in the Gulf of Mexico are subject to different bluefin regulations than vessels fishing in the Atlantic. Recreational vessels fishing in the Gulf of Mexico may not target bluefin, but may retain one incidental trophy-sized bluefin per vessel per year if the southern trophy sub-quota has not been reached. Recreational vessels fishing in the Atlantic may target bluefin, subject to the size and daily retention limits in effect, provided the relevant sub-quota has not been attained. Under current regulations, a situation may be created whereby the entire southern trophy quota could be filled by bluefin caught in the Atlantic, thus precluding any opportunities for the incidental catch and retention of trophy-sized bluefin in the Gulf of Mexico

2.5.3.2 Alternative E 3b - Allocate a Portion of the Trophy South Sub-Quota to the Gulf of Mexico (Preferred)

Under this alternative, a portion of the trophy south subquota would be allocated specifically for the Gulf of Mexico. Specifically, the trophy subquota would be divided as 33% to each of the

northern area, the southern area outside the Gulf of Mexico, and the Gulf of Mexico. At the current average trophy fish weight, this would allow annually up to 8 trophy bluefin to be landed in each of the three areas. To distinguish bluefin caught in the Gulf of Mexico from those caught in the Atlantic, for the purposes of this alternative, the Gulf of Mexico region includes all waters of the U.S. EEZ west and north of the boundary stipulated at 50 CFR 600.105(c) and the Atlantic region includes all other waters of the Atlantic Ocean. The objective of this alternative is to provide a reasonable fishing opportunity for recreational vessels in the Atlantic and Gulf of Mexico, reduce discards, and account for incidentally caught bluefin. It may be equitable to split the southern subquota for trophy-sized bluefin to create a separate Gulf of Mexico subquota. A separate subquota allocation for the Gulf of Mexico could improve the equity of the trophy-sized fish allocation by increasing the likelihood that there will be trophy quota available to account for incidental catch of bluefin in that area (while still providing incentives not to target bluefin).

2.5.4 Alternative E 4 – Change Start Date of Purse Seine Category to June 1

2.5.4.1 Alternative E 4a – No Action

Under the No Action alternative, there would be no change to the start date of the Purse Seine category fishery, which is currently set at July 15. NMFS may modify the start date within the time period from July 15 to no later than August 15, by publishing a notice in the Federal Register. Vessels fishing in the Purse Seine category target giant bluefin (> 81” CFL), but may retain large medium size (73 to < 81” CFL) bluefin up to 15 percent by weight of the total amount of giant bluefin landed during that fishing year (and may retain up to 1 percent of bluefin smaller than 73” CFL, by weight, of the skipjack and yellowfin tuna landed on a trip).

2.5.4.2 Alternative E 4b – Change Start Date of Purse Seine Category to June 1(Preferred)

Alternative E 4b would change the start date of the Purse Seine category fishery from July 15 to June 1, and provide NMFS the ability to delay the season start date from June 1 to no later than August 15, by publishing a notice in the Federal Register. The objective of this alternative is to optimize fishing opportunity for Purse Seine category vessels. The opportunity for Purse Seine category vessels to harvest their quota, which consists principally of giant bluefin, may be constrained due to the restriction on the amount of large medium bluefin they may retain. A Purse Seine vessel operator may choose not to fish if bluefin schools are composed of a high proportion of large medium fish in addition to giants in order to avoid sets in which a large portion of the catch would have to be discarded due to fish size. In addition to optimizing fishing opportunity, other considerations with respect to the timing of the start date of the fishery are potential gear conflicts and market considerations.

2.5.5 Alternative E 5 - Rules Regarding Permit Category Changes

2.5.5.1 Alternative E 5a - No Action

Under the No Action alternative, there would be no changes made to current regulations regarding changes to permit categories. The current regulations prohibit a vessel issued an

Atlantic Tunas or an HMS permit from changing the category of the permit after 10 calendar days from the date of issuance.

2.5.5.2 Alternative E 5b - Modify Rules Regarding Permit Category Changes (Preferred)

This alternative would allow a vessel owner to modify the category of an Atlantic Tunas or HMS permit issued for up to 45 days from date of issuance, provided the vessel has not landed bluefin as verified via landings data. The current restriction is meant to preclude vessels from fishing in more than one category during a year and to discourage speculative use of fishing permits. However, based on feedback NMFS has received over a number of years from vessel owners affected by the 10 day restriction, NMFS has concluded that limiting the time period during which a vessel may change permit categories to 10 calendar days is overly restrictive, and may not allow the flexibility to resolve the problems of a permit issued by mistake. This measure may achieve a better balance of allowing flexibility for vessel owners, while still preventing fishing in more than one permit category during a fishing year.

2.5.6 Alternative E 6 - Northern Atlantic Albacore Tuna Quota

2.5.6.1 Alternative E 6a - No Action

Under the No Action alternative, there would be no new regulations regarding Atlantic albacore tuna. There are currently no regulations regarding the quota management of Atlantic albacore tuna.

2.5.6.2 Alternative E 6b - Implement U.S. Northern Atlantic Albacore Tuna Quota (Preferred)

The alternative would implement the U.S. annual quota of north Atlantic albacore tuna (or "northern albacore") recommended by ICCAT (Recommendation 11-04; Supplemental Recommendation by ICCAT Concerning The North albacore Rebuilding Program) and would establish provisions for the accounting of overharvest and underharvest of the quota via annual specifications. Specifically, the codified U.S. northern albacore quota would be adjusted as appropriate for prior year catch, including delayed or multiyear adjustments. Carry-forward of unused quota would be limited to 25 percent of the initial quota, consistent with the current ICCAT recommendation. NMFS would adjust and implement the following via regulatory framework adjustments: Actions to implement ICCAT recommendations, as appropriate; allocating and refining domestic allocation of the U.S. quota; establishing retention limits; implementing effort restrictions, etc. Although an FMP amendment is not needed, framework adjustments still go through extensive public and analytical review and must be consistent with the MSA and other applicable law.

Since 1998, ICCAT has made recommendations regarding the northern albacore fishery. A multi-year management measure for northern albacore was first adopted in 2003, setting the TAC at 34,500 mt. At the latest northern albacore stock assessment (2009), ICCAT's Standing Committee on Research and Statistics concluded that the northern albacore stock continues to be overfished with overfishing occurring, and recommended a level of catch no more than 28,000

mt to meet ICCAT management objectives by 2020. In 2009, ICCAT established a North Atlantic albacore rebuilding program via Recommendation 09-05, setting a 28,000-mt TAC and including several provisions to limit catches by individual ICCAT parties (for major and minor harvesters) and reduce the amount of unharvested quota that could be carried forward from 50 percent to 25 percent of a party's initial catch quota. The 2009 recommendation expired in 2011.

In 2011, ICCAT Recommendation 11-04 set a TAC of 28,000 mt for 2012 and for 2013 and contained specific recommendations regarding the North Atlantic albacore rebuilding program, including an annual TAC for 2012 and 2013 allocated among the European Union, Chinese Taipei, the United States, and Venezuela. The U.S. quota for 2012 and 2013 is 527 mt. The recommendation limits Japanese Northern albacore catches to 4 percent in weight of its total Atlantic bigeye tuna longline catch, and limits the catches of other ICCAT parties to 200 mt. The recommendation also specifies that quota adjustments for underharvest or overharvest during a given year be made for either two or three years from the subject year (i.e., adjustments based on 2013 catches would be made for either 2015 or 2016). Pursuant to this recommendation, it is appropriate for the United States to implement the U.S. quota and establish provisions to adjust the base quota via annual quota specifications.

2.5.7 Alternative E 7 – Minor Regulatory Changes

This section addresses minor corrections, clarifications, the removal or modification of obsolete cross-references, and minor changes to definitions and prohibitions that will improve the administration and enforcement of HMS regulations. Several of these items have been identified by constituents over the past few years or were raised during scoping hearings. Most of the corrections, clarifications, changes in definitions, and modifications to remove obsolete cross-references are consistent with the intent of previously analyzed and approved management measures. These changes would have no effect either individually or cumulatively upon the human environment. Under NOAA Administrative Order 216-6, actions that modify previously analyzed actions and that do not affect the human environment, minor technical additions, corrections, or changes to existing regulations are categorically excluded from the requirements of an EA or EIS. Changes that meet these criteria, and that are therefore exempt from the NEPA requirements, are described below.

2.5.8 Alternative E 8 – Pelagic and Bottom Longline Transiting Closed Areas (Preferred)

This alternative, although not directly associated with the proposed Gear Restricted Areas or the performance criteria to access those, and preexisting closed areas, it would allow HMS vessels that possess bottom or pelagic longline gear on board to transit areas with this gear type provided they remove and stow the gangions, hooks, and buoys from the mainline and drum. The hooks could not be baited. There are currently a number of time/area closures for vessels possessing pelagic and bottom longline gear. The current regulations do not provide these vessels the ability to stow their gear and transit the areas. Instead, the vessels must go around the areas to remain in compliance with the regulations.

In addition to the economic costs associated with indirect routes of travel (more time at sea and more fuel, etc.), this restriction has raised safety-at-sea concerns.

Table 2.18 Proposed Regulatory Changes that Do Not Need Alternatives

Item	Current Regulation	Amendment and Rationale
1	635.5(c)(1)	The reporting requirement currently states 'catch", but should state "landings" instead. The relevant internet address would be updated.
2	635.20(a)	The method of determining length of Atlantic tunas currently states that it applies only to swordfish permitted vessels, but it should apply regardless of permit type.
3	635.21(c)(5)(iii)(C)	The current reference to the NED in this context refers to the area as a "closed" area instead of a "gear restricted area"
4	635.27(a)(7)	The reference to research in this paragraph is too specific. "Fishery-independent research" would be changed to "research"
5	635.27(a)(1)(iii)	The descriptor "coastwide", when referring to the General category fishery is no longer necessary and would be deleted.
6	635.71(b)(13)	The current prohibition would be corrected to clarify that the relevant amount of bluefin is the "applicable limit" instead of "a" bluefin.

2.6 Considered but Not Analyzed Further

2.6.1 Research in Gear Restricted and Closed Areas and Modification to Northeastern U.S. Closed Area

NMFS Ability to Conduct Research in Gear Restricted Areas and Closed Areas

This alternative would have considered regulatory changes to facilitate NMFS' ability to conduct research in gear restricted and closed areas. HMS Advisory Panel discussions in 2012 included suggestions that NMFS make it "easier" to conduct research in closed areas. NMFS considered, but did not analyze further modifications of regulations to achieve this objective. NMFS concluded that no changes to the regulations with respect to the procedures utilized to conduct research are necessary. The Exempted Fishing Permit (EFP) regulations and associated administrative procedures (and similar authorizations) are sufficient to provide a standardized process through which research into closed areas may be authorized and conducted. EFPs, display permits, Letters of Acknowledgement (LOAs), and Scientific Research Permits (SRPs) are issued under the authority of the Magnuson-Stevens Act and/or ATCA. EFPs are issued to individuals for the purpose of conducting research or other fishing activities using private (non-NOAA) vessels, whereas an SRP would be issued to agency scientists who are using NOAA vessels or "bona fide" research vessels (e.g., state research vessels) as their research platform. Similar to SRPs, LOAs are issued to individuals conducting research from "bona fide" research vessels on species that are only regulated by Magnuson-Stevens Act and not ATCA. EFPs

authorize activity that would otherwise be prohibited (such as research with pelagic longline gear in a closed area).

The current procedure for issuing EFPs is adequate for providing research opportunities. NMFS strives to balance the needs of researchers for reasonable requirements and timely consideration of applications with its responsibility to evaluate and authorize research proposals consistent with legal obligations. Annually, NMFS accepts and reviews applications for research activities, informs the public of such applications, provides opportunities for public comment, and informs the public regarding the content of comments received. The process makes use of the Federal Register as well as other means to communicate with the public. Because NMFS has determined that its current procedures for authorizing research are meeting its objectives, this alternative is not considered "reasonable" at this time because it is not necessary and redundant with current regulations.

2.6.2 IBQs based on historical bluefin catch

This alternative would have based IBQ quota shares on historical catch of bluefin, utilizing vessel logbook information. The individual catch allocation would be expressed as a percentage of the Longline category quota, and based upon an average of multiple years. The Amendment 7 predraft document contained data to illustrate this alternative and showed a range of numbers of historical longline interactions with bluefin. NMFS is not considering this alternative further at this time because allocation of bluefin in proportion to historical catch of bluefin would facilitate the future fishing opportunity of those vessels that have historically caught bluefin tuna more than vessels that have historically caught less bluefin. Facilitating future opportunity for vessels that have caught more bluefin is not consistent with the Amendment 7 objective of reducing dead discards of bluefin, and therefore, is not a reasonable alternative. Additionally, this alternative was generally not supported by members of the HMS Advisory Panel and public, who generally perceive this as providing incentive to catch more bluefin or legitimizing historical bluefin interactions.

2.6.3 Reduction in Minimum Size for Commercial Categories

This alternative would have reduced the current minimum size applicable to pelagic longline vessels fishing in the Atlantic to 47" or 59" CFL. A 47" minimum size is equivalent to the ICCAT minimum size and 59" is the lower end of the small medium size class. The objective of this alternative would be to reduce regulatory discards, while limiting interactions, and maintain consistency with ICCAT requirements. Reduction of the minimum size may reduce regulatory discards, and could enable the sale of fish that would otherwise have been discarded. Because current data indicate that there is substantially less regulatory discarding of undersized bluefin in the Gulf of Mexico than in the Atlantic, there is little justification for reduction of the minimum size in the Gulf of Mexico; therefore, this alternative is not reasonable for that region. In the Atlantic region, a 59" minimum size would increase the complexity of the regulations and reduce enforcement capabilities by eliminating the ability to distinguish commercial and recreational bluefin. For these reasons, a reduction in minimum size for commercial categories in the Atlantic region is not a reasonable alternative and is not considered further at this time.

2.6.4 Angling Category: Maximum Bluefin Catch Limit

This alternative would have set a maximum catch limit per trip for bluefin (including kept and released fish) for the HMS Angling category and for the HMS Charter/Headboat category (when fishing recreationally), in order to limit the number of fish caught and released and therefore potential post-release mortalities. The catch limit would be specified in relation to the retention limit (e.g., two, or three times the retention limit).

For example, if the retention limit is one bluefin per trip and the maximum catch limit was set at twice the retention limit, the vessel could catch a total of two fish, and therefore could retain one legal-sized fish and release one fish, or release two fish.

The objective of this alternative would be to reduce recreational post-release mortality on a particular trip, due to size restrictions, improper gear, environmental conditions, or high-grading among other reasons. This alternative could provide incentives to limit excessive discarding in certain situations, and may reduce the amount of overall discards. However, this alternative is not considered further at this time due the lack of enforcement capabilities and because it would be contrary to the positive incentives and fishing practices inherent in current tag-and-release or catch-and-release programs that support scientific data collection and are consistent with current regulations.

2.6.5 Modification of Tolerance Rules for Purse Seine Vessels

This alternative would modify the current annual tolerance of large medium bluefin (no more than 15 percent of the total amount of giant bluefin (81 inches or greater) per year, by weight for the Purse Seine category) or the Purse Seine tolerance for targeting mixed tuna schools (bluefin smaller than 73 inches may not constitute more than 1 percent per trip of the skipjack and yellowfin tuna, by weight). The amount of large medium bluefin that Purse Seine category vessels are allowed to harvest would be increased in order to reduce dead discards and/or the tolerance for possession of large medium bluefin would be increased to allow the fishery to pursue schools of mixed tuna species.

The objective of this alternative would be to reduce bluefin dead discards. Modification of the purse seine tolerances could reduce discards and provide more flexibility in optimizing fishing opportunities the fishery. This alternative is not considered further at this time because it would increase the amount of ‘overlap’ between the purse seine fishery and the other commercial categories, which would increase gear conflicts and market gluts as well as dead discards of bluefin less than 73”, contrary to the objective to reduce dead discards.

2.6.6 Allow Storage of Unauthorized Gear when Fishing for Bluefin

This alternative would allow a vessel with a directed Atlantic Tunas permit fishing for or possessing bluefin tuna to have on board gear that is not authorized to capture bluefin tuna.

For example, a vessel could fish for groundfish (Northeast Multispecies) using a trawl or gillnet, but also fish for bluefin with handgear on the same trip, provided the unauthorized gear was stowed, in accordance with the governing regulations for that gear type/fishery.

The objective of this alternative would be to provide additional flexibility for vessels in order to fish more efficiently. Under current regulations (635.21(e)), an Atlantic Tunas permitted vessel may not possess at the same time bluefin and any gear that is not authorized under the 2006 Consolidated HMS FMP. This alternative would ease that restriction in order to allow a vessel greater flexibility to fish more efficiently and catch bluefin when bluefin are available.

This alternative is not considered further at this time because it would reduce the enforceability of the gear restrictions because it would be difficult to determine whether bluefin has been caught using authorized gear or not.

2.6.7 Define and Authorize the Use of Bait Nets while Fishing for Bluefin

This alternative would allow a vessel with an Atlantic tunas General, HMS Angling, or HMS Charter/Headboat category permit to have on board and deploy a bait net for the capture of fish intended as bait for bluefin. Vessels operators may wish to capture baitfish on the same trip on which they intend to fish for bluefin, but current gear restrictions preclude this practice. Under current regulations, such vessels may not possess bluefin tuna and any gear that is not authorized under the 2006 Consolidated HMS FMP. For example, because gillnets are not authorized for bluefin, they cannot be onboard. Therefore, fishermen must either fish for bait using a gillnet on a separate trip, catch it in another manner, or purchase bait. This measure is not considered further at this time. The use of a large net or net that is not tended could potentially impact bluefin, and therefore the allowable range of bait net specifications should be defined, and the net should be tended. It would be difficult to develop a useful specification that is consistent with fishing practices, as there are many interpretations as to what constitutes a “bait net” (e.g., gillnet, cast net, mid-water trawl, bottom trawl, herring seine, etc.). Enforcement of bait net regulations would be difficult due to the varying interpretations of “bait net.”

2.6.8 Real-time Monitoring and Closure of “Hot-Spots”

Under this alternative, NMFS would implement a real-time bluefin catch monitoring system and utilize the information to take inseason actions to close geographic areas with high rates of bluefin interaction with pelagic longline gear to reduce dead discards. Real-time monitoring by NMFS to detect the occurrence of high numbers of interactions, and inseason closure of such areas to the use of pelagic longline gear could prevent the continuation of those interactions. This measure is not considered further at this time because a reporting and monitoring system to support this measure does not currently exist, and development and administration of such a system would be complex and require substantial resources; therefore, this is not a reasonable alternative.

2.6.9 Facilitation of an Industry-Based Bluefin Avoidance System

This alternative would be implemented in conjunction with a catch cap. NMFS would work with the pelagic longline fishery to facilitate the communication of hot-spots by developing of a fishery-based "bluefin avoidance system" where vessels voluntarily provide real-time information regarding the location of bluefin. A fishing industry organization or a third party such as an academic or research organization would compile the fleet information and email the locations of hot-spots back to the fleet. Based on this information, pelagic longline vessels would avoid fishing in locations with relatively higher availability of bluefin. The objective of this alternative would be to reduce bluefin discards. Enhanced knowledge of the location of bluefin may enable vessels to avoid interactions with bluefin. An analogous system has been useful in other fisheries such as Georges Bank yellowtail flounder, and the use of a third-party could address sensitivities in sharing this information or may preserve the integrity of the information shared by the fleet.

This alternative is not considered further at this time because, although NMFS fully supports the concept of fishing industry members collaborating and communicating in an effort to avoid and reduce interactions with bluefin, development of a regulatory structure and administration of such a system would be complex and require substantial resources; therefore, this is not a reasonable alternative.

2.6.10 Smart-Phone Reporting

This alternative would require Atlantic tunas General, Harpoon, and HMS Charter/Headboat categories to report their bluefin catch through a smart-phone application ("app") at the end of each trip. Although information on bluefin landings by commercial vessels currently reported by dealers is sufficient for NMFS to monitor the landings (which count toward the relevant sub-quotas), NMFS does not obtain information on bluefin that may be discarded as a result of the capture of fish that are less than the required minimum size (or discarded for another reason). Smart-phone reporting would enhance NMFS' ability to more fully and accurately account for all sources of fishing mortality.

This alternative is not considered further at this time because, although NMFS fully supports the concept of the use of smart-phones for data reporting, the development and implementation of a smart phone "app" would be more costly and take more time than enhancement of the existing automatic data reporting system; therefore, this alternative is not reasonable at this time. Additionally, not all participants in the fishery have smart phones, yet most have access to a computer and all have access to a telephone.

2.6.11 Prohibition of the Use of Pelagic Longline Gear in the HMS Fishery

This alternative would prohibit the use of pelagic longline gear in the HMS fishery in order to reduce bluefin tuna dead discards. Prohibition of the use of pelagic longline gear to target HMS species would reduce dead discards of bluefin tuna and reduce bycatch of other HMS species, marine mammals, and other species.

This alternative is not considered further at this time because it would not provide a balanced approach to achieving the Amendment 7 objectives or be consistent with the provisions of the

MSA. Specifically, this alternative would not address the Amendment 7 objective to optimize fishing opportunity and would have unnecessary significant adverse economic impacts due to the cessation of the pelagic longline fishery for swordfish, yellowfin tuna and other HMS species, contrary to National Standard (NS) 8 which requires that management measures provide for the sustained participation of fishing communities and to the extent practicable, minimize adverse economic impacts on such communities.

Chapter 2 References

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3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

This chapter serves several purposes. It describes the affected environment (the fishery, the gears used, the communities involved, etc.), and provides a view of the current condition of the fishery, which serves as a baseline against which to compare potential impacts of the different alternatives. This chapter also provides a summary of information concerning the biological status of Atlantic bluefin and northern albacore tuna stocks; the marine ecosystems in the fishery management unit; the social and economic condition of the fishing interests, fishing communities, and fish processing industries

The domestic management of Atlantic tunas, is combined with the management of swordfish, sharks, and billfish in the 2006 Consolidated HMS FMP and its amendments. International management of Atlantic tunas occurs primarily through the International Commission for the Conservation of Atlantic Tunas (ICCAT) which adopts binding recommendations that are then implemented domestically under ATCA. The management background information in this chapter is limited in scope to information needed to understand the Affected Environment discussion. More extensive and specific discussion is included in Chapters 1 and 2 and 9. Additional background information and documents may be found at the following link under the HMS website: http://www.nmfs.noaa.gov/sfa/hms/Linkpages/documents.htm.

3.1 Bluefin Tuna Quota Management

The Atlantic bluefin tuna fisheries are managed domestically through a quota system, in conjunction with other management measures including gear restrictions, minimum fish sizes, closed areas, and trip limits, among others. ICCAT recommendations include establishing an annual TAC of bluefin for the western Atlantic management area, as well as other management measures. The western Atlantic management area is separated from the eastern Atlantic and Mediterranean management area at the 45° West longitude line in the northern hemisphere. Under existing recommendations, the U.S. portion of the ICCAT-designated western Atlantic bluefin TAC is 54 percent of the overall TAC plus an additional 25 mt for bycatch related to longline fisheries in the vicinity of the Northeast Distant management area boundary. NMFS implements the ICCAT U.S. quota recommendation, as required by ATCA, and further divides the quota among U.S. fishing categories through the domestic rulemaking process (i.e., proposed and final rules in the Federal Register). Through such a rule, NMFS divides the annual U.S. bluefin quota among several domestic categories based on allocation percentages first established in the 1999 FMP (NMFS 1999a), and further subdivides these domestic category allocations into subquotas (*i.e.*, on a temporal, geographic, and/or size class basis) to further meet the objectives of the Magnuson-Stevens Act, ATCA, and the 2006 Consolidated HMS FMP. NMFS adjusts the U.S. bluefin quota through annual domestic quota specifications, as needed, to appropriately account for overharvest or underharvest during the previous year, consistent with ICCAT recommendations.

3.1.1 Domestic Subquotas

NMFS implements ICCAT-adopted quotas through rulemaking. Domestically, consistent with the 2006 Consolidated HMS FMP, the base quota for each of the quota categories is expressed as a percentage of the total U.S. quota, and the quotas are codified in the regulations.

The U.S. BFT quota and subquotas for the General, Angling, Harpoon, Purse Seine, Longline, Trap, and Reserve categories are codified in the HMS regulations at 50 CFR § 635.27; these allocations (in metric tons) were most recently established via a 2011 final rule (76 FR 39019, July 5, 2011) following the 2010 ICCAT recommendation, which revised the western Atlantic bluefin TAC. As an example, applying the 19.7% allocation to the 923.7-mt U.S. quota (not including any quota recommended for longline bycatch in the vicinity of the management area boundary) resulted in an Angling category quota of 182 mt.

Table 3.1 Bluefin Base Quota Allocations by Quota Category – As a Percentage of U.S. Quota.

Category	Current Allocation (%)	Category	Current Allocation (%)
Angling	19.7	Purse Seine	18.6
General	47.1	Trap	0.1
Harpoon	3.9	Reserve	2.5
Longline	8.1		

3.1.2 Bluefin Quota Specification

In addition to implementing the ICCAT-recommended quota by regulation, NMFS also annually adjusts the quota as appropriate for overharvest or underharvest consistent with ICCAT recommendations. The quota specifications are based on the ICCAT-recommended U.S. quota for a particular year, the under/overharvest of the prior year, the recommended limit on the amount of quota that may be carried forward, and the codified category quotas and subquotas. In recent years, NMFS has proactively accounted for a portion or all of the estimated dead discards "up front," (i.e., at the beginning of the fishing year) via the specifications process.

In the 2007 through 2010 quota specifications, NMFS accounted for pelagic longline dead discards within the Longline category quota, and deducted the best available estimate of dead discards from the current year Longline base quota. In the quota specifications for these years, NMFS also carried forward the full amount of prior-year underharvest allowed by ICCAT and distributed the underharvest to: (1) ensure that the Longline category had sufficient quota to operate during the fishing year after the required accounting for BFT dead discards; (2) maintain 15 percent of the 2010 U.S. quota in Reserve for potential transfer to other ICCAT Contracting Parties and other domestic management objectives, if warranted; and (3) provide the non-Longline quota categories a share of the remainder of the underharvest consistent with the allocation percentages established in the Consolidated HMS FMP.

In both the 2011 and 2012 specifications, NMFS took the proactive measure of accounting for half of the dead discard estimate up front and deducting that portion directly from the Longline category quota. In the 2011 specifications, NMFS applied half of the 2010 underharvest that was

allowed to be carried forward to the Longline category and maintained the other half in the Reserve category (76 FR 39019, July 5, 2011). This was intended to provide maximum flexibility in accounting for 2011 landings and dead discards. In 2012, NMFS proposed the same method of distributing the underharvest that was allowed to be carried forward to 2012 (77 FR 15712, March 16, 2012). However, NMFS had closed the pelagic longline fishery to BFT retention by the time the final specifications were being prepared and therefore ultimately provided a larger portion to the Longline category in the final rule to account for actual BFT landings, and placed the remainder in the Reserve category. For the last two years, NMFS has maintained the directed fishing categories at their baseline quotas.

3.2 Biological Environment: Life History and Stock Status

The following information focuses only on Atlantic bluefin and northern albacore due to the scope of the measures considered in this document. Biological information on the other HMS may be found in the 2006 Consolidated HMS FMP.

3.2.1 Atlantic Bluefin Tuna Life History and Biology

A thorough review of Atlantic bluefin life history and biology is contained in the "Status Review Report of Atlantic Bluefin Tuna" (Atlantic Bluefin Tuna Status Review Team, 2011) and the "Report of the Standing Committee on Research and Statistics" (SCRS 2012). A brief summary is below:

Atlantic bluefin tuna are highly migratory pelagic fish (scombrids, a family within the class Actinopterygii and order Perciformes) that range across most of the North Atlantic and its adjacent seas, particularly the Mediterranean Sea. They are distributed from the Gulf of Mexico to Newfoundland in the West Atlantic, from roughly the Canary Islands to south of Iceland in the East Atlantic, and throughout the Mediterranean Sea. They are the largest of the tuna species and can reach up to 13 feet and 2,000 pounds.

Archival tagging and tracking information have confirmed that bluefin tuna are endothermic (i.e., able to endure cold as well as warm temperatures while maintaining a stable internal body temperature). While bluefin tuna dive frequently to deeper depths, they generally spend most of their time in waters less than 500 m, and often much shallower.

Similar to other large predators, juvenile and adult bluefin tuna are opportunistic feeders, with a diet that may consist of a variety of species including fish, crabs, octopus, jellyfish, salps, and sponges. Juveniles typically feed on crustaceans, fish and cephalopods while adults are generally piscivorous, primarily eating available baitfish such as herring, anchovy, sand lance, sardine, sprat, bluefish, and mackerel. Bluefin tuna larvae consume zooplankton, primarily copepods. Sharks, marine mammals (including killer whales and pilot whales), and large fishes feed on bluefin tuna. Bluefish and seabirds also prey upon juvenile bluefin tuna.

Bluefin tuna occur over the continental shelf and in embayments, especially during the summer months when they feed actively on herring, mackerel, and squids in the North Atlantic. Larger individuals move into higher latitudes than do smaller fish. Changes in important fisheries

indicate that apparent variations in the spatial dynamics of bluefin tuna may be the result of interactions between biological factors (e.g., prey distribution), environmental variations and fishing practices.

Currently, bluefin tuna are assumed to be sexually mature at age 4 (25 kg) in the eastern Atlantic and Mediterranean (at 25 kg) and at age 9 (145 kg) in the western Atlantic. Recent information received by the SCRS indicated that some individuals caught in the West Atlantic as small as 47 kg (age 5) were mature. Bluefin tuna are oviparous (i.e., lay eggs) and iteroparous (i.e., spawn regularly), and are multiple batch spawners. The number of eggs produced is dependent on the size of the fish. Females can produce up to 10 million eggs a year. The eggs are fertilized in the water column and hatch in about 2 days.

In the West Atlantic, bluefin tuna are thought to spawn from mid-April into June in the Gulf of Mexico and in the Florida Straits. Juveniles are thought to occur in the summer over the continental shelf, primarily from about 34°N to 41°N and offshore of that area in the winter. In the East Atlantic, bluefin tuna generally spawn from late May to July depending on the spawning area, in several areas around the Balearic Islands, Tyrrhenian Sea, and central and eastern Mediterranean where the sea-surface temperature of the water is about 24°C. Sexually mature fishes have also been recently observed in May and June in the eastern Mediterranean (between Cyprus and Turkey).

Atlantic bluefin tuna grow more slowly than other tunas and have a long life span, up to 20 years or more. They can grow to over 300 cm and reach more than 650 kg. Juvenile growth is rapid for a teleost fish (about 30 cm/year), but slower than other tuna and billfish species. Fish born in June attain a length of about 30-40 cm long and a weight of about 1 kg by October. After one year, fish reach about 4 kg and 60 cm long. Growth in length tends to be lower for adults than juveniles, but growth in weight increases. At 10 years old, a bluefin tuna is about 200 cm and 170 kg and reaches about 270 cm and 400 kg at 20 years. The oldest age considered reliable is 20 years, based on an estimated age at tagging of two years and about 18 years at liberty, although it is believed that bluefin tuna may live to older ages. Bluefin tuna are, thus, characterized by a late age at maturity (thus, a large number of juvenile classes) and a long life span (about 40 years, as indicated by recent studies from radiocarbon deposition). These factors contribute to make bluefin tuna well adapted to variations in recruitment success, but more vulnerable to fishing pressure than rapid growth species such as tropical tuna species. Bluefin tuna in the West Atlantic generally reach a larger maximum size compared to bluefin caught in the East Atlantic.

3.2.2 Northern Albacore Life History and Biology

The thorough review of Northern albacore life history and biology is contained in the "Report of the Standing Committee on Research and Statistics" (SCRS, 2012) and NOAA' website "Fishwatch" (http://www.fishwatch.gov/). Below is a brief summary:

Albacore is a temperate tuna widely distributed throughout the Atlantic Ocean and Mediterranean Sea. For assessment purposes, the existence of three stocks is assumed based on available biological information: northern and southern Atlantic stocks (separated at 5º N. latitude), and a Mediterranean stock.

Like other species of tuna, albacore have unique biological characteristics that enable them to swim at speeds over 50 miles per hour and cover vast areas during annual migrations. Albacore tuna feed near the top of the food chain, preying upon a variety of fish, crustaceans, and squid. They are also prey for many top predators, including sharks, rays, larger tunas, and billfishes.

The expected life-span for albacore is around 15 years. Present available knowledge on habitat, distribution, spawning areas and maturity of Atlantic albacore is based on limited studies, mostly from past decades. Sexual maturity is considered to occur at about 90 cm FL (age five) in the Atlantic, and at smaller size (62 cm, age two) in the Mediterranean. Until this age, they are mainly found in surface waters.

In the spring and summer, northern albacore spawn in subtropical waters of the Atlantic and throughout the Mediterranean Sea. Depending on their size, females have between 2 million and 3 million eggs per spawning season.

3.2.3 Status of Western Atlantic Bluefin Tuna and Northern Albacore

A review of how the status of HMS stocks is determined may be found in the 2012 Stock Assessment and Fishery Evaluation (SAFE) Report.

The western Atlantic bluefin tuna stock was last assessed in 2012 by ICCAT's SCRS (SCRS 2012), and included information through 2011. The stock assessment included the use of two alternative recruitment scenarios, one assuming low potential recruitment and one assuming high potential recruitment. Therefore, the stock assessment produced two sets of results, and the status of the stock depends upon which recruitment scenario is considered. Under the low recruitment scenario, the stock is not overfished and overfishing is not occurring, while under the high recruitment scenario, the stock is overfished and overfishing is occurring. The SCRS, as stated in the stock assessment, has no strong evidence to favor either scenario over the other and notes that both are reasonable (but not extreme) lower and upper bounds on rebuilding potential.

The northern albacore stock was last assessed in 2009 by ICCAT's SCRS (SCRS 2009), and included information through 2007. Northern albacore is considered overfished, with overfishing occurring. ICCAT will assess northern albacore again in 2013.

Table 3.2 summarizes stock assessment information and the current status of Atlantic bluefin tuna and northern albacore tuna as of 2012. NMFS updates all U.S. fisheries stock statuses each quarter and provides a Status of U.S. Fisheries Report to Congress on an annual basis.

The status of the stock reports are available at:
http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm**.**

The Bluefin tuna and northern albacore stock assessments can be found online at:

http://www.iccat.int/Documents/Meetings/Docs/2012_BFT_ASSESS.pdf

http://www.iccat.int/Documents/SCRS/DetRep/DET-ALB-NA.pdf.

Table 3.2 Stock Assessment Summary for Western Atlantic Bluefin and Northern Albacore.

Current Relative Biomass Level	Biomass at Maximum Sustainable Yield	Minimum Stock Size Threshold	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook – From Status of Stocks for U.S. managed species*
Western Atlantic bluefin tuna					
SSB_{11}/SSB_{MSY}= 1.4 (1.14-1.72) (low recruitment) SSB_{11}/SSB_{MSY}= 0.19 (0.13-0.29) (high recruitment)	12,943 mt (low recruitment; 12,717-13,268 mt) 93,621 mt (high recruitment; 77,288-116,679 mt)	0.86 SSB_{MSY} (11,131 mt; low recruitment) (80,514 mt; high recruitment)	F_{08-10}/F_{MSY}** = 0.61 (0.49-0.74) (low recruitment) F_{08-10}/F_{MSY}** = 1.57 (1.24-1.95) (high recruitment)	F_{MSY} = 0.17 (0.14-0.19) (low recruitment) F_{MSY} = 0.064 (0.056-0.074) (high recruitment)	Low recruitment scenario: Not overfished; overfishing is not occurring. High recruitment scenario: Overfished; overfishing is occurring
Northern albacore tuna					
B_{07}/B_{MSY} =0.62 (0.45-0.79)	B_{MSY}=172,000 mt SSB_{MSY}=58,170 mt	0.7B_{MSY} (120,400 mt; based on B_{MSY}); (40,719 mt; based on SSB_{MSY})	F_{07}/F_{MSY} = 1.05 (0.85-1.23)	F_{MSY} =0.17	Overfished; overfishing is occurring.

**Where F year refers to the geometric mean of the estimates for 2008-2010 (a proxy for recent F levels).

3.2.4 Physical Environment / Habitat

HMS may be found in large expanses of the world's oceans, straddling jurisdictional boundaries. Although many of the species frequent other oceans of the world, the scope of the U.S.

management of HMS is in Federal, state or territorial waters, including areas of the U.S. Caribbean, the Gulf of Mexico and the Atlantic coast of the United States to the seaward limit of the U.S. EEZ. These areas are connected by currents and water patterns that influence the occurrence of HMS at particular times of the year. On the largest scale, the North and South Equatorial currents occur in the U.S. Caribbean islands. The North Equatorial Current continues through the Caribbean Basin to enter the Gulf of Mexico through the Yucatan Straits. The current continues through the Florida Straits to join the other water masses (including the Antilles Current) to form the Gulf Stream along the eastern coast of the United States. Variations in flow capacities of the Florida Straits and the Yucatan Straits produce the Loop Current, the major hydrographic feature of the Gulf of Mexico. These water movements in large part influence the distributions of the pelagic life stages of HMS.

Tuna, swordfish, and billfish distributions are most frequently associated with hydrographic features such as density fronts between different water masses. The scales of these features may vary. For example, the river plume of the Mississippi River extends for miles into the Gulf of Mexico and is a fairly predictable feature, depending on the season. Fronts that set up over the De Soto Canyon in the Gulf of Mexico, or over the Charleston Bump or the Baltimore Canyon in the Mid-Atlantic, may be of a much smaller scale. The locations of many fronts or frontal features are statistically consistent within broad geographic boundaries. These locations are influenced by riverine inputs, movement of water masses, and the presence of topographic structures underlying the water column, thereby influencing the habitat of HMS. For a detailed description of tuna coastal, continental shelf, and slope area habitats of the Atlantic, Gulf of Mexico, and U.S. Caribbean, please refer to Section 3.3.2 of the 2006 Consolidated HMS FMP.

3.2.5 Essential Fish Habitat

Section 303(a)(7) of the Magnuson-Stevens Act, 16 U.S.C. §§ 1801 *et seq*., requires FMPs to describe and identify essential fish habitat (EFH), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat.

NMFS originally described and identified EFH and related EFH regulatory elements for all HMS in the management unit in the 1999 FMPs, which were updated in Amendment 1 to the 1999 Tunas, Swordfish, and Shark FMP and implemented in 2003 (NMFS 1999b; NMFS 2003). The EFH regulations require NMFS to conduct a comprehensive review of all EFH related information at least once every five years and revise or amend the EFH boundaries if warranted. To that effect, NMFS undertook the comprehensive five-year review of information pertaining to EFH for all HMS in the management unit in the 2006 Consolidated HMS FMP (NMFS 2006). Based on the findings of this review, NMFS issued a Notice of Intent to amend EFH for HMS through Amendment 1 to the 2006 Consolidate HMS FMP on November 7, 2006 (71 FR 65087). In the Notice of Intent, NMFS described its intent to prepare an Environmental Impact Statement (EIS) to examine alternatives for updating existing HMS EFH, consider additional Habitat Areas of Particular Concern (HAPCs), analyze fishing gear impacts, and if necessary, identify ways to avoid or minimize, to the extent practicable, adverse fishing impacts on EFH consistent with the Magnuson-Stevens Act and other relevant federal laws. At that time, NMFS requested new information not previously considered in the 2006 Consolidated HMS FMP, comments on

potential HAPCs, and information regarding potential fishing and non-fishing impacts that may adversely affect EFH.

On June 12, 2009, NMFS published a Notice of Availability of the Final Environmental Impact Statement for EFH Amendment 1 to the 2006 Consolidated HMS FMP (74 FR 28018) (NMFS 2009). This amendment updated and revised EFH boundaries for HMS, designated a new HAPC for bluefin tuna in the Gulf of Mexico, and analyzed fishing and non-fishing impacts on EFH. To facilitate public outreach, an internet-based mapping program (HMS EFH Evaluation Tool) was created to show the updated and revised EFH boundaries for HMS.

Habitat Areas of Particular Concern

To further the conservation and enhancement of EFH, the EFH guidelines encourage FMPs to identify HAPCs. HAPCs are areas within EFH that meet one or more of the following criteria: they are ecologically important, particularly vulnerable to degradation, undergoing stress from development, or are a rare habitat type. HAPCs can be used to focus conservation efforts on specific habitat types that are particularly important to managed species. Currently, HAPC has been designated for two HMS species: sandbar sharks and bluefin tuna. The areas off of North Carolina, Chesapeake Bay, MD, and Great Bay, NJ, have been identified as a HAPC for sandbar sharks (NMFS 1999a). HAPC for bluefin tuna was designated in Amendment 1 to the 2006 Consolidated HMS FMP and is located across the western, northern, and central Gulf of Mexico (Figure 3.1). Maps of these areas are available on the HMS Management Division website at http://www.nmfs.noaa.gov/sfa/hms/EFH/index.htm.

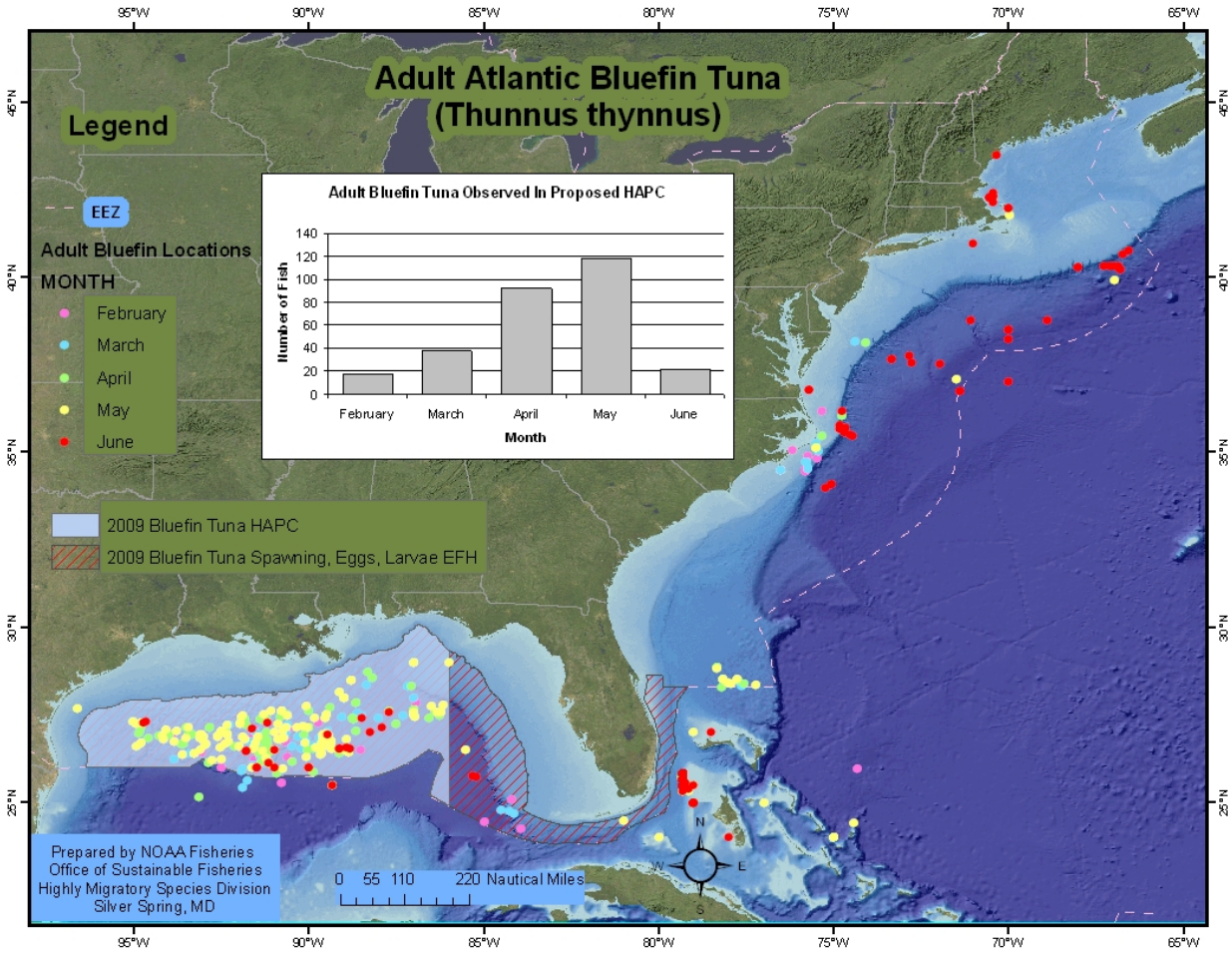

Figure 3.1 Spawning adult bluefin tuna Habitat Area of Particular Concern in the Gulf of Mexico.

3.2.6 Bycatch Issues in the Physical Environment

A thorough regulatory and management review of bycatch in HMS fisheries, and bycatch of HMS in other fisheries, may be found in previous SAFE reports (e.g., the 2012 HMS SAFE Report and 2011 HMS SAFE Report). The 2011 HMS SAFE Report includes a more focused review on implications under the Endangered Species Act and Marine Mammal Protection Act. The 2012 HMS SAFE Report should be referenced for the most recent analyses on the effectiveness of HMS regulations on reducing bycatch (updated annually).

Bycatch in commercial and recreational fisheries has become an important issue for the fishing industry, resource managers, scientists, and the public. These interactions can result in death or injury to the discarded fish, and it is essential that this component of total fishing-related mortality be incorporated into fish stock assessments and evaluation of management measures. Bycatch precludes other more productive uses of fishery resources and decreases the efficiency of fishing operations. Although not all discarded fish die, bycatch can in some fisheries become a large source of mortality, which can slow the rebuilding of overfished stocks. Bycatch imposes

direct and indirect costs on fishing operations by increasing sorting time and decreasing the amount of gear available to catch target species. Incidental catch concerns also apply to populations of marine mammals, sea turtles, seabirds, and other components of ecosystems which may be protected under other applicable laws and for which there are no commercial or recreational uses but for which existence values may be high.

There are benefits associated with the reduction of bycatch, including the reduction of uncertainty concerning total fishing-related mortality, which improves the ability to assess the status of stocks, to determine the appropriate relevant controls, and to ensure that overfishing levels are not exceeded. It is also important to consider the bycatch of HMS in fisheries that target other species as a source of mortality for HMS and to work with fishery constituents and resource manager partners on an effective bycatch strategy to maintain sustainable fisheries. This strategy may include a combination of management measures in the domestic fishery, and if appropriate, multi-lateral measures recommended by international bodies such as ICCAT or coordination with Regional Fishery Management Councils or States. The bycatch in each fishery and effectiveness of bycatch reduction measures are summarized annually in the SAFE Report for Atlantic HMS fisheries.

A number of options are currently employed (*) or available for bycatch reduction in Atlantic HMS fisheries. These include but are not limited to:

Commercial

1. *Gear Modifications (including hook and bait types)
2. *Circle Hooks
3. *Weak Hooks
4. *Time/Area Closures
5. Performance Standards
6. *Education/Outreach
7. *Effort Reductions (*i.e.*, Limited Access)
8. Full Retention of Catch
9. *Use of De-hooking Devices (mortality reduction only)

Recreational

1. *Use of Circle Hooks (mortality reduction only; for bluefin tournaments)
2. Use of De-hooking Devices (mortality reduction only)
3. Full Retention of Catch
4. *Formal Voluntary or Mandatory Catch-and-Release Program for all Fish or Certain Species
5. Time/Area Closures

There are probably no fisheries in which there is zero bycatch because none of the currently legal fishing gears are perfectly selective for the target of each fishing operation (with the possible exception of the swordfish/tuna harpoon fishery and speargun fishery). Therefore, to totally eliminate bycatch of all non-target species in Atlantic HMS fisheries would be impractical. The

goal then is to minimize the amount of bycatch to the extent practicable and minimize the mortality of species caught as bycatch.

Standardized Reporting of Bycatch

Section 303(a)(11) of the Magnuson-Stevens Act requires that an FMP establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery. Bycatch is usually estimated using the following methods: (1) fishery-independent surveys; (2) self-reporting through logbooks, trip reports, dealer reports, port sampling, and recreational surveys; (3) at-sea observation, including observers, digital video cameras, digital observers, and alternative platform and remote monitoring; and (4) stranding networks. All of the methods may contribute to useful bycatch estimation programs, but at-sea observation (observers or electronic monitoring) provides the best mechanism to obtain reliable and accurate bycatch estimates for many fisheries. Often, observer programs also will be the most cost-effective of these alternatives. However, observers are not always the most cost-effective or practicable method for assessing bycatch (NMFS, 2004a).

The effectiveness of any Standardized Bycatch Reporting Method (SBRM) depends on its ability to generate estimates of the type and quantity of bycatch that are both precise and accurate enough to meet the conservation and management needs of a fishery. The National Bycatch Report (NMFS, 2004a) contains an extensive discussion of how precision relates to sampling and to assessments.

The other important aspect of obtaining bycatch estimates that are useful for management purposes is accuracy. Efficient allocation of sampling effort within a stratified survey design improves the precision of the estimate of overall discard rates (Rago *et al.*, 2005). Accuracy of sample estimates can be evaluated by comparing performance measures (*e.g.*, landings, trip duration) between vessels with and without observers present. While there are differences between the terms accuracy and bias they have been used interchangeably. A “biased” estimate is inaccurate while an “accurate” estimate is unbiased (Rago *et al*., 2005).

The NWGB recommended that at-sea sampling designs should be formulated to achieve precision goals for the least amount of observation effort, while also striving to increase accuracy (NMFS, 2004a).

The recommended precision goals for estimates of bycatch are defined in terms of the CV of each estimate. For marine mammals and other protected species, including seabirds and sea turtles, the recommended precision goal is a 20 to 30 percent CV for estimates of interactions for each species/stock taken by a fishery. For fishery resources, excluding protected species, caught as bycatch in a fishery, the recommended precision goal is a 20 to 30 percent CV for estimates of total discards (aggregated over all species) for the fishery; or if total catch cannot be divided into discards and retained catch, then the goal is a 20 to 30 percent CV for estimates of total catch (NMFS, 2004a). The report also states that attainment of these goals may not be possible or practical in all fisheries and should be evaluated on a case-by-case basis.

The CV of an estimate can be reduced and the precision increased by increasing sample size.

Although the precision goals for estimating bycatch are important factors in determining observer coverage levels, other factors are also considered when determining actual coverage levels. These may result in lower or higher levels of coverage than that required to achieve the precision goals for bycatch estimates. In general, factors that may justify lower coverage levels include lack of adequate funding; incremental coverage costs that are disproportionately high compared to benefits; and logistical consideration such as lack of adequate accommodations on a vessel, unsafe conditions, and lack of cooperation by fishermen (NMFS, 2004a).

Factors that may justify higher coverage levels include incremental coverage benefits that are disproportionately high compared to costs and other management focused objectives for observer programs. The latter include total catch monitoring, in-season management of total catch or bycatch, monitoring bycatch by species, monitoring compliance with fishing regulations, monitoring requirements associated with the granting of Experimental Fishery Permits, or monitoring the effectiveness of gear modifications or fishing strategies to reduce bycatch. In some cases, management may require one or even two observers to be deployed on every fishing trip. Increased levels of coverage may also be desirable to minimize bias associated with monitoring "rare" events with particularly significant consequences (such as takes of protected species), or to encourage the introduction of new "standard operating procedures" for the industry that decrease bycatch or increase the ease with which bias can be monitored (NMFS, 2004a).

NMFS utilizes self-reported logbook data (Fisheries Logbook System or FLS, and the supplemental discard report form in the reef fish/snapper-grouper/king and Spanish mackerel/shark logbook program), at-sea observer data, and survey data (recreational fishery dockside intercept and telephone surveys) to produce bycatch estimates in HMS fisheries. The number and location of discarded fish are recorded, as is the disposition of the fish (*i.e.*, released alive vs. released dead). Post-release mortality of HMS can be accounted for in stock assessments to the extent that the data allow.

The fishery logbook systems in place are mandatory programs, and it is expected that the reporting rates are generally high (Garrison, 2005). Due to the management focus on HMS fisheries, there has been close monitoring of reporting rates, and observed trips can be directly linked to reported effort. In general, the gear characteristics and amount of observed effort is consistent with reported effort. However, under-reporting is possible, which can lead to a negative bias in bycatch estimates. Cramer (2000) compared dead discards of undersized swordfish, sailfish, white and blue marlin, and pelagic sharks from HMS logbook and POP data in the U.S. Atlantic pelagic longline fishery. Cramer (2000) provided the ratio of catch estimated from the POP data divided by the reported catch in the HMS logbooks. The ratio indicated the amount of underreporting for each species in a given area. However, the data analyzed by Cramer (2000), was based on J-hook data from 1997 – 1999 and that gear is no longer authorized for pelagic longline gear. In some instances, logbooks are used to provide effort information against which bycatch rates obtained from observers are multiplied to estimate bycatch. In other sectors/fisheries, self-reporting provides the primary method of reporting bycatch because of limited funding, priorities, *etc*.

The following section provides a review of the bycatch reporting methodologies for all bluefin fisheries: the U.S. pelagic longline fishery, commercial handgear fisheries, purse seine fishery, and the recreational handgear fishery. Future adjustments may be implemented based on evaluation of the results of studies developed as part of the HMS Bycatch Reduction Implementation Plan, or as needed due to changing conditions in the fisheries. In addition, NMFS developed a National Bycatch Report to provide additional insight and guidance on areas to be addressed for each fishery (http://www.nmfs.noaa.gov/by_catch/bycatch_nationalreport.htm). Further analyses of bycatch in the various HMS fisheries may be conducted as time, resources, and priorities allow.

3.3 Quota Categories

Management approaches for bluefin tuna are highly focused on the different Categories within the fishery. Regulations vary by category. The amount of information available about each fishery, dependent on the reporting requirements for each category, also varies. Therefore, the following discussion is organized by fishery Category, and provides a brief description of the fishery and relevant management measures that apply.

Bluefin Tuna Size Classes

The size of bluefin is an important attribute for management. Categories within the bluefin fisheries tend to target different sized bluefin tuna as a function of the gear used. Basing the regulations around size classes provides a mechanism to minimize user conflict. The regulations are also intended to shift the fishery towards targeting larger fish, in order to provide for opportunities for young fish to spawn in the Gulf of Mexico. Table 3.3 contains the names of bluefin size classes and associated size ranges used for management. Please see the 2012 HMS SAFE Report for a complete description of permit types issued by species, gear, or fishery as of October 2012 (NMFS 2012).

Table 3.3 Bluefin Size Classes (in inches)

Size Class	Curved Fork Length (CFL) - inches	Notes
Young school	less than 27	May not retain
School	27 to less than 47	Recreational Size Range
Large School	47 to less than 59	
Small Medium	59 to less than 73	
Large Medium	73 to less than 81	Commercial Size Range*
Giant	greater than 81	

*One “trophy” (large medium or giant) bluefin may be landed per year by recreational vessels while the trophy fishery is open

3.3.1 Recreational Categories – Angling and Charter/Headboat Categories

Recreational fishing for medium and giant bluefin tuna generally takes place between December and February off North Carolina, and in Cape Cod Bay, the Gulf of Maine, and other New

England waters during summer and early fall. Smaller bluefin tuna are targeted off Virginia, Delaware and Maryland in early to mid-summer, with the center of activity moving northward into the New York Bight as the season progresses. Fishing usually takes place between eight and 200 km from shore. Beyond these general patterns, the availability of bluefin tuna at a specific location and time is highly dependent on environmental variables that fluctuate from year-to-year. Tournaments tend to concentrate fishing effort into a small area (NMFS 1999a). In recent years, school bluefin have been increasingly available to southern New England fisheries, in that school bluefin have been appearing and caught further north than in the past. Fishery landings and school bluefin availability generally decline in the fall with colder water temperatures and degrading fishing conditions (NMFS2011). Charter/headboats have been targeting school bluefin tuna off New York and New Jersey since the early 1900s. Small bluefin tuna are typically caught by trolling with artificial lures, although chunking has become popular in some areas, using rod and reel (NMFS 1999a). A survey of anglers that participated in the 1997 winter fishery off Cape Hatteras, NC found that 73 percent of 1,390 vessel trips for bluefin tuna were taken on charterboats (Ditton et al. 2000).

3.3.1.1 Recreational Bluefin Fishery Regulations for the Angling and Charter/Headboat Categories

The open-access Angling Category applies to private recreational vessels with HMS Angling permits, and to vessels with HMS Charter/Headboat permits that are fishing recreationally. Vessels cannot be simultaneously issued Angling Category and Charter/Headboat Category permits. The recreational fishery is limited to using handgear (rod and reel, handline, bandit gear (Charter/Headboat permit only), and Green-stick (Charter/Headboat permit only) to capture HMS, including bluefin. Speargun use is allowed for the “BAYS” tunas (bigeye, albacore, yellowfin, and skipjack) only, not for bluefin tuna. Recent size and retention limits for the Angling and Charter/Headboat permit categories are summarized in Table 3.4 and Table 3.5. All restrictions are applied to the vessel, per day and/or trip.

The Angling category is allocated 19.7 percent of the baseline bluefin quota. The Angling category quota is further subdivided into size class subquotas (school, large school/small medium, and large medium/giant) and then areas (north and south, divided at 39° 18’ North latitude, or Great Egg Inlet, NJ) (Table 3.4). Recreational anglers must also comply with retention limits, reporting requirements, applicable regulations for the bluefin fishery, and the general regulations for HMS fisheries.

Vessels with an HMS Charter/Headboat category permit can fish for bluefin under the Angling category recreational rules or the General category commercial rules on a particular fishing trip. The rules that apply depend upon the size of the first bluefin retained on that particular trip. For example, if the first bluefin retained is a school, large school, or small medium, the Angling category rules would apply. If the first fish is a large medium or giant, the General category rules would apply, and the vessel would be required to abide by the size and retention limits applicable to the General category, and would be able to sell the fish. Landed bluefin tuna count toward their respective category quotas.

Other species authorized for harvest with an HMS Angling permit include: sharks, swordfish, white and blue marlin, sailfish, roundscale spearfish, and federally regulated Atlantic tunas (yellowfin, bigeye, skipjack, and albacore). Atlantic HMS caught, retained, possessed, or landed by persons on board vessels with an HMS Angling Category permit may not be sold or transferred to any person for a commercial purpose. By definition, recreational landings of Atlantic HMS are those that cannot be marketed through commercial channels, therefore it is not possible to monitor anglers' catches through ex-vessel transactions as in the commercial fishery. Instead, NMFS conducts statistical sampling surveys of the recreational fisheries.

Table 3.4 Angling Category Bluefin Quota Rules.

Description	**Amount**
Total Angling quota	19.7 % of total quota
Large medium or giant	No more than 2.3 % of annual Angling category quota
School	No more than 10 % of annual U.S. BFT quota may be school BFT (27- 47")
School reserve	18.5 % of school Angling category quota
After deducting the school reserve the following school subquotas are calculated:	
School south	52.8 %
School north	47.2 %
Large school/small medium south	52.8 %
Large school/small medium north	47.2 %
Large medium/giant south	66.7 %
Large medium/giant north	33.3 %

Table 3.5 Recent Retention Limits for the Angling and Charter/Headboat Permitted Vessels.

Date Range	Permit Category	Restriction
Jan 1 – Jun 11, 2010	Angling & Charter/Headboat	1 BFT 27” to less than 73”/day 1 BFT greater than 73” (“Trophy”)/year
June 12 – Dec 31, 2010	Angling	1 BFT 27” to less than 59” .day
	Charter/Headboat	1 BFT 27” to less than 47” and; 1 BFT from 47” to less than 59” / day (59 to 73” prohibited) Trophy South Fishery closed for both Angling & Charter/Headboat June 12-Dec 31. Trophy North fishery closed for both Angling & Charter/Headboat July 18 – Dec 31.
Jan 1- Apr 1, 2011	Angling & Charter/Headboat	1 BFT 27” to less than 73” /day
Apr 2- Dec 31, 2011	Angling	1 BFT 27” to less than 73”/day
	Charter/Headboat	1 BFT 27” to less than 47”/day and; 1 BFT 47” to less than 59”/day (47 to 73” prohibited). Trophy South Fishery closed for both Angling & Charter/Headboat Apr 2 – Dec 31. Trophy North fishery closed for both Angling & Charter/Headboat July 29 – Dec 31.
Jan 1 – Apr 6	Angling & Charter Headboat	1 BFT 27” to less than 73”/day 1 BFT greater than 73” (“Trophy”)/year
Apr 7 – Dec 31	Angling	1 BFT 27” to less than 73”/day
	Charter/Headboat	1 BFT 27” to less than 47” and 1 BFT 47” to less than 73”/day Trophy South fishery closed for both Angling & Charter/Headboat Apr 7-Dec 31

There were 23,061 HMS Angling permits and 4,129 Charter/Headboat permits issued as of October 2012. For more information, including a breakdown of Angling Category permits by state of residency and by home port, please see the 2012 SAFE Report (NMFS 2012).

3.3.1.2 Recreational Bluefin Fishery Data

3.3.1.2.1 Recent catch and landings

The recreational landings database for Atlantic HMS consists of information obtained through surveys including the Marine Recreational Information Program (MRIP), Large Pelagic Survey (LPS), Southeast Headboat Survey (HBS), Texas Headboat Survey, Recreational Billfish Survey (RBS) tournament data, and the recreational non-tournament swordfish and billfish landings database. Descriptions of these surveys, the geographic areas they include, and their limitations are discussed in the 2006 Consolidated HMS FMP and previous HMS SAFE Reports.

Updated landings for HMS recreational rod and reel fisheries are presented below in Table 3.6 from 2002 through 2011; landings by the recreational fishery of different size classes of bluefin are presented in Table 3.7.

Table 3.6 Domestic landings (mt ww) for the Atlantic Tunas and Swordfish Recreational Rod and Reel Fishery (2002 – 2011). Sources: NMFS 2012.

Species	Region	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bluefin tuna*	NW Atlantic	519.3	314.6	370.2	254.4	158.2	398.6	352.2	143.3	111.4	173.3
	GOM	1.5	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
	Total	520.8	314.6	370.2	254.4	158.8	398.6	352.2	143.3	111.4	173.3
Bigeye tuna**	NW Atlantic	49.6	188.5	94.6	165.0	422.3	126.8	70.9	77.6	116.8	72.4
	GOM	0.0	0.0	6.0	0.0	24.3	0.0	0.0	0.0	0.8	34.9
	Caribbean	0.0	4.0	< 0.1	0.0	0.0	0.0	0.0	0.0	0.0	2.3
	Total	49.6	192.5	100.6	165.0	446.6	126.8	70.9	77.6	117.6	109.6
Albacore**	NW Atlantic	323.0	333.8	500.5	356.0	284.2	393.6	125.2	22.8	46.2	170.6
	Caribbean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	103.4	0.0
	Total	323.0	333.8	500.5	356.0	284.2	393.6	125.2	22.8	149.6	170.6
Yellowfin tuna**	NW Atlantic	2,624.0	4,672.1	3,433.7	3,504.8	4,649.2	2,726.0	657.1	742.6	1,209.0	1,134
	GOM	200.0	640.0	247.1	146.9	258.4	227.6	366.3	264.7	18.0	362.8
	Caribbean	7.2	16.0	0.0	0.0	0.0	12.4	0.0	3.5	4.5	0.9
	Total	2,831.2	5,328.0	3,684.8	3,651.7	4,907.6	2,966.0	1,023.4	1,010.8	1,231.5	1,497.7
Skipjack tuna**	NW Atlantic	23.3	34.1	27.3	8.1	34.6	27.4	21.0	75.7	29.1	50.3
	GOM	13.2	11.1	6.3	3.1	6.4	23.9	16.3	22.0	15.5	23.7
	Caribbean	13.2	15.7	40.4	3.9	7.7	0.2	11.3	4.3	0.4	3.0
	Total	49.7	60.9	74.0	15.1	48.7	51.5	48.6	102.0	45.0	77.0
Swordfish	Total	21.5	6.1	25.2	61.2	52.7	68.2	75.7	31.6	49.3	53.6

* Rod and reel catch and landings estimates of bluefin tuna < 73 in curved fork length (CFL) based on statistical surveys of the U.S. recreational harvesting sector. Rod and reel catch of bluefin tuna > 73 in CFL are commercial and may also include a few metric tons of "trophy" bluefin (recreational bluefin ≥ 73 in). ** Rod and reel catches and landings for Atlantic tunas represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.

Table 3.7 Observed or Reported Number of Bluefin Tuna Kept in the Rod and Reel Fishery (ME-VA, 2002 – 2011). Source: Large Pelagic Survey

Species	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Giant bluefin tuna[1]	176	58	50	48	15	15	20	46	54	51
Large medium bluefin tuna[1]	11	11	13	12	1	5	11	0	36	28
Small medium bluefin tuna	62	83	30	22	48	69	48	205	11	14
Large school bluefin tuna	391	287	291	179	171	298	398	107	174	77
School bluefin	556	509	927	638	84	314	228	180	201	180
Young school bluefin	7	4	16	25	0	3	4	1	2	0

[1]Includes some commercial handgear landings.

3.3.1.2.2 Bycatch, Incidental Catch, and Protected Species

Bycatch in the recreational rod and reel fishery is difficult to quantify because many fishermen simply value the experience of fishing and may not be targeting a particular species. Amendment 1 to the Atlantic Billfish FMP established a catch-and-release fishery management program for the recreational Atlantic billfish fishery. As a result of this program, all Atlantic billfish that are released alive, regardless of size, are not considered bycatch. The recreational white shark fishery is by regulation a catch-and-release fishery only, and white sharks are not considered bycatch.

Bycatch can result in death or injury to discarded fish; therefore, bycatch mortality is incorporated into fish stock assessments, and into the evaluation of management measures. The number of kept and released fish reported or observed through the LPS dockside intercepts for 2002 – 2011 is presented in Table 3.7 and Table 3.8.

An outreach program to address bycatch and to educate anglers on the benefits of circle hooks has been implemented by NMFS. In January 2011, NMFS developed and released a brochure that provides guidelines on how to increase the survival of hook-and-line caught large pelagic species.

Table 3.8 Observed or Reported Number of Bluefin Tuna Released in the Rod and Reel Fishery (ME-VA, 2002 – 2011). Source: Large Pelagic Survey.

Species	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Giant bluefin tuna[1]	8	0	3	0	3	0	0	0	1	0
Large medium bluefin tuna[1]	2	0	36	4	1	3	11	7	22	2
Small medium bluefin tuna	8	13	21	30	18	32	23	93	46	32
Large school bluefin tuna	47	40	107	141	85	99	286	77	172	53
School bluefin tuna[2]	200	174	1,297	1,917	290	347	358	173	392	345
Young school bluefin tuna[2]	182	10	1,885	282	117	83	55	52	68	44

[1] Includes some commercial handgear landings. [2] Includes dead releases in 2010.

There is concern about the accuracy of discard estimates in the recreational rod and reel fishery for Atlantic HMS due to the low number of observations by the Large Pelagic Survey (LPS) and the Marine Recreational Information Progam (MRIP). Recreational bycatch estimates (numbers of fish released alive and dead) are not currently available, except for bluefin tuna. For some species, encounters are considered rare events, which might result in bycatch estimates with considerable uncertainty. Due to improvements in survey methodology, increased numbers of intercepts (interviews with fishermen) have been collected since 2002. NMFS may develop bycatch estimates (live and dead discards) and estimates of uncertainty for the recreational fishery from the LPS.

3.3.1.3 Tournaments

An Atlantic HMS tournament is defined as any fishing competition involving Atlantic HMS in which participants must register or otherwise enter or in which a prize or award is offered, for catching or landing such fish. Atlantic HMS tournaments are conducted from ports along the U.S. Atlantic coast, Gulf of Mexico, and Caribbean (i.e., the U.S. Virgin Islands and Puerto Rico). Some foreign tournaments (e.g., those held in the Bahamas, Bermuda, and the Turks and Caicos) may voluntarily register because their participants are mostly U.S. citizens. Since 1999, Federal regulations have required that tournament registration with NMFS take place at least four weeks prior to the commencement of tournament fishing activities. Tournament operators may be selected by NMFS for reporting, in which case a record of tournament catch and effort must be submitted to NMFS within seven days of the conclusion of the tournament. HMS Tournament registration data are presented in Table 3.9, Table 3.10, and Figure 3.2.

Recent trends in recreational catch and landings of HMS (including tournament landings information), including bluefin and BAYS tunas, can be found in Table 3.6.

Table 3.9 Number of Registered Atlantic HMS Tournaments by Year (2003 – 2012). Source: NMFS 2012; NMFS Atlantic HMS Tournament Registration Database.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012*	Average**
Total	244	215	256	259	299	267	270	270	249	235	259

*As of October 2012. **Averages only final numbers (2003-2011); excludes preliminary 2012 number.

Table 3.10 Number of Atlantic HMS Tournaments per species (2010 – 2011). Sources: NMFS 2012; NMFS Atlantic HMS Tournament Registration Database

Species	2010	2011
Blue marlin	157	146
White marlin	146	134
Longbill spearfish	75	66
Roundscale spearfish	-	30
Sailfish	160	151
Swordfish	83	75
Bigeye tuna	83	85
Albacore tuna	40	36
Yellowfin tuna	151	137
Skipjack tuna	23	21
Bluefin tuna	91	86
Pelagic sharks	69	55
Small coastal sharks	18	15
Non-ridgeback sharks	21	16
Ridgeback sharks	20	17

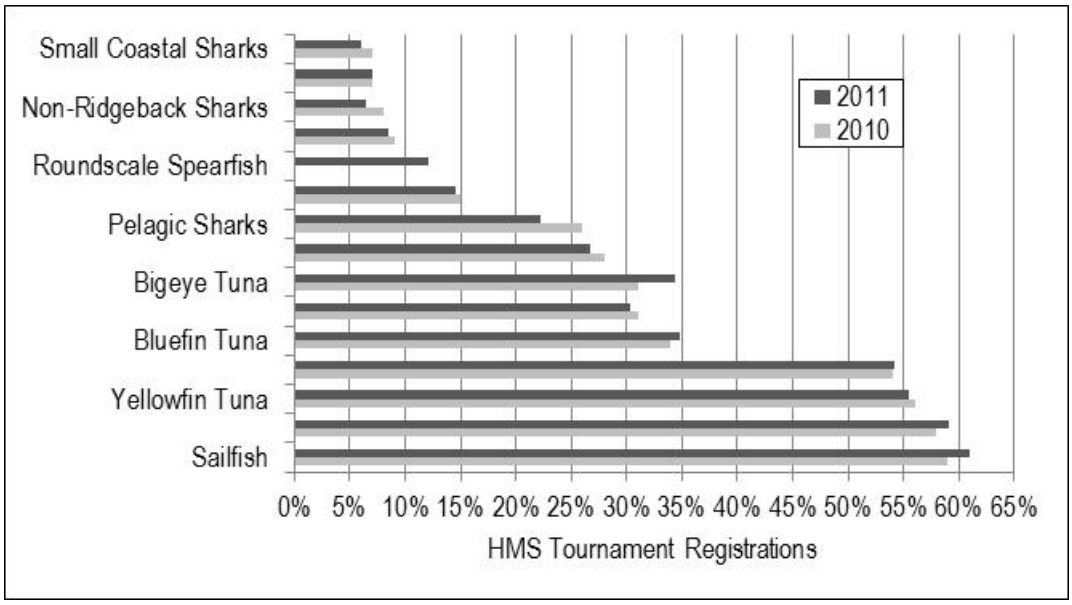

Figure 3.2 Species composition of HMS Tournaments (2010-2011). Source: 2012 HMS SAFE Report.

3.3.2 Commercial Handgear: General Category and Harpoon Category

Commercial handgear vessels that wish to sell their Atlantic tunas must obtain a commercial handgear permit in one of the following categories: General (rod and reel, harpoon, handline, bandit gear), Harpoon (harpoon only), or HMS Charter/Headboat (rod and reel and handline). Charter/Headboat fisheries, regulations, recent catch data, and bycatch data are discussed in Section 3.2.2.

Commercial handgears are used to fish for bluefin and other HMS by fishermen on private vessels, charter vessels, and headboat vessels. Rod and reel gear may be deployed from a vessel that is at anchor, drifting, or underway (*i.e.*, trolling). In general, trolling consists of dragging baits or lures through, on top of, or even above the water's surface. While trolling, vessels often use outriggers, kites, or green-sticks to assist in spreading out or elevating baits or lures and to prevent fishing lines from tangling. For more information on green-stick fishing gear, and the configurations allowed under current regulations, please refer to the discussion of green-stick gear in Section 4.8 of the 2012 HMS SAFE Report.

Operations, frequency and duration of trips, and distance ventured offshore vary widely. Most of the vessels are greater than seven meters in length and are privately owned by individual fishermen. The handgear fisheries are typically most active during the summer and fall, although in the South Atlantic and Gulf of Mexico fishing occurs during the winter months. Fishing usually takes place between eight and 200 kilometers (km) from shore and for those vessels using bait, the baitfish typically include herring, mackerel, whiting, mullet, menhaden, ballyhoo, butterfish, and squid. The commercial handgear fishery for bluefin traditionally occurred mainly in New England, but more recently has also flourished off the coast of southern Atlantic states, such as Virginia, North Carolina, and South Carolina, with vessels targeting large medium and

giant bluefin. This fishery is highly variable due to bluefin distribution and abundance, which varies with oceanographic and ecological conditions, etc.

These vessels may need additional permits from the states they operate out of in order to land and sell their catch. All commercial permit holders are encouraged to check with their local state fish/natural resource management office regarding these requirements. There are also U.S. Coast Guard safety regulations that apply to vessels with commercial permits. Permitted vessels are also required to sell their Atlantic tunas to federally permitted Atlantic tuna dealers.

3.3.2.1 General Category

The General category permit is an open access permit. The General category is allocated 47.1 percent of the baseline U.S. quota. The General category quota is further subdivided into subquotas, shown in Table 3.11, that are based upon historical fishery patterns and the seasonal distribution of bluefin.

Table 3.11 General Category Sub-Quotas by Month.

Months	Percentage of General Category Annual Quota
January *	5.3 %
June through August	50 %
September	26.5 %
October and November	13 %
December	5.2 %

*Although it is called the "January subquota," the regulations allow this fishery to continue until the subquota is reached, or March 31, whichever comes first.

The General category fishery has, over a number of years, landed a large percentage of the total bluefin landings (e.g., 62% in 2011 NMFS 2012). Landings can vary considerably however, and in recent years, fishermen have noted a substantial decline in the availability of large medium and giant bluefin in the New England area (NMFS 2011). During certain periods, for example, between 2004 through 2008, the availability of commercial-sized bluefin to the commercial fisheries, particularly off New England appeared to have declined dramatically, while the Canadian commercial quota was approached or met (SCRS 2010).

3.3.2.1.1 Recent Catch and Landings

In 2010, bluefin commercial handgear landings accounted for approximately 67 percent of the total U.S. bluefin landings, and almost 86 percent of commercial bluefin landings. Figure 3.3 and Table 3.6 shows the U.S. Atlantic bluefin landings in metric tons by category since 1996. Note that the commercial handgear landings are comprised of bluefin landed by both the General and Harpoon categories.

Table 3.13 displays the estimated number of rod and reel and handline trips targeting large pelagic species (e.g., tunas, billfishes, swordfish, sharks, wahoo, dolphin, and amberjack) from Maine through Virginia, in 2002 through 2011. The trips include commercial and recreational trips, and are not specific to any particular species. Total number of trips made in Virginia, the Delmarva region, off southern New Jersey, Connecticut and Rhode Island by private vessels decreased between 2002 and 2011. Private vessels made more trips in 2011 than in 2002 in states bordering the Gulf of Maine (Massachusetts, New Hampshire, and Maine), and in northern New Jersey. The number of trips made by Charter vessels decreased by 2,517 between 2002 and 2011; minor increases in the number of trips made occurred in the Gulf of Maine states and in New York.

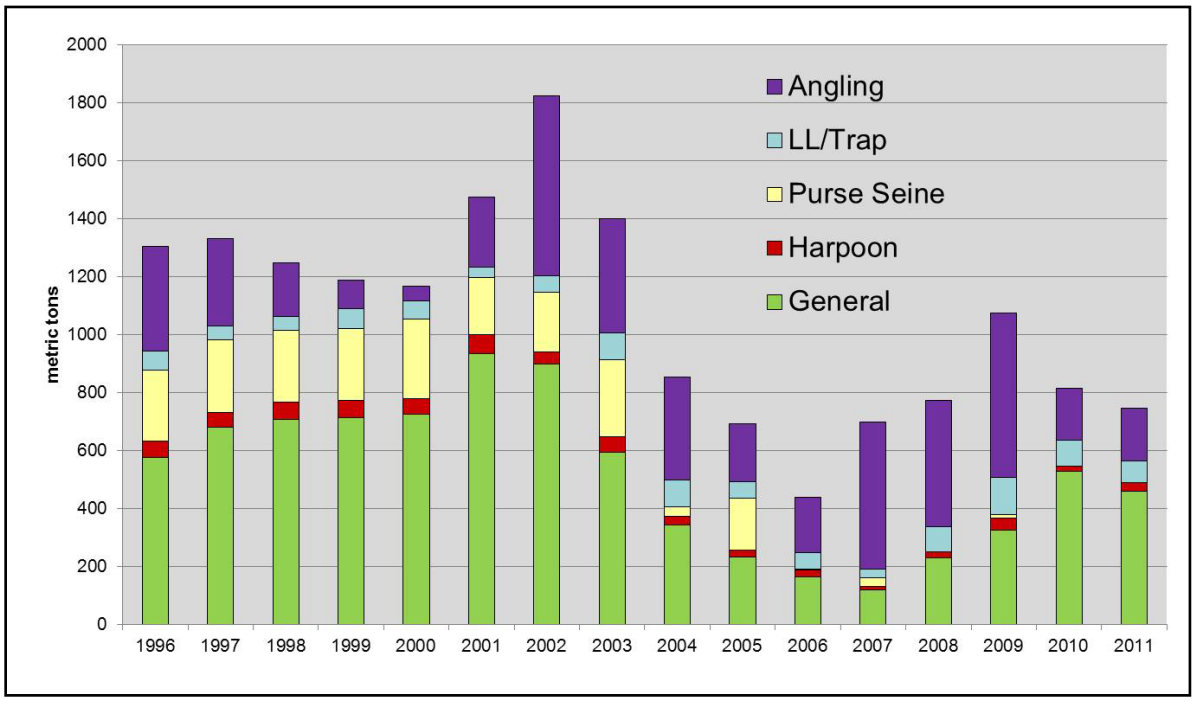

Figure 3.3 Landings of bluefin by category, 1996 – 2011. Longline (LL) and Trap landings are combined (these gears are permitted incidental landings only). Source: 2012 HMS SAFE Report.

Table 3.12 Domestic Atlantic landings for the commercial handgear fishery, 2004 – 2011. Source: 2012 HMS SAFE Report.

Species	Gear	2004	2005	2006	2007	2008	2009	2010	2011
Bluefin tuna	Rod and Reel	353.2	226.6	164.1	120.8	226.6	301.7	515.1	418.6
	Handline	1.5	2.3	0.3	0.0	0.6	0.1	2.7	0.9
	Harpoon	41.2	31.5	30.3	22.5	30.2	66.1	29.0	70.1
	Total	395.9	260.4	194.7	143.3	257.4	367.9	546.8	489.6

Table 3.13 Estimated number of rod and reel and handline trips targeting Atlantic large pelagic species, by state (ME-VA, 2002- 2011). Source: Large Pelagics Survey database.

	AREA							
Year	NH/ME	MA	CT/RI	NY	NJ (North)	NJ (South) and MD/DE	VA	Total
Private Vessels								
2002	5,090	15,180	2,558	7,692	2,762	22,757	6,524	62,563
2003	4,501	13,411	2,869	12,466	3,214	21,619	5,067	63,147
2004	2,025	10,033	3,491	11,525	3,632	22,433	4,406	57,545
2005	4,607	12,052	7,603	8,051	2,446	19,759	4,631	59,148
2006	3,303	24,951	5,430	11,114	3,043	19,187	5,274	72,302
2007	5,929	25,139	6,020	6,809	5,875	17,712	5,012	72,496
2008	3,873	19,157	3,546	7,587	3,099	15,807	3,081	56,150
2009	4,724	27,066	2,670	8,274	3,633	15,458	4,299	66,122
2010	6,102	19,679	2,276	6,737	3,898	12,493	2,591	53,776
2011	6,931	20,227	2,175	5,480	4,549	12,109	2,630	54,101
Charter Vessels								
2002	1,132	3,357	937	1,686	1,331	6,300	1,510	16,253
2003	221	2,561	1,246	2,035	1,331	5,201	546	13,141
2004	312	2,021	1,564	2,285	1,094	5,080	1,579	13,935
2005	329	2,397	551	2,033	1,024	3,476	763	10,573
2006	96	1,294	677	1,057	891	3,452	828	8,296
2007	789	4,073	1,141	1,445	1,420	4,579	610	14,057
2008	892	3,295	751	1,525	1,026	4,340	370	12,199
2009	568	4,930	726	1,677	1,142	3,348	534	12,923
2010	917	3,581	549	1,432	1,111	2,679	511	10,780
2011	1,318	4,339	322	2,019	1,279	3,685	774	13,736

3.3.2.1.2 Bycatch, Incidental Catch, and Protected Species

NMFS has not estimated bycatch in the General category commercial rod and reel tuna fishery although anecdotal evidence indicates that some undersized bluefin tuna may be captured.

3.3.2.2 Harpoon Category

The Harpoon category is allocated 3.9 percent of the U.S. baseline bluefin quota. Vessels that are permitted in the Harpoon category fish under the Harpoon category rules and regulations. The Harpoon category is an open access permit fishery. Vessels with a Harpoon category permit may retain up to four bluefin measuring 73 inches to less than 81 inches curved fork length per vessel per trip per day while the fishery is open. There is no limit on the number of giant bluefin (measuring 81 inches or greater), as long as the Harpoon category season is open. The Harpoon category season opens on June 1 of each year and remains open until November 15, or until the quota is filled. The Harpoon fishery is a highly specialized fishery that is reported to have begun

in the early 1800s off the coast of New England (for swordfish), with vessels operating out of Rhode Island and Massachusetts. Some harpoon category vessels work in conjunction with spotter planes to locate schools of bluefin.

3.3.2.2.1 Recent catch and landings

Catch and landings in the harpoon category are presented in Figure 3.3 and Table 3.12. The Harpoon Category has always comprised a small proportion of U.S. bluefin landings, however, landings have increased within the Category since 2007 as larger bluefin became available to the fishery.

3.3.2.2.2 Bycatch, Incidental Catch, and Protected Species

NMFS has not estimated bycatch in the bluefin tuna harpoon fishery because these fishermen have not been selected to submit logbooks or take observers. Vessels targeting bluefin tuna with harpoon gear have not been selected for observer coverage since the deliberate fishing nature of the gear is such that bycatch is expected to be low. Therefore, there are no recorded instances of non-target finfish caught with harpoons and NMFS cannot quantify the bycatch of undersized bluefin tuna in this fishery. Bycatch in the harpoon fishery is expected to be virtually, if not totally, non-existent. Since bycatch approaches zero in this fishery, NMFS assumes that bycatch mortality is near zero. Disposition (number discarded dead, and number of animals discarded alive) of bycatch reported in logbooks is used to estimate mortality in HMS fisheries..

3.3.3 The Pelagic Longline Fishery

The pelagic longline fishery for Atlantic HMS primarily targets swordfish, yellowfin tuna, and bigeye tuna in various areas and seasons. Secondary target species include dolphin, albacore tuna, and, to a lesser degree, pelagic sharks. Although this gear can be modified (*e.g*., depth of set, hook type, hook size, bait, *etc*.) to target swordfish, tunas, or sharks, it is generally a multi-species fishery. These vessel operators are opportunistic, switching gear style and making subtle changes to target the best available economic opportunity of each individual trip. Pelagic longline gear sometimes attracts and hooks non-target finfish with little or no commercial value as well as species that cannot be retained by commercial fishermen due to regulations, such as billfish. Pelagic longline gear may also interact with protected species such as marine mammals, sea turtles, and seabirds. Thus, this gear has been classified as a Category I fishery with respect to the Marine Mammal Protection Act (MMPA). Any species (or undersized catch of permitted species) that cannot be landed due to fishery regulations is required to be released, regardless of whether the catch is dead or alive.

A thorough description of the pelagic longline fishery, common gear configurations, and deployment strategies by target species may be found in the 2012 HMS SAFE Report (Section 4.1, page 36). Descriptions of the different U.S. EEZ pelagic longline fisheries (e.g., Gulf of Mexico yellowfin tuna fishery, the South Atlantic swordfish fishery) may be found in the 2011 HMS SAFE report (Section 4.2).

3.3.3.1 Alternative Gears

The use of greenstick gear and/or buoy gear to target yellowfin tuna, swordfish, or other non-bluefin tuna species instead of using pelagic longline gear may result in the reduction of bluefin interactions and dead discards. It has been demonstrated that these gear types catch relatively few bluefin compared with pelagic longline gear. Buoy gear is successfully used to commercially target swordfish, and greenstick gear is successfully used to commercially target yellowfin tuna and other tunas. Research has indicated that the use of buoy gear would provide opportunity to harvest swordfish, while reducing bycatch of many species, including bluefin tuna. Tended buoy gear has been associated with a high survival rate of catch species. Bycatch of bluefin by greenstick gear is relatively low, while the survival rate of bluefin caught is high. The use of either buoy gear or greenstick gear may result in less efficient catch of target species when compared with pelagic longline gear (NMFS 2011). Additional information on the use of buoy gear and greenstick gear, as well as recent data on catches and discards is found in the 2012 SAFE Report (Sections 4.7 and 4.8, NMFS 2012).

3.3.3.2 Fishing Effort in the Pelagic Longline Fishery

The number of hooks per set varies with line configuration and target species. Table 3.14 shows the average number of hooks per pelagic longline set by target species, from 2002 through 2011. Most recently, sets targeting dolphin had the highest average number of hooks per set, whereas pelagic longline sets targeting sharks had the lowest average number of hooks per set.

Table 3.14 Average Number of Hooks per Pelagic Longline Set by Target Species (2002 – 2011). Source: HMS Logbook Data.

Target Species	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Swordfish	695	711	701	747	742	672	708	687	759	733
Bigeye tuna	755	967	400	634	754	773	751	755	653	802
Yellowfin tuna	715	720	696	691	704	672	678	689	687	635
Mix of tuna species	767	765	779	692	676	640	747	744	837	786
Shark	640	696	717	542	509	494	377	354	455	348
Dolphin	542	692	1,033	734	988	789	989	1,033	1,131	1,095
Other species	300	865	270	889	236	NA	NA	NA	467	400
Mix of species	756	747	777	786	777	757	749	781	761	749

Figure 3.5 shows the number of pelagic longline hooks fished by year, and Table 3.16 shows the percentage of total hooks fished by area. Overall, the number of hooks per set fished by target species has not changed dramatically for vessels targeting swordfish, bigeye tuna, yellowfin tuna, or multi-species. A large increase in the average number of hooks per longline set occurred between 2002 and 2011 by vessels targeting dolphin. The average number of hooks per set has dropped considerably between 2002 and 2011 for vessels targeting sharks, likely a result of stricter retention limits and other management measures that were enacted after 2006. Early in the time period of interest, the greatest percentage of effort was concentrated in the Gulf of Mexico (e.g., greater than 50 percent of the hooks were fished in the Gulf of Mexico from 2002-2005). However, in 2011, the distribution of effort was more even between the Mid-Atlantic

Bight, the South Atlantic Bight, the Gulf of Mexico, and the Florida East Coast management regions. Table 3.16 shows the average percentage of total hooks fished by area during two time periods in order to illustrate some of the trends. While fishing effort decreased in the Gulf of Mexico, it increased in the other regions. Figure 3.4 shows the distribution of average pelagic longline hooks fished per set between 2006 and 2011; smaller numbers of hooks per set are typically set in continental shelf or nearshore regions, whereas the highest mean number of hooks fished per pelagic longline set occurred in offshore regions south of Newfoundland. The greatest numbers of hooks were fished by the pelagic longline fleet along the continental shelf break in the Atlantic and in the middle of the Gulf of Mexico (Figure 3.4).

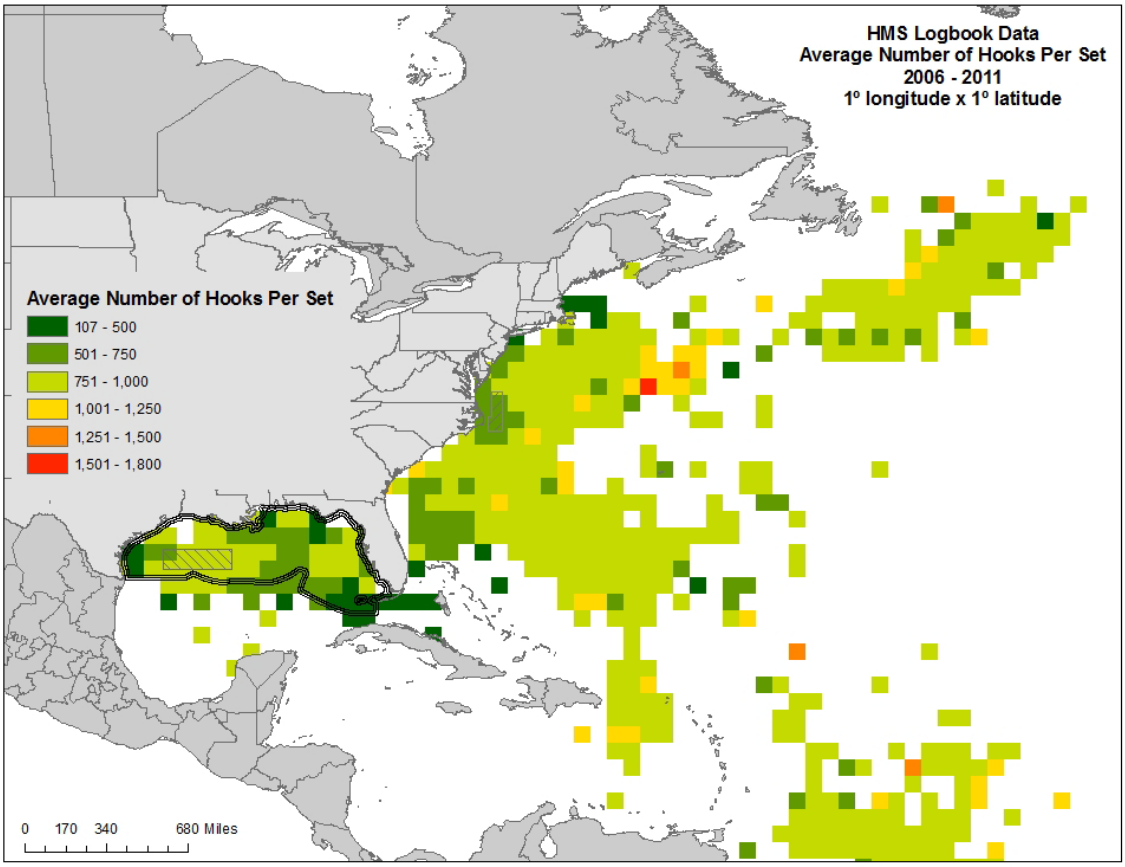

Figure 3.4 HMS logbook pelagic longline data from 2006 – 2011 averaged over 1° x 1° grid cells to show the spatial distribution of average hooks per set.

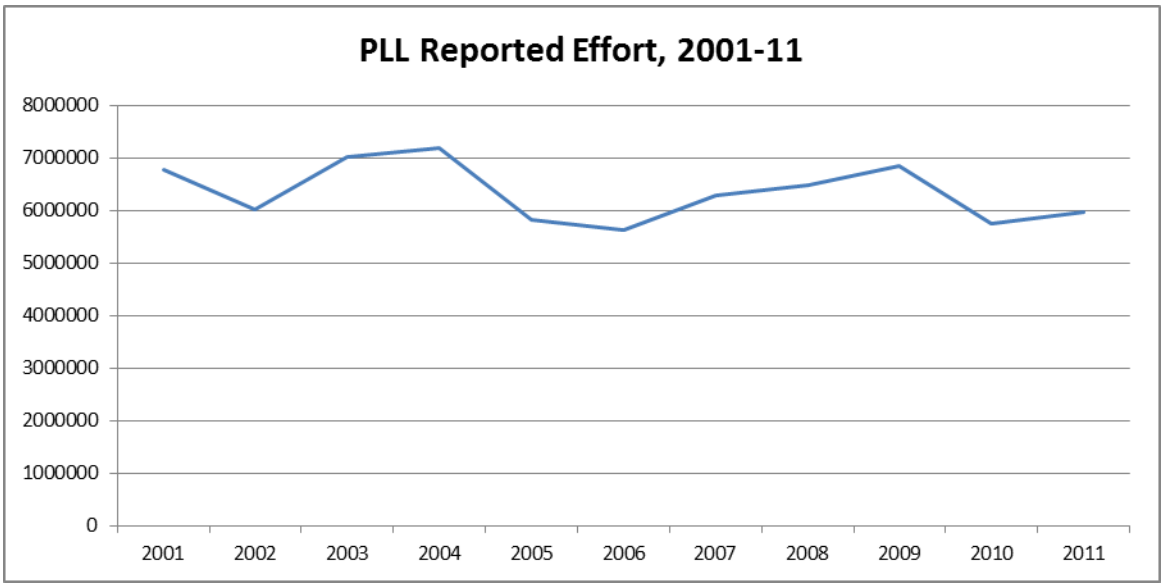

Figure 3.5 Pelagic Longline Fishing Effort (Hooks Fished) by Year (2002 – 2011). Source: HMS Logbook Data.

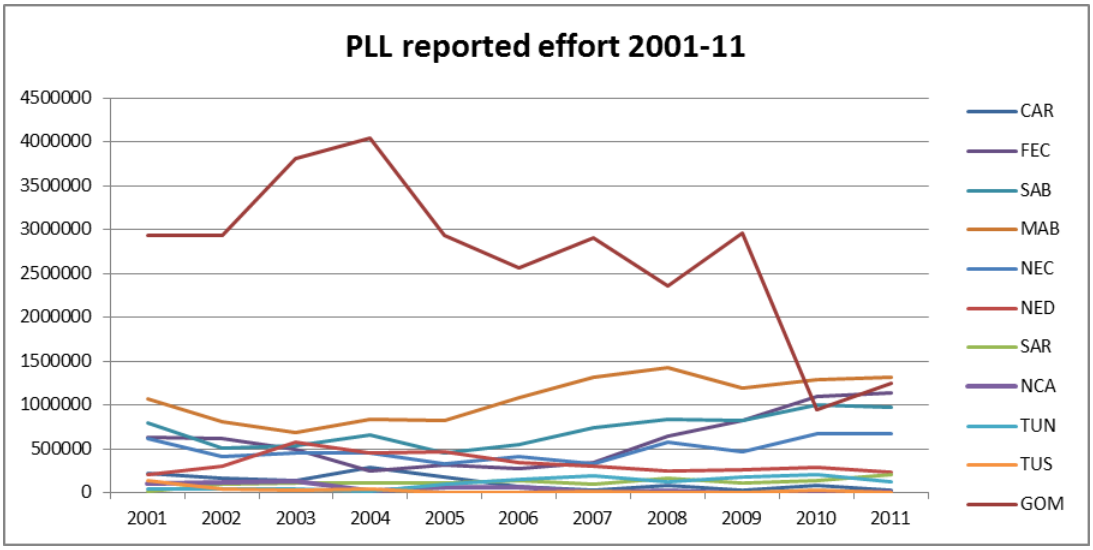

Figure 3.6 Pelagic Longline Fishing Effort (Hooks Fished) by Year (2002 – 2011). Source: HMS Logbook Data

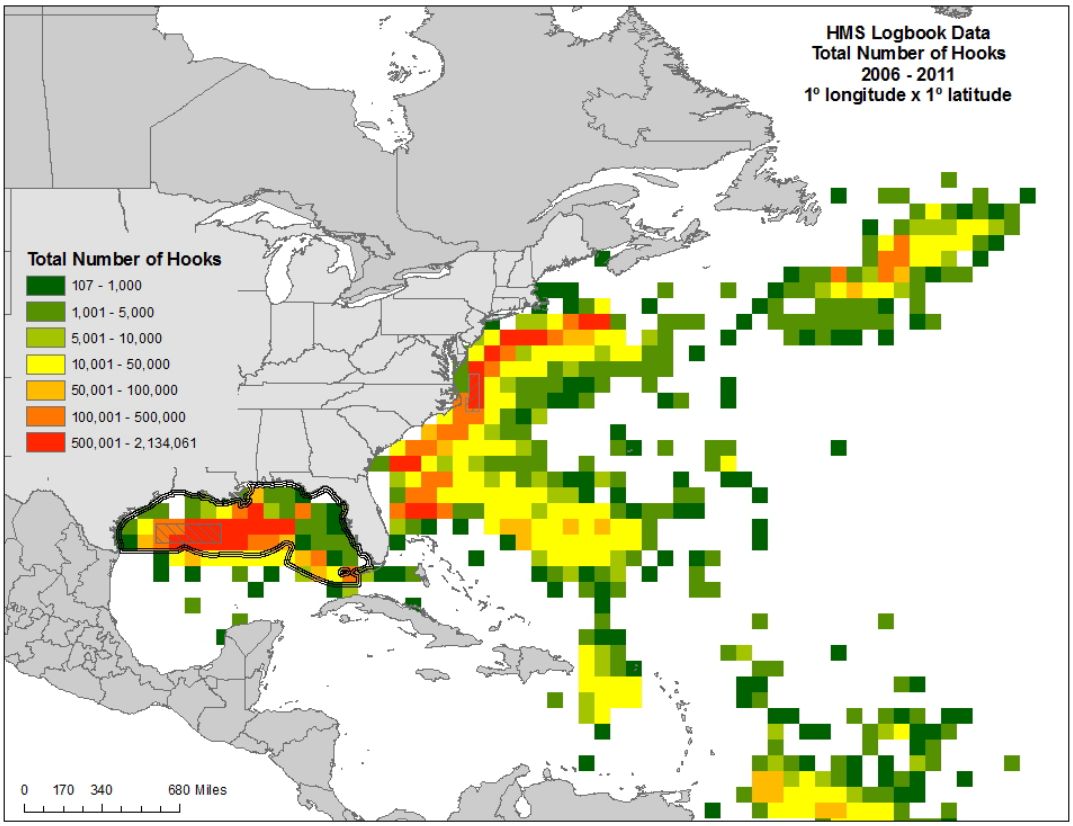

Figure 3.7 Reported hooks fished by the HMS pelagic longline fleet between 2006 and 2011 (as reported in the HMS logbook). Values in 1º x 1º grid cells are the sum of all reported hooks reported to be fished within that grid cell. Source: HMS Logbook Data.

Table 3.15 Percentage of Total Hooks Fished by Area (2002 – 2011).

Area	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
CAR	2	2	4	3	1	1	1	0	1	1
FEC	7	7	4	5	5	6	10	12	19	19
GOM	50	55	56	51	46	46	36	44	18	21
MAB	14	10	12	14	19	21	22	17	23	22
NCA	3	2	0	1	1	0	0	0	0	0
NEC	8	6	6	6	7	5	9	7	11	11
NED	6	8	6	8	6	5	3	4	4	3
SAB	6	8	9	8	10	12	13	12	18	17
SAR	1	2	2	2	2	2	2	2	2	4
SAT	2	1	1	2	3	3	2	3	4	2

Acronyms represent domestic reporting regions, and include: CAR = Caribbean; FEC = Florida East Coast; GOM = Gulf of Mexico; MAB = Mid-Atlantic Bight; NCA = North Central Atlantic; NEC = Northeast Coastal; NED = Northeast Distant waters; SAB = South Atlantic Bight; SAR = Sargasso Sea; and, SAT = Tuna North & Tuna South. Source: HMS Logbook Data.

Table 3.16 Average Percentage of Total Hooks Fished by Area, 2002 – 2011. Source: HMS Logbook Data.

Area	Average Percentage of Hooks 2002 to 2006	Average Percentage of Hooks 2007 to 2011
GOM	52 %	33 %
FEC	6 %	13 %
MAB	14 %	21 %
SAB	8 %	14 %

The total number of hooks fished by the pelagic longline fishery shows a slight declining trend (Figure 3.5). The average number of hooks fished per year from 2002 through 2006 was 6,652,108, and the average number of hooks fished per year from 2007 through 2011 was 6,238,949. The areas with the greatest fishing effort are the Gulf of Mexico, Mid-Atlantic Bight, South Atlantic Bight, Florida East Coast, and the Northeast Coastal. Since 2002, there have been notable trends in the distribution of pelagic longline fishing effort among the different areas. The percentage of total hooks fished in the Gulf of Mexico has declined, and the percentage of total hooks fished in the Florida East Coast, Mid-Atlantic Bight, and South Atlantic Bight have increased (Figure 3.6).

3.3.3.3 Management of the U.S. Pelagic Longline Fishery

Regulations for the U.S. Atlantic pelagic longline fishery vary by target species and include bluefin target catch requirements; minimum sizes for swordfish, yellowfin tuna, bigeye tuna, and bluefin; gear and bait requirements; limited access vessel permits; observers, time/area closures, protected species incidental take limits; reporting requirements (including logbooks); mandatory workshop requirements; regional quotas for swordfish; and shark regulations.. Current billfish regulations prohibit the retention of billfish by commercial vessels, or the sale of billfish from the Atlantic Ocean. As a result, all billfish hooked on pelagic longline gear must be discarded, and are considered bycatch. Pelagic longline is a heavily managed gear type and is strictly monitored. Because it is difficult for pelagic longline fishermen to avoid undersized or prohibited fish in some areas, NMFS has closed areas in the Gulf of Mexico and along the U.S. East Coast. The intent of these closures was to decrease bycatch in the pelagic longline fishery by closing areas with the highest bycatch rates. There are also time/area closures for pelagic longline fishermen designed to reduce the incidental catch of bluefin and sea turtles. In order to enforce time/area closures and to monitor the fishery, NMFS requires all pelagic longline vessels to report positions on an approved VMS.

In addition to the regulations mentioned above, to protect sea turtles, vessels with pelagic longline gear onboard must, at all times, in all areas open to pelagic longline fishing except the Northeast distant, possess onboard and/or use only 16/0 or larger non-offset circle hooks and/or 18/0 or larger circle hooks with an offset not to exceed 10 degrees. Only whole finfish and squid baits may be possessed and/or utilized with allowable hooks. Vessels fishing in the Northeast distant are required to use 18/0 or larger circle hooks with an offset not to exceed 10 degrees and whole mackerel or squid baits. All pelagic longline vessels must possess and use sea turtle handling and release gear in compliance with NMFS careful release protocols. Additionally, all

pelagic longline vessel owners and operators must be certified in the use of the protected species handling and release gear. Certification must be renewed every three years and can be obtained by attending a training workshop. Approximately 18 - 24 workshops are conducted annually, and they are held in areas with significant numbers of pelagic longline permit holders.

In 2009, to protect pilot whales and Risso's dolphins, the Pelagic Longline Take Reduction Plan (PLTRP) (74 FR 23349, May 19, 2009) included a requirement that pelagic longline vessel operators fishing in the Cape Hatteras Special Research Area must contact NMFS at least 48 hours prior to a trip, and carry observers if requested. The PLTRP also established a 20 nm upper limit on mainline length for all pelagic longline sets in the Mid-Atlantic Bight, and required that an informational placard be displayed in the wheelhouse and on the working deck of all active pelagic longline vessels in the Atlantic fishery. In April 2011, NMFS implemented a requirement for pelagic longline vessels to use "weak hooks" - hooks that are designed to release spawning bluefin while retaining yellowfin tuna and swordfish – when fishing in the Gulf of Mexico (76 FR 18653, April 5, 2011). This action provided protection for spawning bluefin in the Gulf of Mexico and helps to better align landings and dead discards of bluefin with the Longline category bluefin subquota.

The 1999 FMP established six different limited access permit types: (1) directed swordfish, (2) incidental swordfish, (3) swordfish handgear, (4) directed shark, (5) incidental shark, and (6) Atlantic tunas longline. To reduce bycatch in the pelagic longline fishery, these permits were designed so that the swordfish directed and incidental permits are valid only if the permit holder also holds both an Atlantic tunas longline and a shark permit. Similarly, the Atlantic tunas longline permit is valid only if the permit holder also holds both a swordfish (directed or incidental, not handgear) and a shark permit. This allows limited retention of species likely to be caught on pelagic longline, which might otherwise have been discarded. In order to minimize bycatch and bycatch mortality in the domestic pelagic longline fishery, NMFS implemented regulations to close certain areas to this gear type (See Figure 3.8) and has banned the use of live bait by pelagic longline vessels in the Gulf of Mexico.

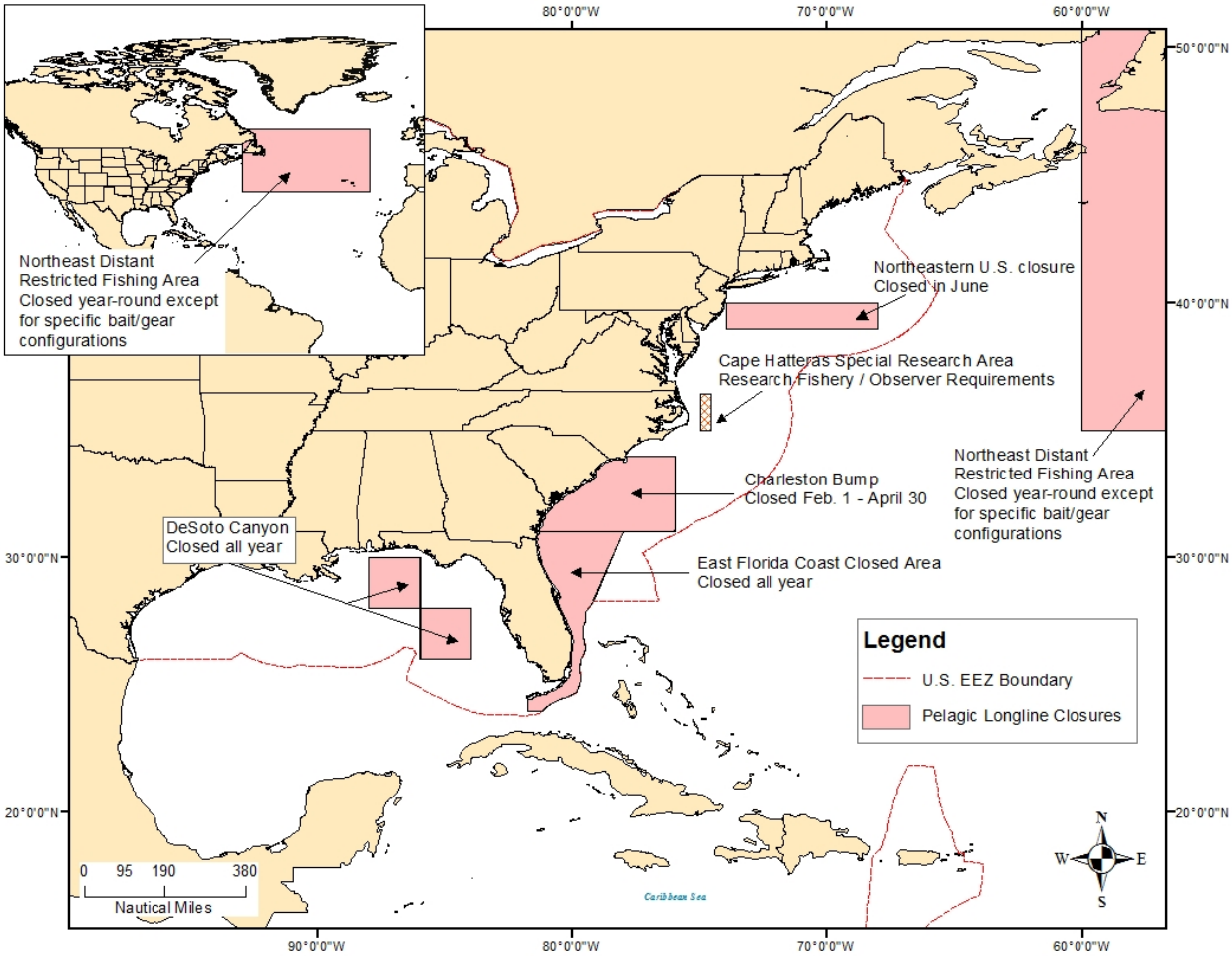

Figure 3.8 Areas Closed to Pelagic Longline Fishing by U.S. Flagged Vessels.

3.3.3.4 Recent Catches and Landings

Table 3.17 Catch Reported in the U.S. Atlantic Pelagic Longline Fishery, in Number of Fish perSpecies (2003-2011). Source: HMS Logbook Data.

Species	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Swordfish	49,320	51,835	46,440	41,139	38,241	45,933	42,800	45,378	33,831	38,012
Swordfish discarded	13,035	11,829	10,675	11,134	8,900	11,823	11,194	7,484	6,107	8,510
Blue marlin discarded	1,175	595	712	567	439	611	687	1,013	504	539
White marlin discarded	1,438	809	1,053	989	557	744	670	1,064	605	921
Sailfish discarded	379	277	424	367	277	321	506	774	312	556
Spearfish discarded	148	108	172	150	142	147	197	335	212	281
Bluefin tuna kept	178	273	475	375	261	337	343	629	392	355
Bluefin tuna discarded	585	881	1,031	765	833	1,345	1,417	1,290	1,488	764
Bigeye, albacore, yellowfin, and skipjack tunas kept	79,917	63,321	76,962	57,132	73,058	70,390	50,108	57,461	51,786	68,401
Pelagic sharks kept	2,987	3,037	3,440	3,149	2,098	3,504	3,500	3,060	3,872	3,694
Pelagic sharks discarded	22,828	21,705	25,355	21,550	24,113	27,478	28,786	33,721	45,511	43,778
Large coastal sharks kept	4,077	5,326	2,292	3,362	1,768	546	115	403	434	130
Large coastal sharks discarded	3,815	4,813	5,230	5,877	5,326	7,133	6,732	6,672	6,726	6,085
Dolphin kept	30,384	29,372	38,769	25,707	25,658	68,124	43,511	62,701	30,454	29,442
Wahoo kept	4,188	3,919	4,633	3,348	3,608	3,073	2,571	2,648	749	1,848
Sea turtle interactions	465	399	369	152	128	300	476	137	94	66
Number of Hooks	7,150	7,008	7,276	5,911	5,662	6,291	6,498	6,979	5,729	5,530

Table 3.18 Reported Landings (mt ww) in the U.S. Atlantic Pelagic Longline Fishery (2002-2011). Source: NMFS ICCAT National Report 2012

Species	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Yellowfin tuna	2,573.00	2,164.00	2,492.20	1,746.20	2,009.90	2,394.50	1,324.50	1,700.10	1,188.80	1,468.60
Skipjack tuna	2.5	1.4	0.7	0.6	0.2	0.02	1.45	0.5	1.4	0.7
Bigeye tuna	535.8	283.9	310.1	311.9	520.6	380.7	407.7	430.1	443.2	627.1
Bluefin tuna	49.9	133.9	180.1	211.5	204.6	164.3	232.6	335	238.7	220.4
Albacore tuna	155	107.6	120.4	108.5	102.9	126.8	126.5	158.3	159.9	267.6
Swordfish (N)	2,598.80	2,756.30	2,518.50	2,272.80	1,960.80	2,474.00	2,353.60	2,691.30	2,206.20	2,681.20
Swordfish (S)	199.9	20.5	15.7	0	0	0	0	0	0.3	0

* Includes landings and estimated discards from scientific observer and logbook sampling programs

Catch and discards for target and non-target species by the pelagic longline fishery are summarized in Table 3.18. Table 3.19 provides a summary of U.S. Atlantic pelagic longline landings, as reported to ICCAT. Additional information regarding U.S. Atlantic landings are available in the 2012 U.S. National Report to ICCAT. Table 3.20 and Table 3.21 show summaries of landings and dead discards by region and year for the Atlantic and Gulf of Mexico, and for the NED, respectively.

Distribution of live and dead discards of bluefin from 2011 for the East Coast, Gulf of Mexico, and the NED were analyzed and are shown in Figure 3.9, Figure 3.10 and Figure 3.11 respectively. Additional years of data are available for consideration in the Appendices. The 73” minimum size is shown on these graphs as a dashed line. Large numbers of reported dead discards of smaller bluefin were apparent in the Atlantic; larger numbers of reported dead discards of larger bluefin were reported in the Gulf of Mexico. Few dead discards were reported in the NED reporting region in 2011. Spatial distribution of pelagic longline target species CPUE (catch per 1,000 hooks) are shown in Figure 3.12 to Figure 3.16; these maps show CPUE averaged over 1º latitude x 1º longitude grid cells. The pelagic longline fishery experienced moderately high CPUEs for swordfish across much of the fishing grounds in the Atlantic, with CPUE hotspots occurring off New England, Florida, and in the Sargasso Sea. Mahi CPUE hotspots occurred mainly within coastal regions of the South Atlantic Bight. Two regional hotspots for yellowfin tuna are apparent in the Gulf of Mexico, and between North Carolina and Georges Bank. In comparison to these three species, CPUE is much lower and more dispersed for bigeye tuna and shortfin mako. A moderate CPUE hotspot is apparent just outside of the Florida East Coast Closure, and moderately high CPUEs for shortfin mako are apparent off southern Georges Bank.

Table 3.19 Atlantic and Gulf of Mexico (GOM) pelagic longline discards (mt). Source: BFT Dealer Report database; POP data; PLL Logbook Program; G.Diaz, pers. comm.

	2006	2007	2008	2009	2010	2011	Average
Landings							
GOM	17.5	32.5	25.7	33.2	20.8	3.7	22.2
Atlantic	29.8	31.3	40.5	46.3	54.6	64.6	44.5
Total	47.3	63.8	66.2	79.5	75.4	68.3	66.7
Dead Discards							
GOM	70.6	49.3	86	78.4	35.5	7.5	54.6
Atlantic	74.6	60.3	67	120.4	110.1	137.6	95
Total	145.2	109.6	153	198.8	145.6	145.1	149.6
Landings and Dead Discards Total	192.5	173.4	219.2	278.3	221	213.4	216.3

*not including NED

Table 3.20 NED pelagic longline discards (mt) from 2006 to 2011. Source: BFT Dealer Report database; POP data; PLL Logbook Program; G.Diaz, pers. comm

	2006	2007	2008	2009	2010	2011	Average
Landings	10.1	10.4	8.8	51	13.8	6.2	16.7
Dead discards	2	1.7	3.4	5.6	4	0.1	2.8
Landings and Dead Discards Total	12.1	12.1	12.2	56.6	17.8	6.3	19.5

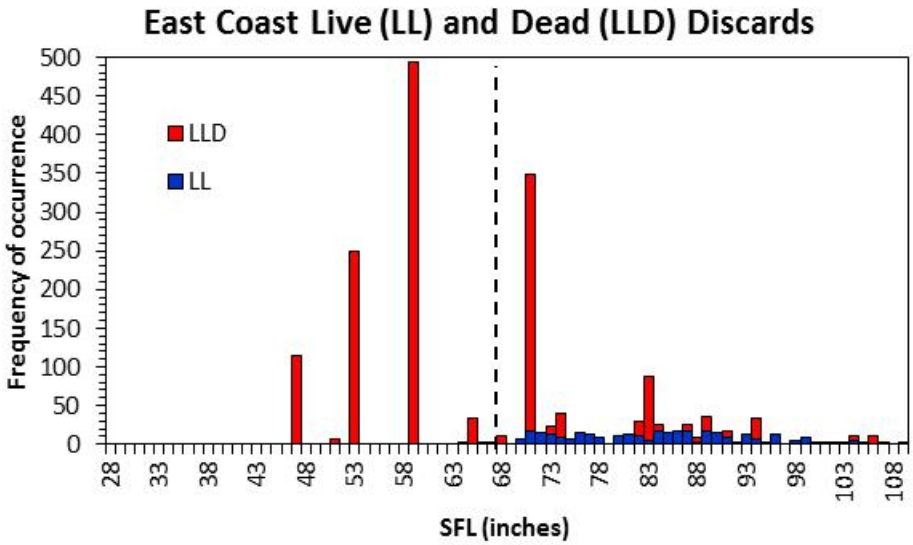

Figure 3.9 Pelagic longline live and dead discards of Bluefin tuna in the U.S. east coast reporting regions (not including the NED) in 2011.

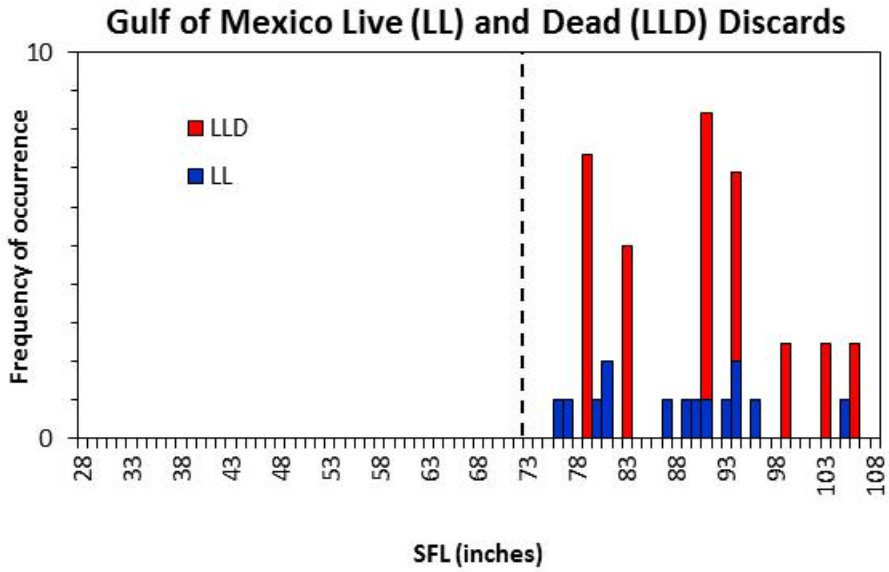

Figure 3.10 Pelagic longline live and dead discards of Bluefin tuna in the U.S. Gulf of Mexico reporting region in 2011.

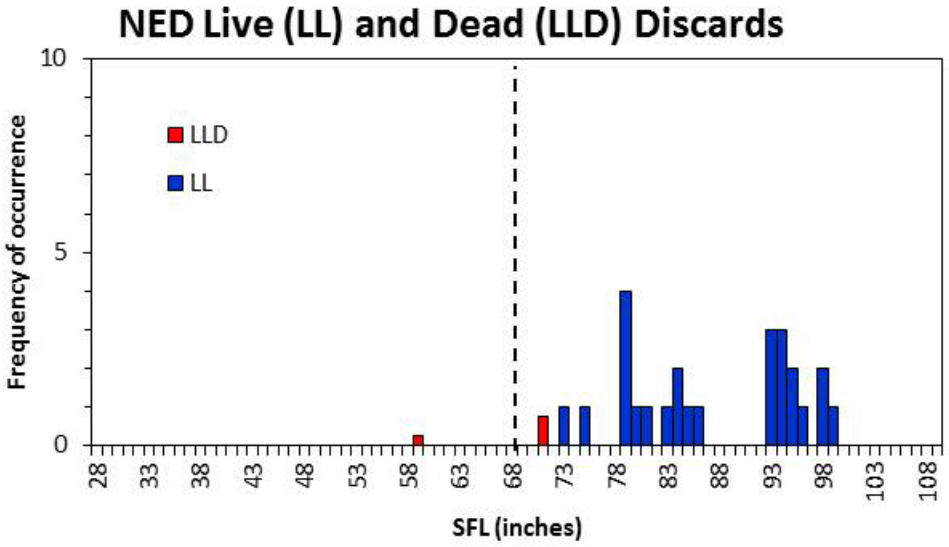

Figure 3.11 Pelagic longline live and dead discards of Bluefin tuna in the U.S. NED reporting region in 2011.

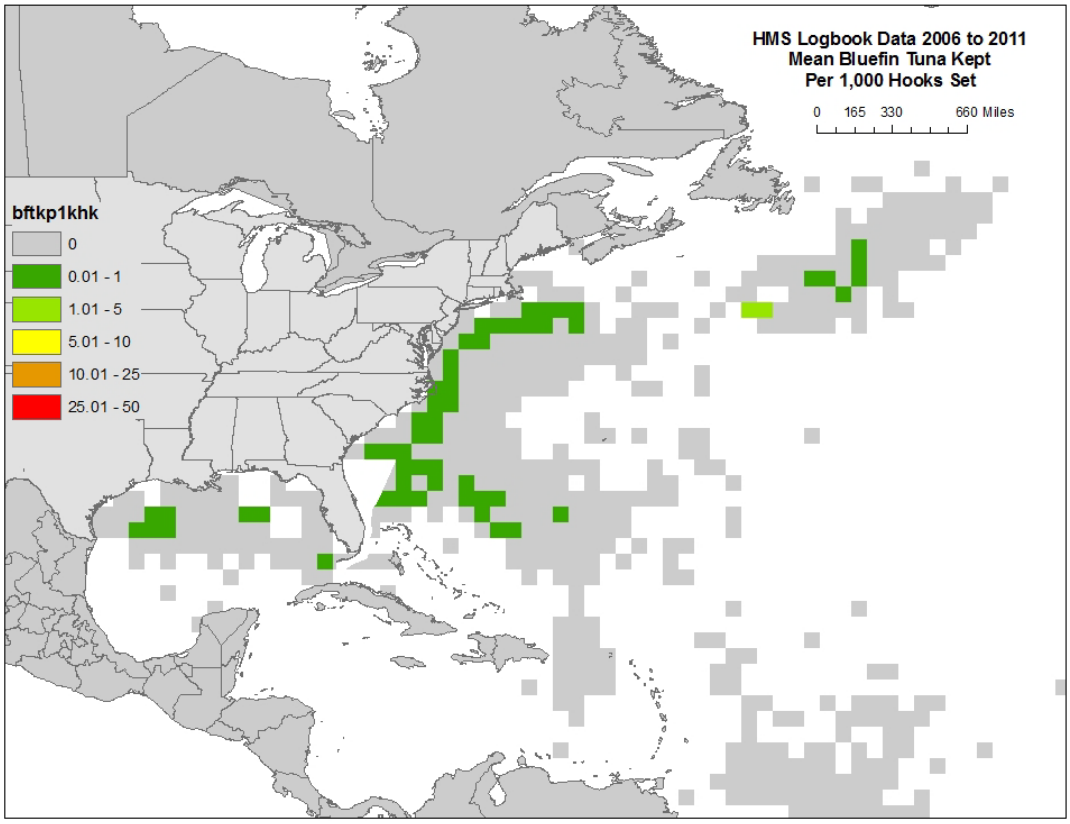

Figure 3.12 Average catch per unit effort of bluefin tuna (number of bluefin kept per thousand hooks set) averaged over 1º latitude x 1º longitude grid cells. Grid cell values reflect the average CPUE of all set locations that fall within a grid cell.

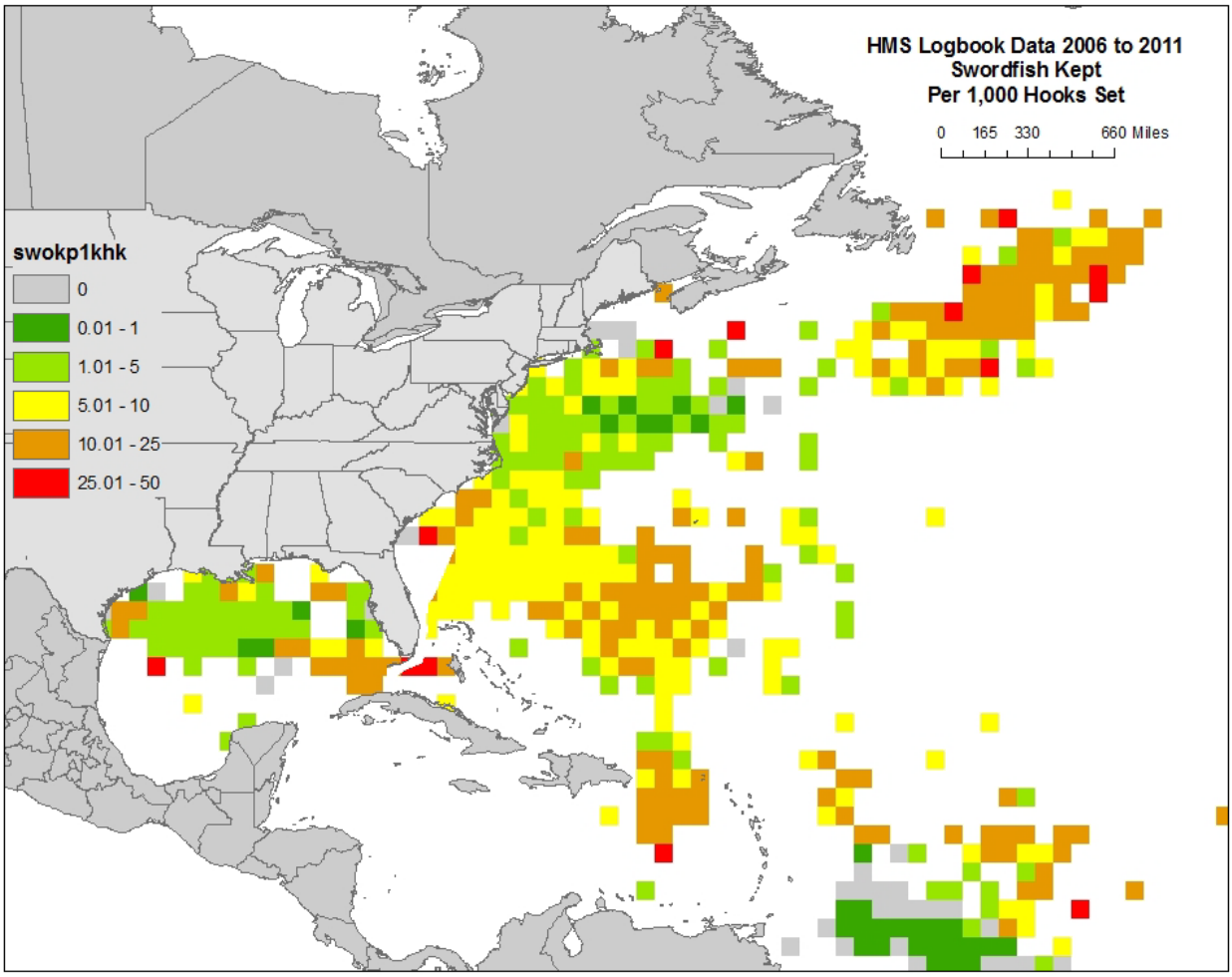

Figure 3.13 Average catch per unit effort of swordfish (number of swordfish kept per thousand hooks set) averaged over 1º latitude x 1º longitude grid cells. Grid cell values reflect the average CPUE of all set locations that fall within a grid cell.

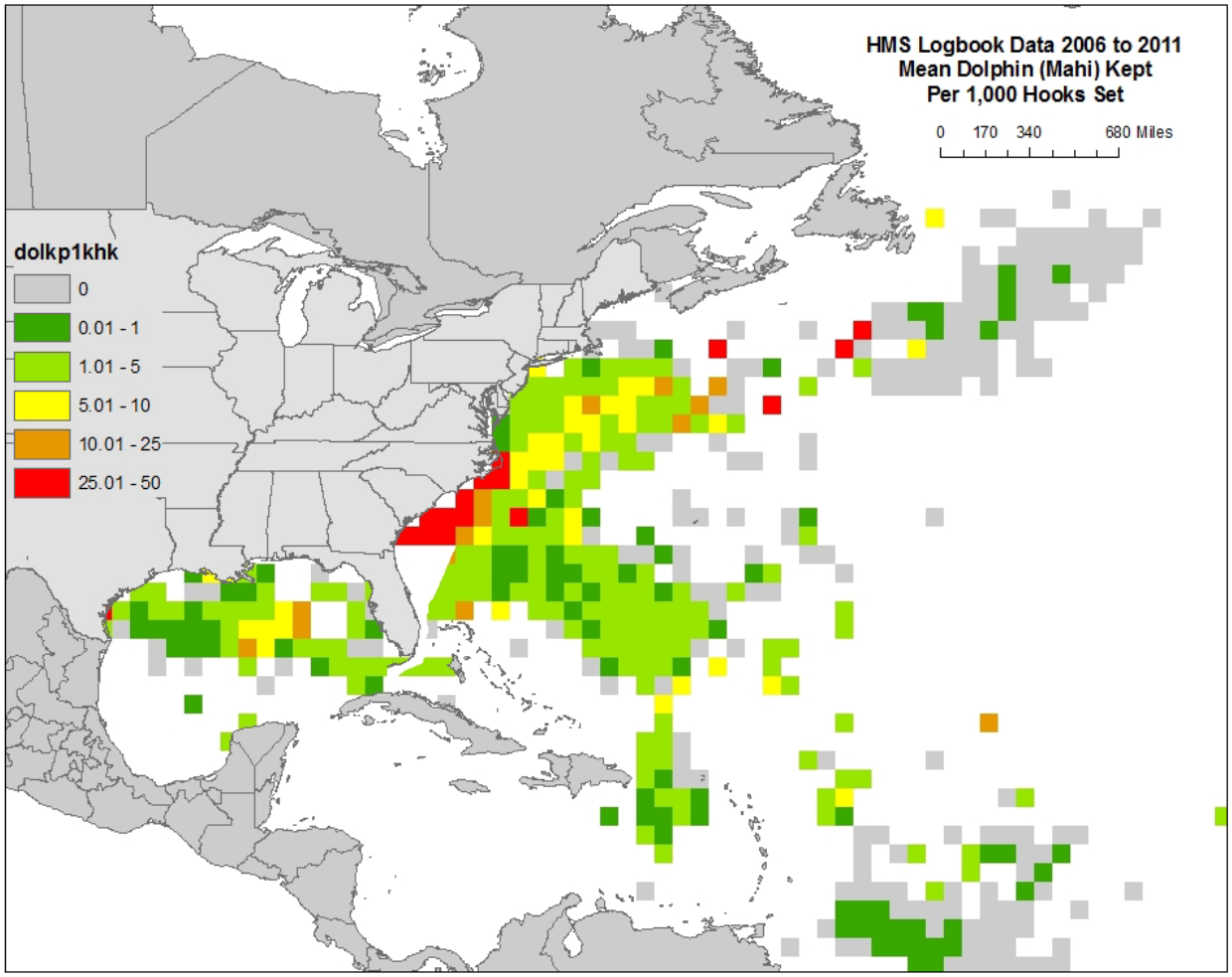

Figure 3.14 Average catch per unit effort of dolphin (number of dolphin kept per thousand hooks set) averaged over 1º latitude x 1º longitude grid cells. Grid cell values reflect the average CPUE of all set locations that fall within a grid cell.

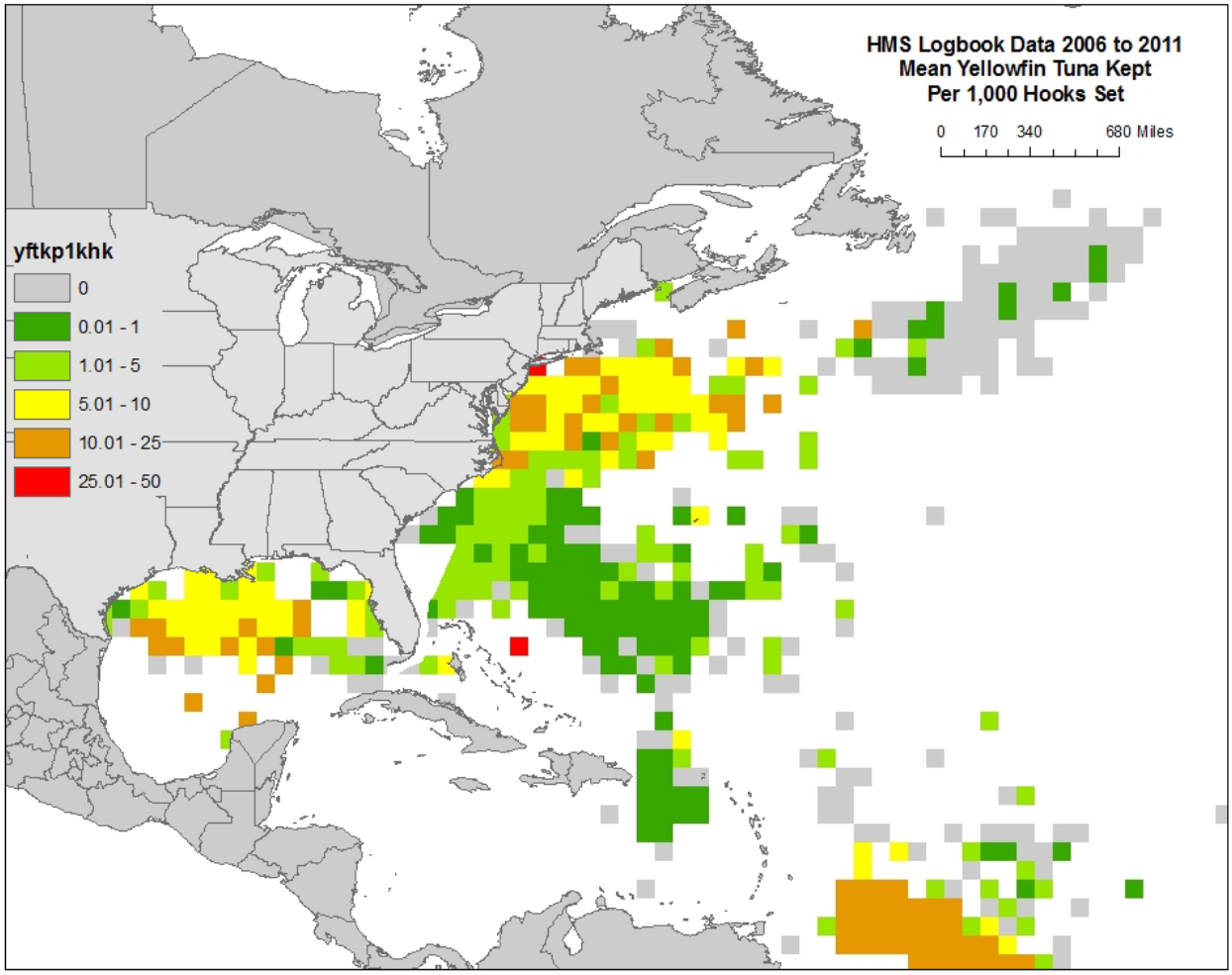

Figure 3.15 Average catch per unit effort of yellowfin tuna (number of yellowfin tuna kept per thousand hooks set) averaged over 1º latitude x 1º longitude grid cells. Grid cell values reflect the average CPUE of all set locations that fall within a grid cell.

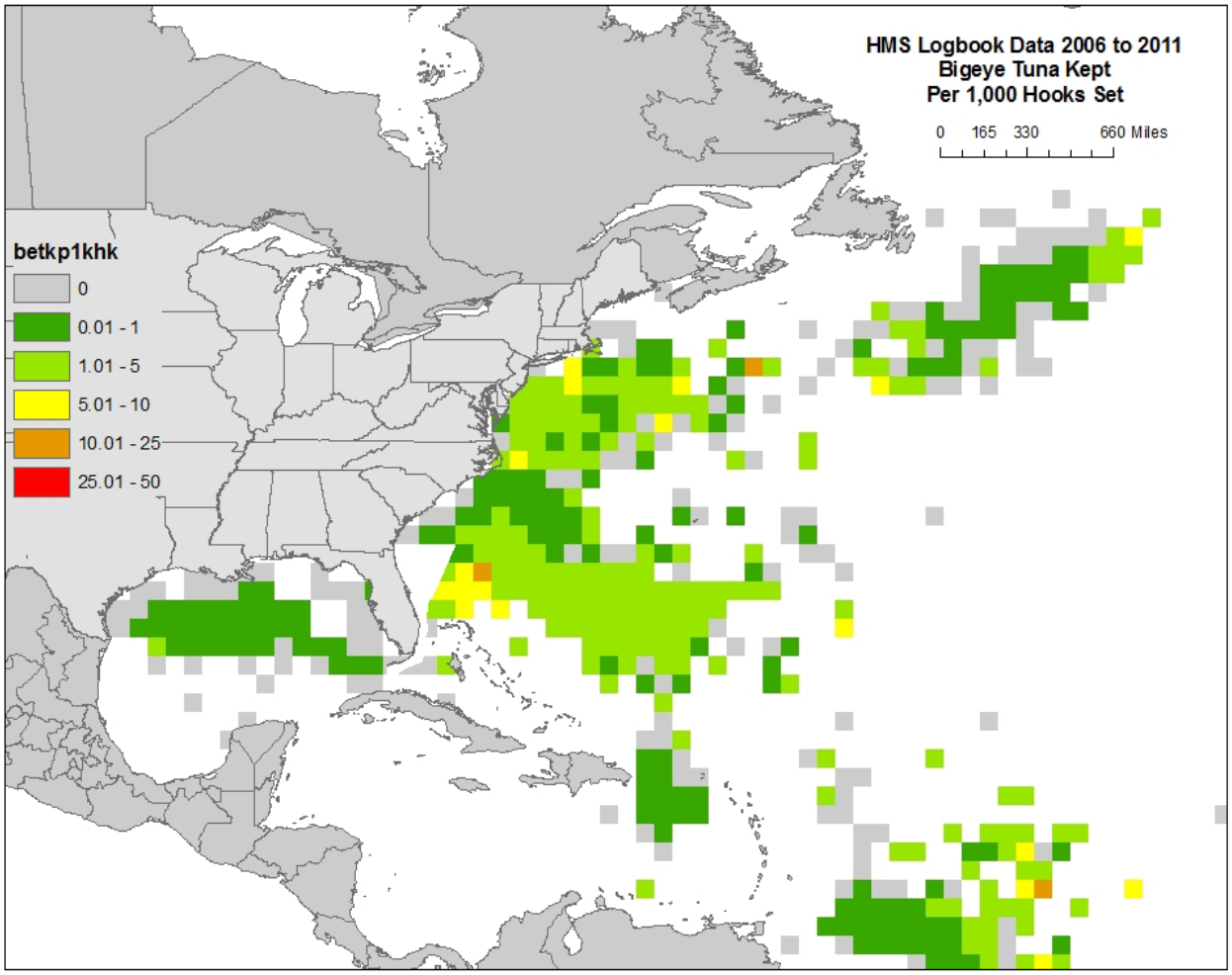

Figure 3.16 Average catch per unit effort of bigeye tuna (number of bigeye tuna kept per thousand hooks set) averaged over 1º latitude x 1º longitude grid cells. Grid cell values reflect the average CPUE of all set locations that fall within a grid cell.

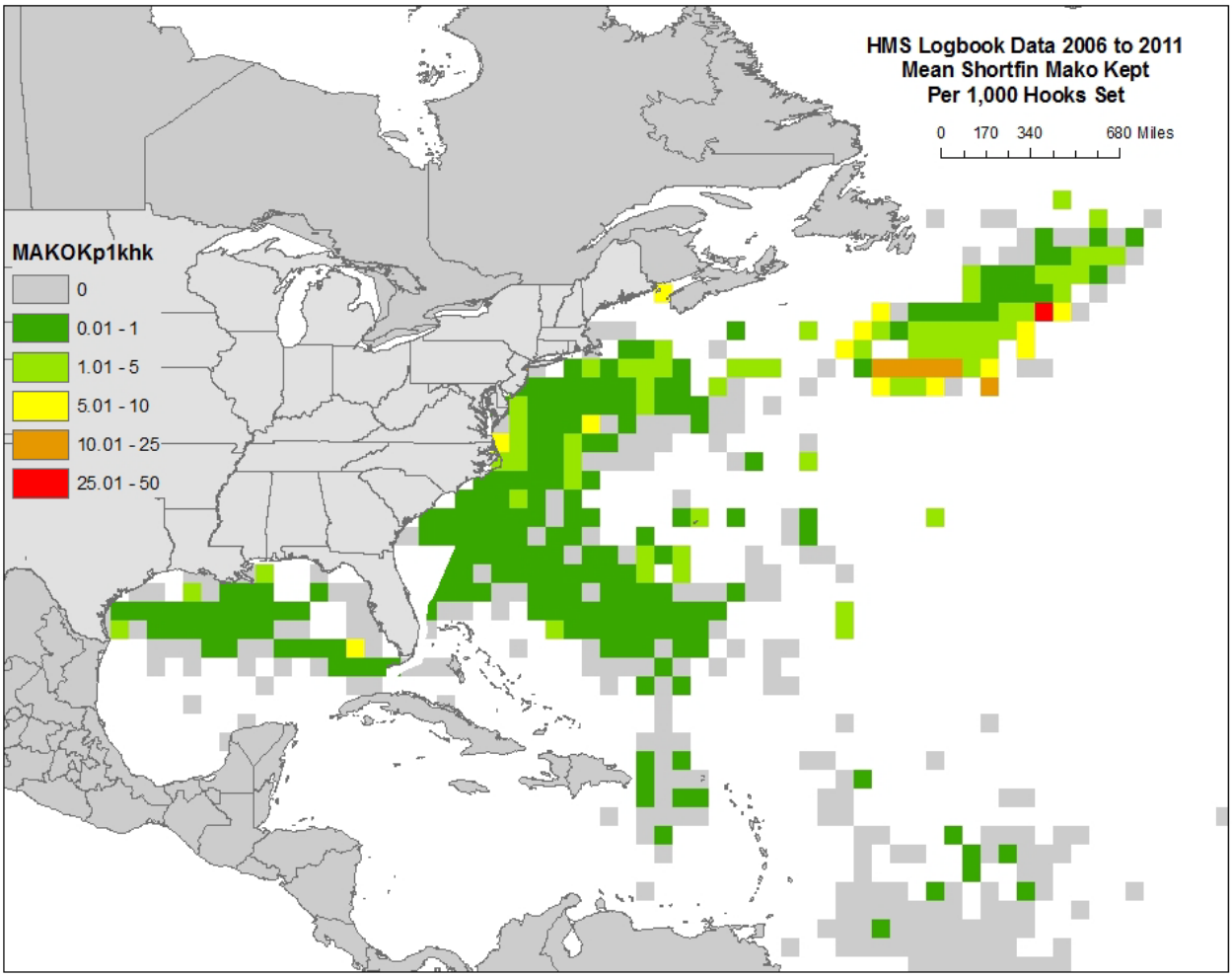

Figure 3.17 Average catch per unit effort of shortfin mako (number of shortfin mako kept per thousand hooks set) averaged over 1º latitude x 1º longitude grid cells. Grid cell values reflect the average CPUE of all set locations that fall within a grid cell.

3.3.3.4.1 Bluefin Tuna Interaction and Discard Hotspots

NMFS analyzed observer data (see Figure 3.29) and HMS logbook data (2006 – 2011) to identify regions where a disproportionate number of bluefin interactions, especially discards, were occurring in the pelagic longline fishery. The regions selected during this analysis were the focus of gear restricted area alternatives presented in Chapter 4.

The Cape Hatteras Gear Restricted Area is one of the areas where there are seasonal concentrations of bluefin, as well as consistent catches by the pelagic longline fleet by season (Figure 3.12and Table 3.21**Error! Reference source not found.**) and by year (Figure 3.12**Error! Reference source not found.** and Table 3.22**Error! Reference source not found.**). Numbers of bluefin interactions reported in the HMS logbook declined between 2006 and 2011 (Table 3.23**Error! Reference source not found.**). Total number of bluefin interactions (kept and discarded) peaked in March 2007 (Table 3.23).

Table 3.21 Bluefin interactions (in number of fish) reported in the HMS logbook by month in the proposed Cape Hatteras Gear Restricted Area, 2006 - 2011. Logbook data were summed by month of capture. Source: HMS Logbook Data.

Month	Bluefin Kept	Bluefin Discarded Alive	Bluefin Discarded Dead
January	25	281	74
February	39	508	136
March	27	606	198
April	29	577	260
December	33	202	70

Table 3.22 All bluefin interactions (kept, discarded alive, and discarded dead) reported in the HMS logbook by year within the proposed Cape Hatteras Gear Restricted Area , 2006-2011. Logbook data were summed by month of capture. Source: HMS Logbook Data.

Year	Bluefin Kept	Bluefin Discarded Alive	Bluefin Discarded Dead
2006	25	248	97
2007	42	710	196
2008	19	351	116
2009	26	291	88
2010	18	471	160
2011	23	103	81

Table 3.23 Bluefin interactions reported in the HMS logbook by month and year in the proposed Cape Hatteras Gear Restricted Area, 2006 - 2011. Logbook data were summed by year of capture. Source: HMS Logbook Data.

Month	2006	2007	2008	2009	2010	2011
January	4	4	84	94	161	33
February	88	98	92	144	226	35
March	154	340	2	87	247	1
April	124	242	285	80	2	133
December	0	264	23	0	13	5

The Gulf of Mexico is also an area with seasonal concentrations of bluefin and consistent catches by the pelagic longline fleet by season and by year. Bluefin tuna congregate in the Gulf of Mexico every spring to spawn. The Gulf of Mexico is currently the only known spawning ground for western Atlantic bluefin tuna.

There are especially high seasonal concentrations of bluefin tuna in the Gulf of Mexico in the spring. Table 3.26 shows the total numbers of bluefin tuna kept, discarded alive, and discarded

dead in the Gulf of Mexico by month and year; these tables were tallied directly from logbook reports of trips made between 2006 and 2011 that occurred within the Gulf of Mexico. Between 2006 and 2011, a total of 85, 74, and 114 bluefin were reported kept in March, April, and May (respectively) in the HMS logbooks (Table 3.24). The number of bluefin kept in May was noticeably higher in 2006, 2008, and 2009; more bluefin were captured in March in 2007 and 2010. Numbers of bluefin kept in the Gulf of Mexico were generally low in 2011 compared to other years. Discards were higher in April and May than in March. Total live bluefin discards across all years in March, April, and May were 59, 136, and 154, respectively. Total bluefin dead discards across all years in March, April, and May were 63, 154, and 211, respectively.

Table 3.24 Total bluefin tuna interactions reported in the HMS logbooks from the Gulf of Mexico EEZ Gear Restricted Area during the months of March, April and May. Source: HMS pelagic longline logbook data.

Year	**Total Bluefin Interactions**	**Bluefin Kept**			**Bluefin Discarded Alive**			**Bluefin Discarded Dead**		
		March	April	May	March	April	May	March	April	May
2006	103	4	13	24	6	5	12	10	9	20
2007	192	29	13	12	23	25	18	22	18	32
2008	301	9	13	43	8	26	41	14	49	98
2009	247	18	18	26	3	38	33	3	54	54
2010	146	23	12	3	19	40	7	14	23	5
2011	24	2	5	6	0	2	6	0	1	2
Total	1013	85	74	114	59	136	117	63	154	211

In comparison, an analysis of logbook data across all months within the Gulf of Mexico (Table 3.25 and Table 3.26) show that sizable numbers of bluefin interactions occur between December and June. Total interactions were somewhat similar in 2007, 2008, and 2009; in 2010 total interactions within the Gulf of Mexico decreased by 46 percent from the previous year (Table 3.25). The month of May consistently had the greatest number of reported interactions across the entire Gulf of Mexico. In total, there were 1,371 self-reported bluefin tuna interactions in the Gulf of Mexico (Table 3.26). In comparison, there were 1,013 reported bluefin tuna interactions in the Gulf of Mexico during the months of March to May (74 percent of total bluefin interactions) (Table 3.26).

Table 3.25 Numbers of bluefin tuna reported kept, discarded alive, and discarded dead in the HMS Logbooks between 2006 and 2011 within the year-round Gulf of Mexico Gear Restricted Area. Source: HMS Logbook Data.

Year	Bluefin Kept	Bluefin Discarded Alive	Bluefin Discarded Dead	Total
2006	73	26	49	148
2007	116	83	103	302
2008	98	84	170	352
2009	115	95	133	343
2010	61	75	48	184
2011	23	13	6	42
Total	486	376	509	1371

Table 3.26 Numbers of bluefin tuna kept, discarded alive, and discarded dead reported in the HMS logbook by month within the year-round Gulf of Mexico Gear Restricted Area. Logbook data were summed by month of capture (e.g., 43 bluefin tuna were caught in every January between 2006 and 2011). Source: HMS Logbook Data.

Month	Bluefin Kept	Bluefin Discarded Alive	Bluefin Discarded Dead	Total
January	43	7	5	55
February	88	12	14	114
March	85	59	63	207
April	74	136	154	364
May	114	117	211	442
June	30	36	42	108
July	4	5	4	13
August	0	2	1	3
September	0	2	11	13
October	0	0	0	0
November	6	0	0	6
December	42	0	4	46
Total	486	376	509	1371

NMFS also identified a smaller area within the Gulf of Mexico that contained a majority of bluefin tuna interactions, based on self-reported logbook data from 2006 to 2011. Logbook data from this area are presented in Table 3.27, Table 3.28, and Table 3.29. This smaller area contained a high percentage of the Gulf of Mexico bluefin interactions between 2006 and 2011. The greatest number of bluefin dead discards were reported in the logbook in May and April; these months also had the greatest number of self-reported bluefish live discards and bluefin kept by HMS-permitted pelagic longline vessels. The greatest number of interactions reported in the HMS logbook occurred in 2008 (n = 207). In recent years (2010 and 2011), total number of

reported interactions with bluefin tuna have decreased by over 90 percent (from 207 reported interactions in 2008 to 21 reported interactions in 2010). The month and year with the highest number of bluefin interactions was May 2008, however, trends in reported interactions between 2006 and 2009 are fairly consistent by month.

Table 3.27 Bluefin interactions reported in the HMS logbook by month in the proposed Small Gulf of Mexico Gear Restricted Area, 2006 - 2011. Logbook data were summed by month of capture (e.g., 217 bluefin tuna were caught across all years during the month of May). Source: HMS Logbook Data.

Year	Bluefin Kept	Bluefin Discarded Alive	Bluefin Discarded Dead	Total
January	18	0	0	18
February	34	4	8	46
March	31	21	31	83
April	41	82	99	222
May	48	43	126	217
June	2	4	5	11
July	0	0	0	0
August	0	0	0	0
September	0	0	1	1
October	0	0	0	0
November	6	0	0	6
December	11	0	0	11
Total	191	154	270	615

Table 3.28 Bluefin interactions reported in the HMS logbook by year in the proposed Small Gulf of Mexico Gear Restricted Area, 2006 - 2011. Source: HMS Logbook Data.

Year	Bluefin Kept	Bluefin Discarded Alive	Bluefin Discarded Dead	Total
2006	39	13	25	77
2007	39	45	56	140
2008	37	44	126	207
2009	65	44	57	166
2010	7	8	6	21
2011	4	0	0	4
Total	191	154	270	615

Table 3.29 All bluefin interactions (kept, discarded alive, and discarded dead) reported in the HMS logbook by month and year within the proposed Small Gulf of Mexico Gear Restricted Area, 2006-2011. Source: HMS Logbook Data.

Month	2006	2007	2008	2009	2010	2011
January	2	3	2	11	0	0
February	3	14	7	19	3	0
March	8	32	22	18	3	0
April	21	43	66	77	15	0
May	40	34	110	33	0	0
June	0	5	0	6	0	0
July	0	0	0	0	0	0
August	0	0	0	0	0	0
September	0	0	0	1	0	0
October	0	0	0	0	0	0
November	0	6	0	0	0	0
December	3	3	0	1	0	4

3.3.3.5 Bycatch, Incidental Catch, and Protected Species

Regulations to Reduce Pelagic Longline Bycatch

NMFS utilizes both self-reported data (mandatory logbooks for all vessels) and observer data to monitor bycatch in the pelagic longline fishery. The observer program has been in place since 1992 to document finfish bycatch, characterize fishery behavior, and quantify interactions with protected species (Beerkircher *et al.*, 2002). The program is mandatory for those vessels selected, and all vessels with directed and indirect swordfish permits are selected. The program had a target coverage level of five percent of the U.S. fleet within the North Atlantic (waters north of 5° N. latitude), as was agreed to by the United States at ICCAT. Actual coverage levels achieved from 1992 – 2003 ranged from two to nine percent depending on quarter and year. Observer coverage was 100 percent for vessels participating in the NED experimental fishery during 2001 – 2003. Overall observer coverage in 2003 was 11.5 percent of the total sets made, including the NED experiment. The program began requiring an eight percent coverage rate due to the requirements of the 2004 BiOp for Atlantic pelagic longline Fishery for HMS (NMFS, 2004b). Observer coverage in 2005-2007 ranged from 7.5 – 10.8 percent. NMFS increased the coverage of the pelagic longline fleet operating in the Gulf of Mexico during March/April through June for 2007-2010 to monitor BFT interactions, attempting 100 percent observer coverage from 2007-2009 and 50 percent in 2010. Since 1992, data collection priorities have been to collect catch and effort data of the U.S. Atlantic pelagic longline fleet on HMS, although information is also collected on bycatch of protected species. Due to increased observer coverage in the Mid-Atlantic Bight as mandated by the PLTRT final rule, percent observer coverage in this fishery is expected to increase.

Fishery observer effort is allocated among eleven large geographic areas and calendar quarter based upon the historical fishing range of the fleet (Walsh and Garrison, 2006). The target

annual coverage is eight percent of the total reported sets, and observer coverage is randomly allocated based upon reported fishing effort during the previous fishing year/quarter/statistical reporting area (Beerkircher *et al.*, 2002). Bycatch rates of protected species (catch per 1,000 hooks) are quantified based upon observer data by year, fishing area, and quarter (Garrison, 2005). The estimated bycatch rate is then multiplied by the fishing effort (number of hooks) in each area and quarter reported to the FLS program to obtain estimates of total interactions for each species of marine mammal and sea turtle (Garrison, 2005).

NMFS adopted fleet-wide VMS requirements in the Atlantic pelagic longline fishery in May 1999 in part to address bycatch concerns, but was subsequently sued by an industry group. By order dated September 25, 2000, the U.S. District Court for the District of Columbia prevented any immediate implementation of VMS in the Atlantic pelagic longline fishery, and instructed to "undertake further consideration of the scope of the [VMS] requirements in light of any attendant relevant conservation benefits." On October 15, 2002, the court issued a final order that denied plaintiff's objections to the VMS regulations. Based on this ruling, NMFS implemented the VMS requirement in September 2003.

On December 2, 2011, NMFS published a final rule requiring all HMS vessels currently required to replace their Mobile Transmitting Unit VMS with Enhanced Mobile Transmitting Unit VMS units. These installations must be performed by a qualified marine electrician. These units are capable of two way communication, and vessel operators must provide information on target species and fishing gear onboard by sending a hail out message using their VMS at least two-hours prior to leaving port. Vessels are also required to send a hail in message indicating when and where they would be returning to port with their VMS two hours before returning. These requirements were effective January 1, 2013 (original final rule, 76 FR 75492; delayed implementation and new effective date, 77 FR 61727).

Bycatch Data

NMFS collects data on the disposition (released alive or dead) of bycatch species from logbooks submitted by fishermen in the pelagic longline fishery. Observer reports also include disposition of the catch as well as information on hook location, trailing gear, and injury status of protected species interactions. These data are used to estimate post-release mortality of sea turtles and marine mammals based on guidelines for each (Angliss and DeMaster 1998, Ryder *et al*. 2006). See Section 4.1 of the 2012 HMS SAFE Report for recent estimates of sea turtle and marine mammal bycatch estimates.

The pelagic longline fishery encounters a variety of species in addition to the target species, including sea turtles, marine mammals, seabirds, sharks, and bluefin tuna. This discussion focuses on bluefin tuna, the principal subject of this amendment. Information on the incidental catch/bycatch of bluefin tuna is presented first, followed by information on other species. The information below presents most of the information regarding bluefin tuna in terms of interactions, which include all bluefin tuna that interacted with the gear included bluefin retained (and landed) as well as discarded (live and dead). The number of interactions is a useful metric because it provides an indication of the magnitude of the number of encounters between pelagic

longline gear and bluefin. Figue 3.21 shows the number of bluefin interactions (landings plus discards) with pelagic longline gear from 2002 through 2011.

The overall trend in the number of interactions is increasing, with a notable decline in the number of interactions in 2011. The number of bluefin interactions ranges from 771 to 1,919 per year. From 2002 through 2006, the average number of bluefin interactions was 1,134. From 2007 through 2011, the average number of bluefin interactions was 1,670. Figure 3.18and Table 3.30 show the percentage of total bluefin interactions by area. The relative number of interactions in the Gulf of Mexico (GOM) and the Mid-Atlantic Bight (MAB) have been declining, and the number of interactions in the FEC have been increasing. It is more difficult to characterize the trends in the other regions.

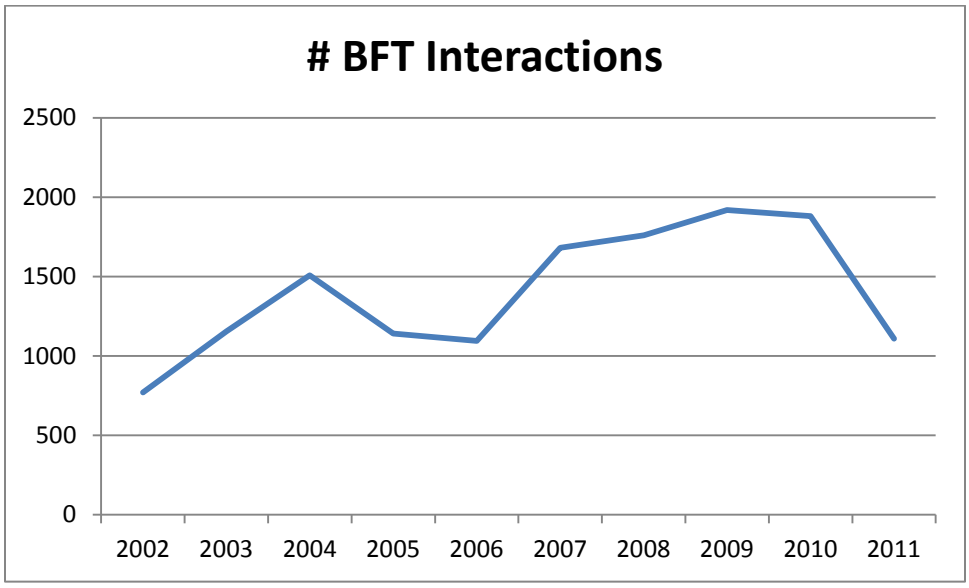

Figure 3.18 Total number of pelagic longline Bluefin tuna interactions reported in the HMS logbook between 2002 and 2011.

Table 3.30 Percentage of Total Bluefin tuna interactions by area and year, as reported in the HMS logbooks between 2002 and 2011.

Area	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
CAR	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
FEC	3	1	1	1	1	1	3	7	5	12
GOM	29	32	35	28	14	18	20	18	10	3
MAB	13	26	23	46	48	74	68	38	55	29
NCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
NEC	40	21	32	13	30	3	5	19	23	38
NED	12	16	5	8	3	2	2	14	4	10
SAB	<1	2	2	2	1	1	2	3	2	4
SAR	2	3	2	2	3	1	1	2	2	2
SAT	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Table 3.31 Average Percentage of Total Interactions by Area and Average Number of Bluefin Interactions per 1,000 Hooks (pelagic longline gear), 2006 – 2011. Source: HMS logbook data.

Area	Average Percentage of Total Interactions	Average Bluefin Interactions per 1,000 hooks
MAB	52 %	.65
NEC	20 %	.53
GOM	14 %	.11
NED	6 %	.40
FEC	5 %	.09
SAB	2 %	.04
SAR	2 %	.23
SAT	< 1 %	< .01

The average percentage of total number of bluefin interactions from 2006 through 2011 is shown in Table 3.31. The rate of bluefin interactions with pelagic longline gear was estimated by dividing the number of bluefin interactions by the number of hooks (for the relevant area and/or time period). Because the number of bluefin interaction per hook is low, in order to facilitate the presentation of data the calculations are expressed as the number of interactions per 1,000 hooks.

Figure 3.19 shows the frequency distribution of bluefin interactions among pelagic longline vessels by year from 2006 through 2011 based on logbook data. Table 3.32 characterizes the bluefin interactions in the pelagic longline fleet, showing the number of vessels deploying pelagic longline gear, the number of vessels reporting bluefin interactions, and the percentage of vessels with and without interactions.

Figure 3.20 shows the cumulative frequency distribution of bluefin interactions with pelagic longline gear, and the number of vessels responsible for 80% of the interactions. The number of vessels is on the horizontal axis and the cumulative percentage of interactions is on the vertical

axis. For example in 2011, 22 vessels were responsible for 80% of the interactions. The trend over all the years is that less than 10 vessels were responsible for between 50 and 70% of the interactions.

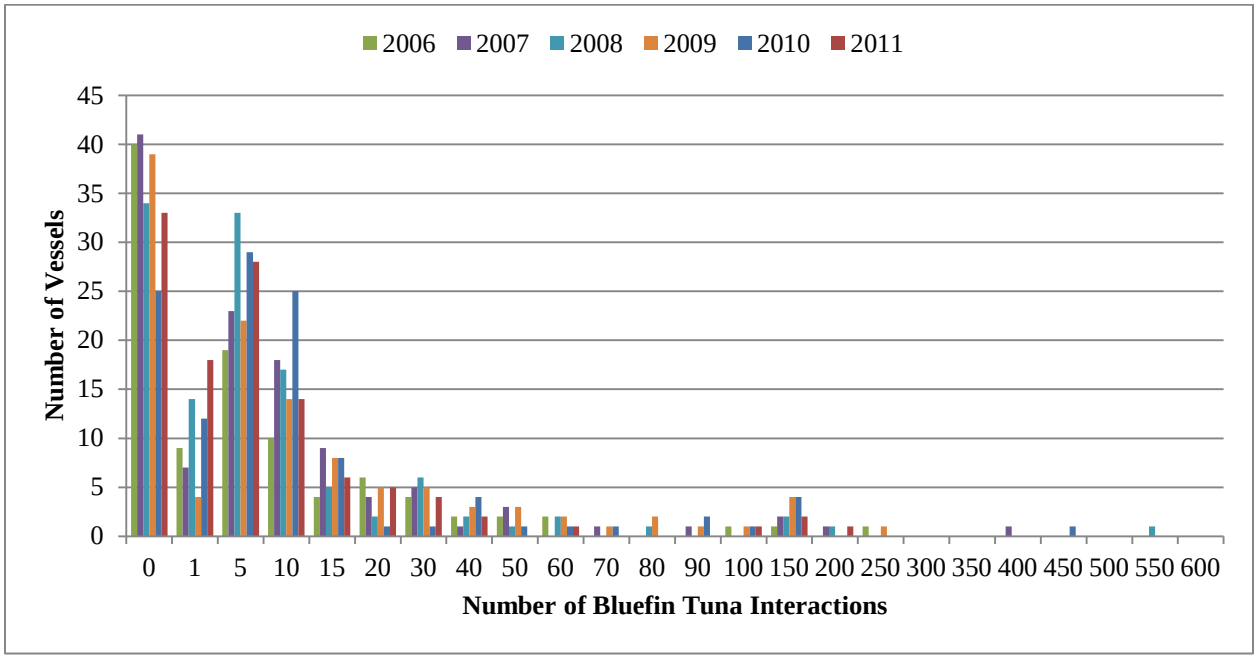

Figure 3.19 Frequency of interactions with bluefin tuna by vessels as reported in the HMS logbook Source: HMS Logbook Data.

Table 3.32 Bluefin Interactions Across the Pelagic Longline Fleet, 2006 to 2011. Source: HMS Logbook Data.

Year	Vessels Deploying PLL Gear	Vessels Reporting BFT Interactions	Percent w Interactions	Percent w/o interactions
2006	101	61	60	40
2007	117	76	65	35
2008	121	87	72	28
2009	115	76	66	34
2010	116	91	78	22
2011	116	82	71	29

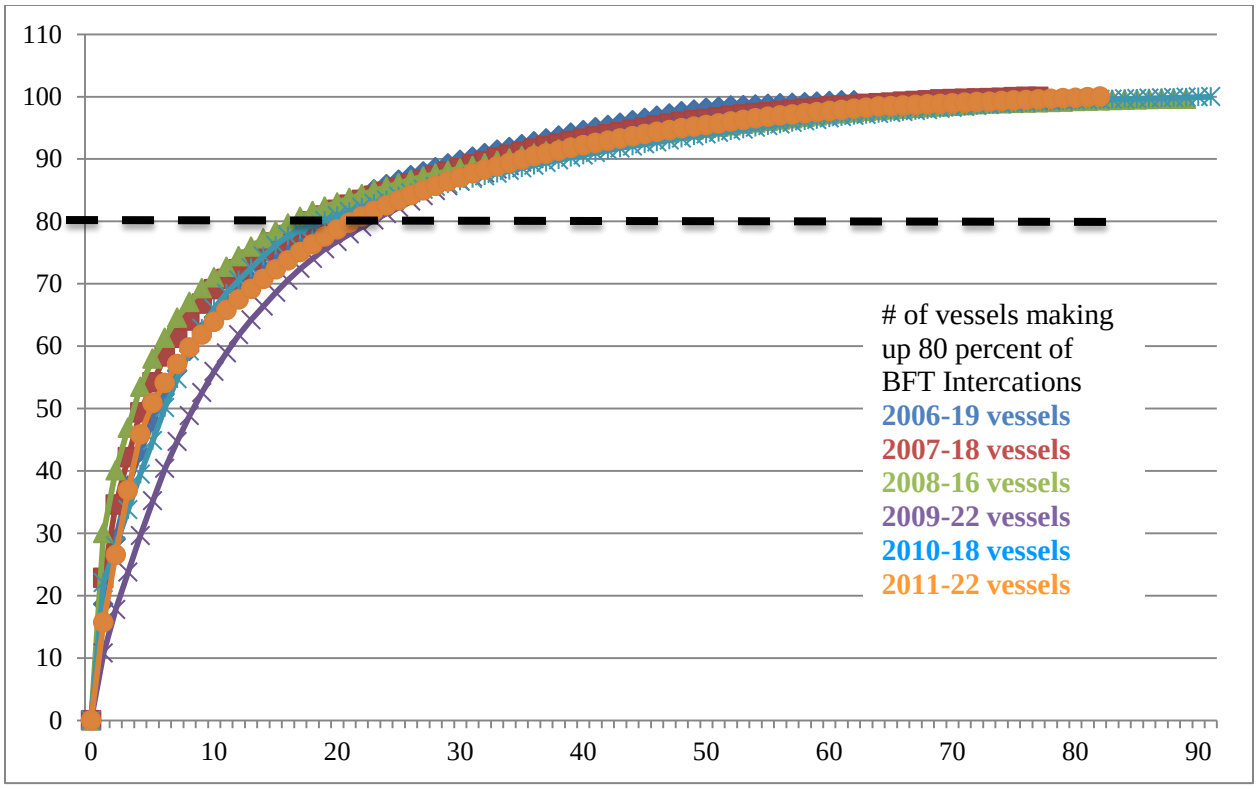

Figure 3.20 Cumulative Frequency Distribution of Bluefin Interactions and Number of Vessel, 2006 - 2011. Source: HMS Logbook Data.

The spatial distribution of logbook-reported catch per unit effort (number per 1,000 hooks set) of several pelagic longline bycatch species between 2006 and 2011, including bluefin tuna discards, sea turtles, and billfish, are shown in Figure 3.21 through Figure 3.26. The reader is encouraged to reference Figure 3.4, which shows how the average number of hooks per set varies spatially across the U.S. EEZ. Average number of hooks per set along the continental shelf regions between Florida and Georges Bank tended to range between 500 and 1000 hooks per set. A grid cell in the bycatch maps with a catch of 1 animal per 1,000 hooks in a region where the mean number of hooks per set is between 500 and 1,000 implies that there are locations where 1 animal is caught per set, on average. Bluefin discards reflect the primary locations of effort along the continental shelf between North Carolina and Georges Bank, in the central Gulf of Mexico, and in the NED. Turtle interactions also reflect this general trend, however higher mean CPUEs of loggerheads were noted for the NED (Figure 3.22 and Figure 3.23. Dusky shark bycatch was also predominantly noted along the continental shelf break in the Atlantic (Figure 3.24). Higher night shark mean CPUE was noted along the continental shelf break between South Carolina and Florida (Figure 3.25). White and blue marlin interactions also reflect locations of higher effort (Figure 3.26).

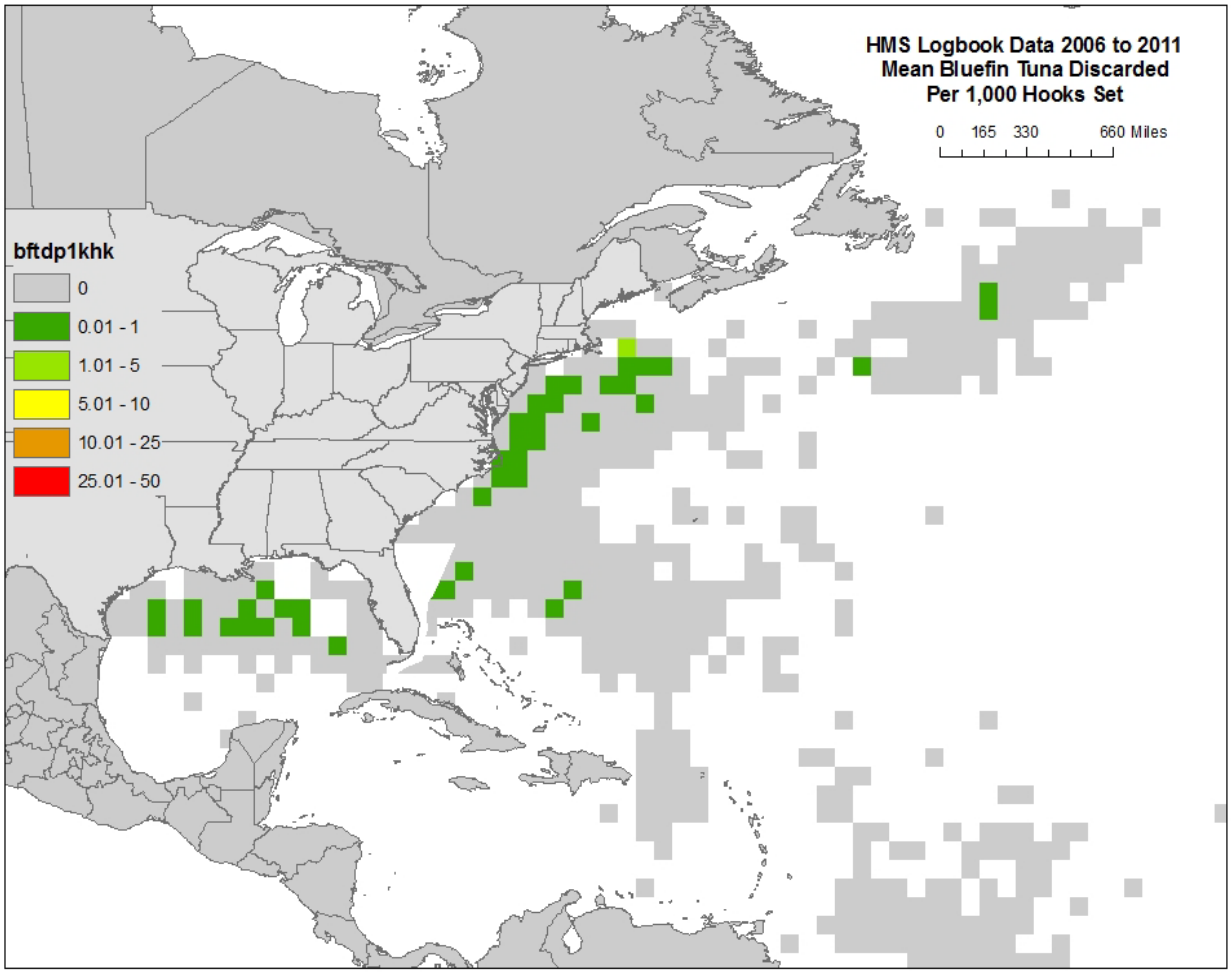

Figure 3.21 Spatial distribution of bluefin tuna discards within the pelagic longline fishery (as reported in the HMS logbook). Grid cell values reflect the average number of Bluefin tuna discarded (alive and dead) on all set locations that fall within a grid cell.

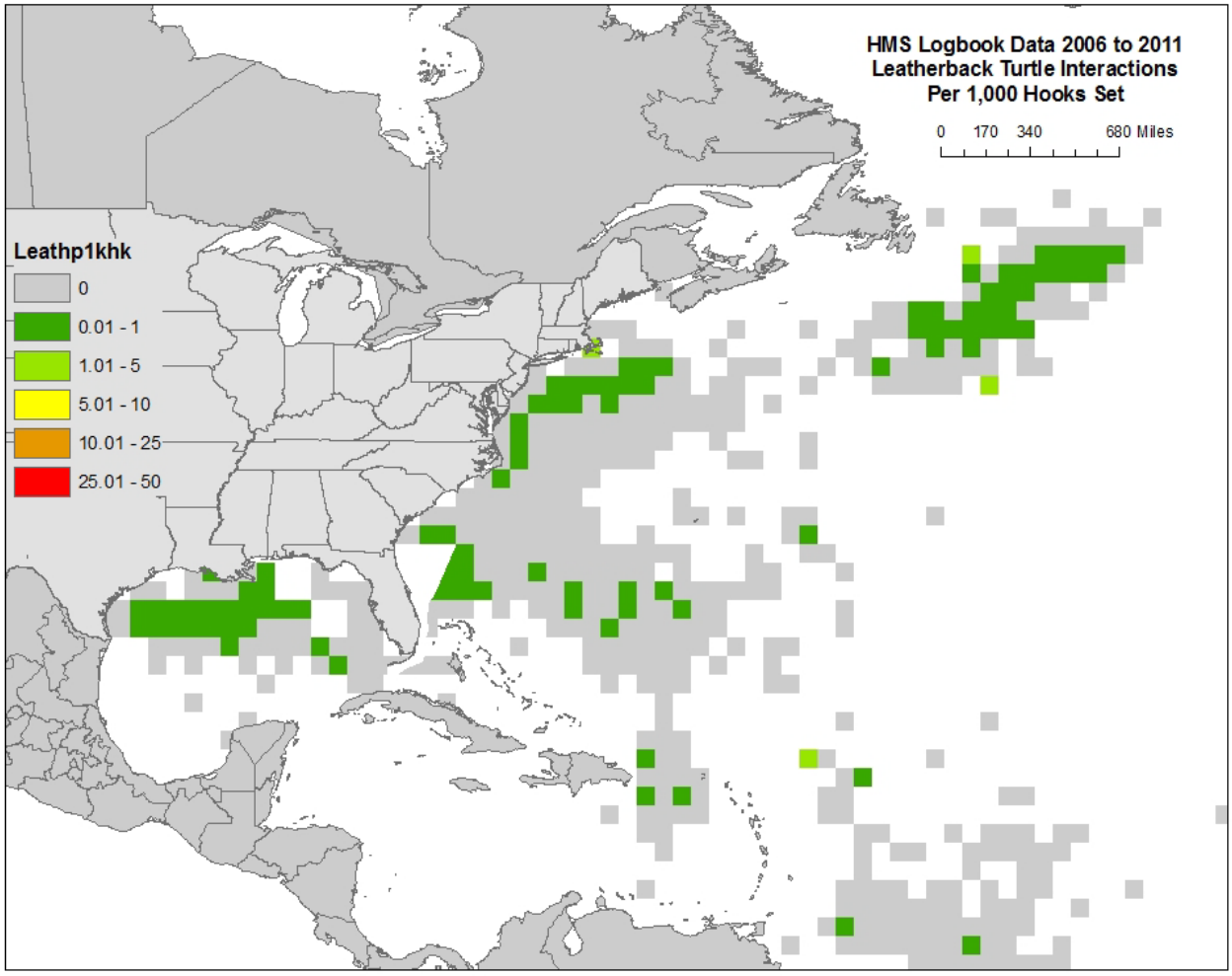

Figure 3.22 Spatial distribution of leatherback turtle interactions within the pelagic longline fishery (as reported in the HMS logbook). Grid cell values reflect the average number of leatherback turtle interactions (alive and dead) on all set locations that fall within a grid cell.

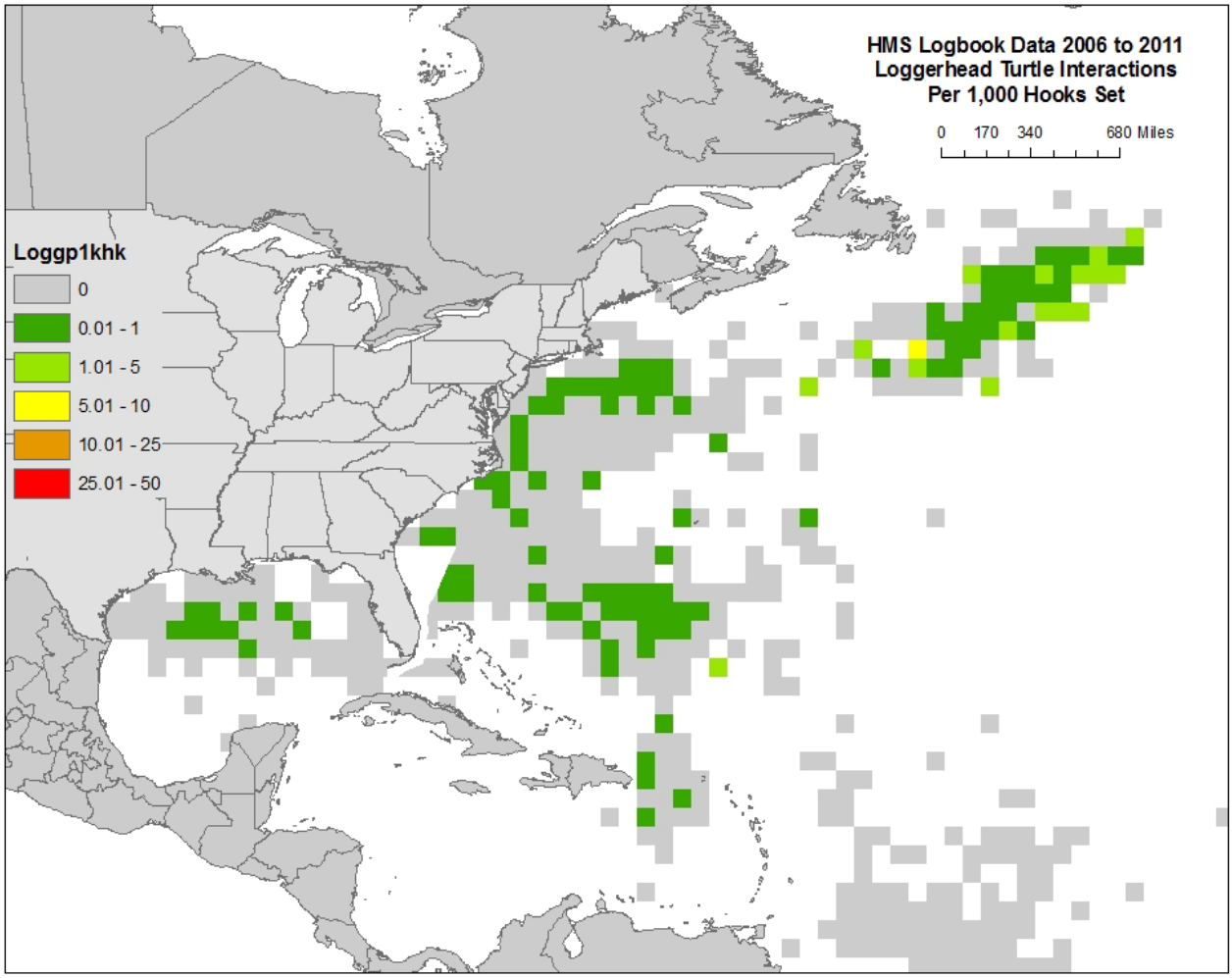

Figure 3.23 Spatial distribution of loggerhead turtle interactions within the pelagic longline fishery (as reported in the HMS logbook). Grid cell values reflect the average number of loggerhead turtle interactions (alive and dead) on all set locations that fall within a grid cell.

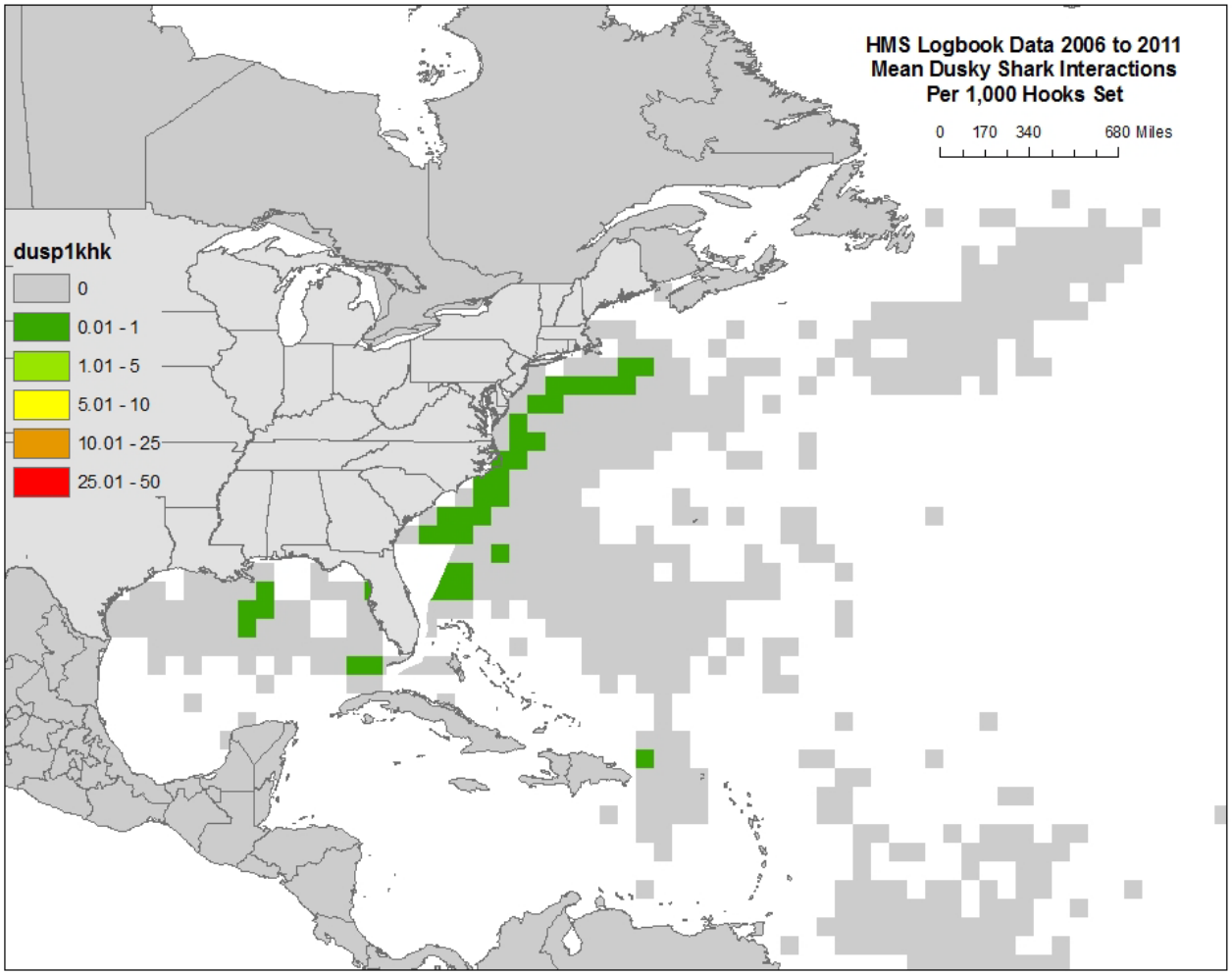

Figure 3.24 Spatial distribution of dusky shark interactions within the pelagic longline fishery (as reported in the HMS logbook). Grid cell values reflect the average number of dusky shark interactions (alive and dead) on all set locations that fall within a grid cell.

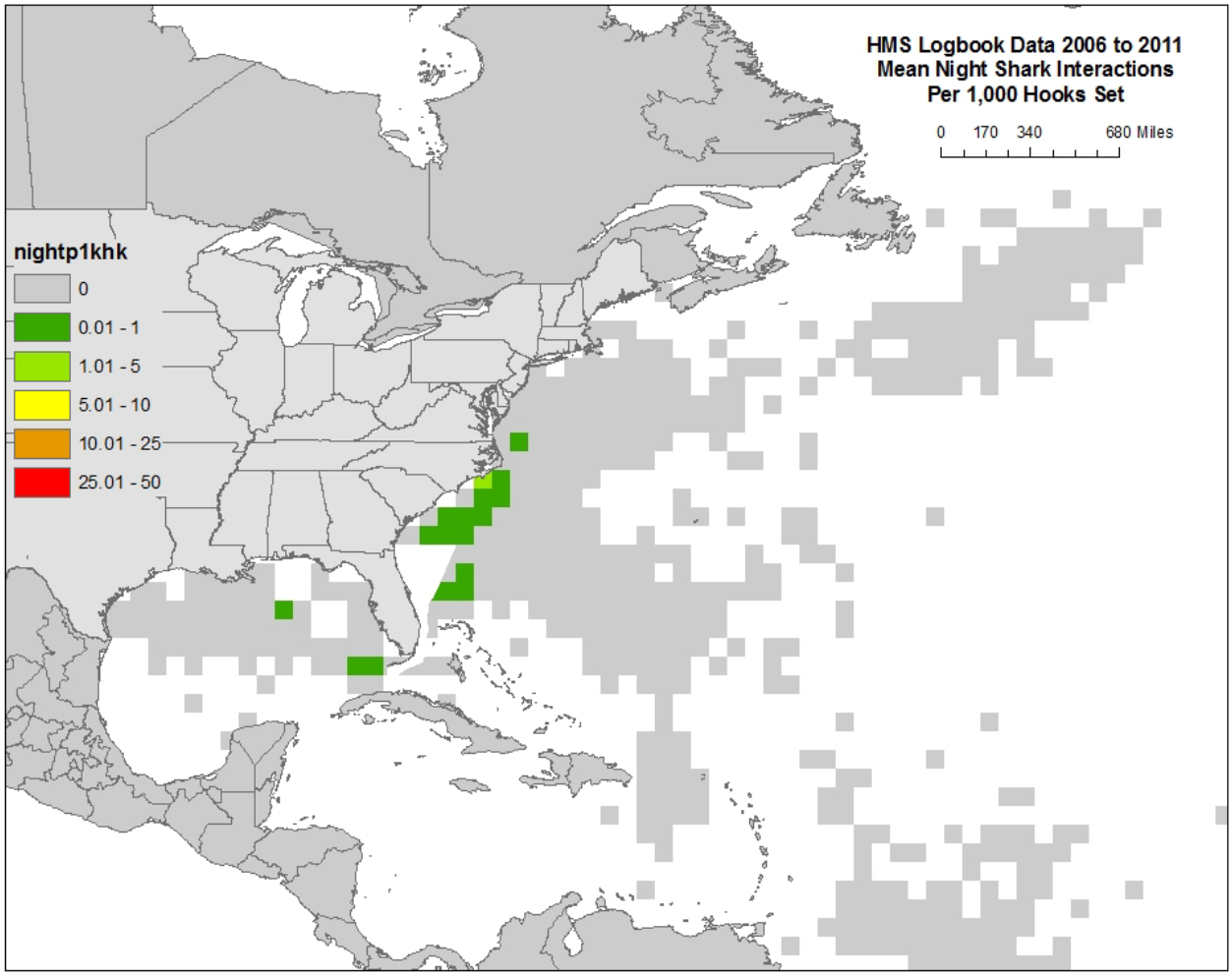

Figure 3.25 Spatial distribution of night shark interactions within the pelagic longline fishery (as reported in the HMS logbook). Grid cell values reflect the average number of night shark interactions (alive and dead) on all set locations that fall within a grid cell.

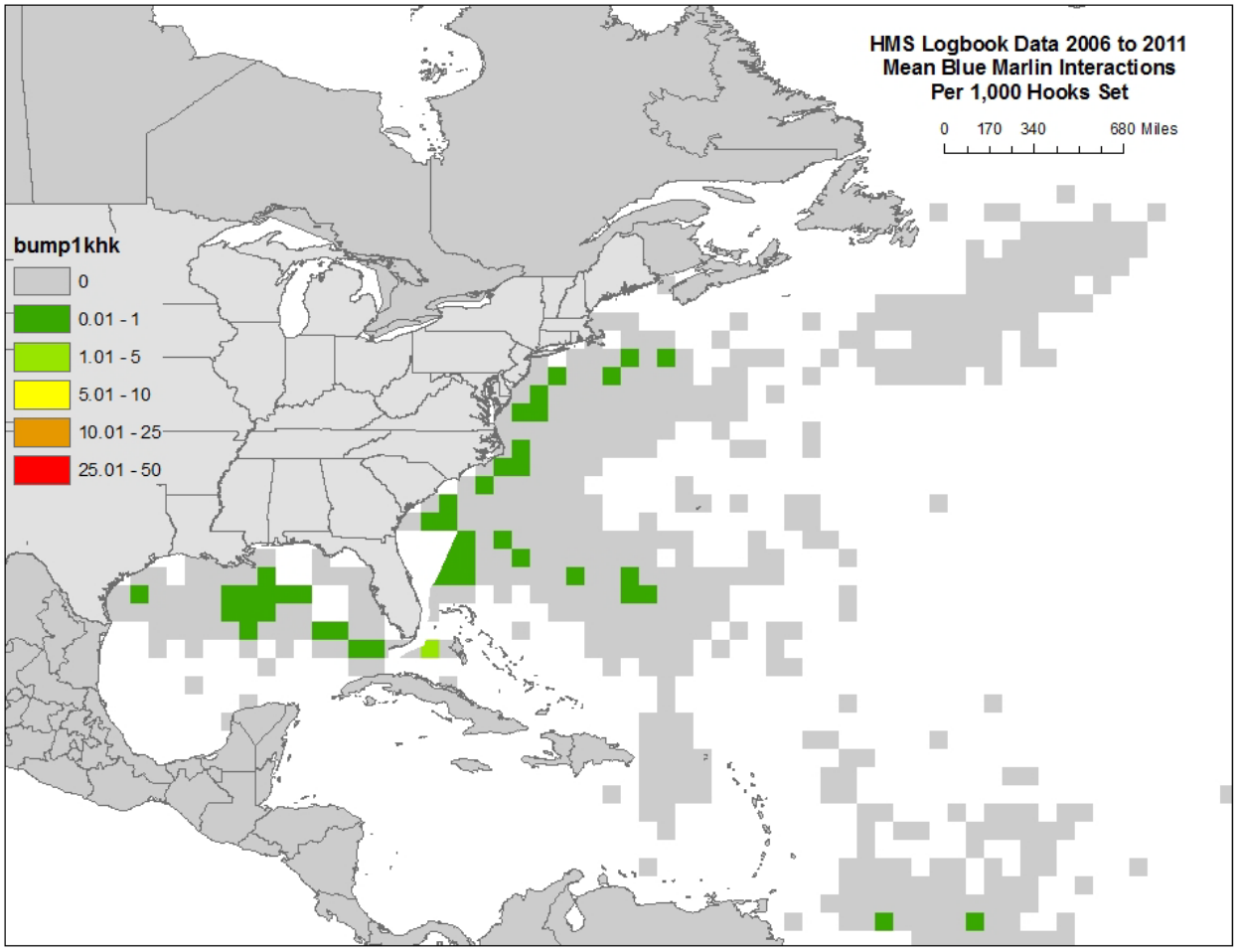

Figure 3.26 Spatial distribution of blue marlin interactions within the pelagic longline fishery (as reported in the HMS logbook). Grid cell values reflect the average number of marlin interactions (alive and dead) on all set locations that fall within a grid cell.

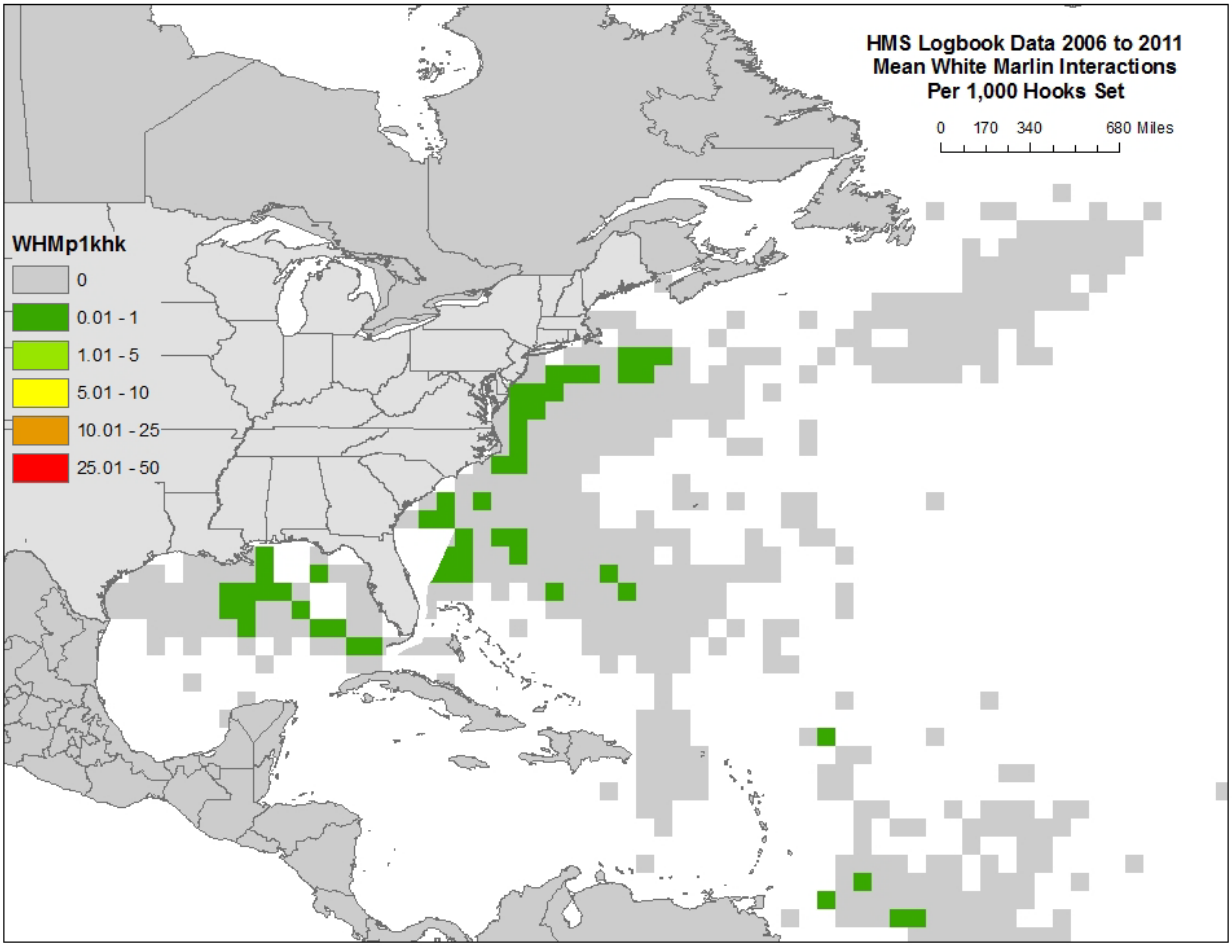

Figure 3.27 Spatial distribution of white marlin interactions within the pelagic longline fishery (as reported in the HMS logbook). Grid cell values reflect the average number of marlin interactions (alive and dead) on all set locations that fall within a grid cell.

Estimated number of sea turtle interactions in the pelagic longline fishery by year is shown in Table 3.13. Estimated turtle interactions of leatherback and loggerhead turtles have generally decreased since the early 2000s. Marine mammal interactions, on the other hand, may be trending upwards from the lowest number of interactions reported in a decade (in 2009).

Table 3.33 Estimated sea turtle interactions by species in the US Atlantic pelagic longline fishery, 2002-2011, and Incidental Take Levels (ITS).

Species	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	3 year ITS 2004-06 / 2007-09* Total
Leatherback	962	1,112	1,362	368	415	500	385	286	168	239	1,981 / 1,764
Loggerhead	575	727	734	282	558	542	772	243	344	438	1,869 / 1,905
Other/unidentified sea turtles	50	38	0	0	11	1	0	0	3	4	105 / 105
Marine mammals	201	300	164	372	313	151	265	144	238	452	NA

* Applies to all subsequent 3-year ITS periods

3.3.4 Purse Seine Fishery

Purse seine gear consists of a floated and weighted encircling net that is closed by means of a drawstring, known as a purseline, threaded through rings attached to the bottom of the net.

Atlantic tuna purse seining operations typically use spotter aircraft to locate fish schools. The vessels might decide to not even leave the docks until suitable concentrations of fish are located. Although the fishing season officially opens August 15, the actual start of the purse seine fishing occurs when, after the season opens fish are available in schools large and dense enough to offset fishing costs. Once a school is spotted, the vessel, with the aid of a smaller skiff, intercepts and uses the large net to encircle it. Once the school is encircled, the purseline is pulled, closing the bottom of the net and preventing escape. The net is hauled back onboard using a powerblock, and the tunas are removed and placed onboard the larger vessel.

A number of purse seine vessels targeted and landed bluefin off the coast of Gloucester, Massachusetts as early as the 1930s and purse seine vessels participated in the U.S. Atlantic tuna fishery continuously since the 1950s, although in recent years (2006 through 2011) there have been little or no landings purse seine landings. In 1958, continued commercial purse seining effort for Atlantic tunas began with a single vessel in Cape Cod Bay, Massachusetts and expanded rapidly into the mid-Atlantic region between Cape Hatteras and Cape Cod during the early 1960s. The purse seine fishery between Cape Hatteras and Cape Cod was directed mainly at small and medium bluefin, yellowfin, and skipjack tuna primarily for the canning industry. North of Cape Cod, purse seining was directed at giant bluefin. High catches of juvenile bluefin were sustained throughout the 1960s and into the early 1970s. These high catch rates by U.S. purse seine vessels are believed to have played a role in the decline in stock abundance during subsequent years.

A limited entry permit system with non-transferable individual vessel quotas for purse seining was established in 1982, effectively excluding any new entrants into this category. Equal baseline quotas of bluefin are assigned to individual vessels by regulation; the individual vessel quota system is possible given the small pool of ownership in this sector of the fishery, *i.e.*, five qualified participants. In 1996, the quotas were made transferable among the five entities provided they notified NMFS in writing. The 1999 FMP and its implementing regulations established bluefin baseline percentage quota shares for each of the domestic fishing categories. These percentage shares were based on allocation procedures that NMFS developed over several years. The baseline percentage quota shares established in the 1999 FMP were carried forward in the 2006 Consolidated HMS FMP (effective since June 1, 1999) and set the Purse Seine category allocation at 18.6 percent of the U.S. quota.

Vessels participating in the Atlantic tunas purse seine fishery are required to target the larger size class bluefin, more specifically the giant size class (81 inches or larger) and are granted a tolerance limit for large medium size class bluefin (73 to less than 81 inches); *i.e.*, large medium catch may not exceed 15 percent by weight of the total amount of giant bluefin landed during a season. These vessels may commence fishing starting on July 15 of each year and may continue through December 31, provided the vessel has not fully attained its individual vessel quota.

3.3.4.1 Recent catch and landings

Table 3.34 shows purse seine landings of Atlantic tunas from 2003 through 2011. Purse seine landings historically have made up approximately 20 percent of the total annual U.S. landings of bluefin tuna (about 25 percent of total commercial landings), but recently only account for a small percentage. In the 1980s and early 1990s, purse seine landings of yellowfin tuna were often over several hundred metric tons. Over 4,000 mt ww of yellowfin were recorded landed in 1985. Over the past 15 years, via informal agreements with other sectors of the tuna industry, the purse seine fleet has opted not to direct any effort on HMS other than bluefin tuna; therefore, only includes bluefin tuna.

The U.S. purse seine fleet has historically accounted for a small percentage of the total international Atlantic tuna landings. Table 3.34 and Table 3.35 show that over the past 10 years, the U.S. purse seine fishery has contributed to less than 0.15 percent of the total purse seine landings reported to ICCAT. In recent years, ICCAT has not taken any action that affects the U.S. purse seine fleet other than the removal of the 250 mt quota cap in 2009.

Table 3.34 Domestic Atlantic tuna landings (mt ww) for the Purse Seine Fishery in the Northwest Atlantic Fishing Area (2004 – 2011). Source: U.S. National Report to ICCAT, 2012.

Species	2004	2005	2006	2007	2008	2009	2010	2011
Bluefin	31.8	178.3	3.6	27.9	0.0	11.4	0.0	0.0

Table 3.35 Estimated international purse seine Atlantic tuna landings in the Atlantic and Mediterranean: 2003-2010 (mt ww). Source: SCRS, 2011.

Species	2003	2004	2005	2006	2007	2008	2009	2010
Bluefin Tuna	17,922	19,895	23,524	20,356	22,980	12,641	9,479	4,985
Yellowfin Tuna	82,088	62,228	61,410	62,761	52,733	70,047	77,757	74,172
Skipjack Tuna	92,347	93,284	89,704	71,215	81,335	73,080	84,494	125,467
Bigeye Tuna	22,731	18,417	18,595	16,457	17,553	15,536	22,658	23,769
Albacore	998	717	949	3432	1289	169	259	213
Total	216,086	194,541	194,182	174,221	175,890	171,473	194,659	228,606
U.S. Total	265	32	178	4	28	0	11	0
U.S. Percentage	0.12%	0.02%	0.09%	<0.01%	0.02%	0%	<0.01%	0%

3.3.4.2 Bycatch, Incidental Catch, and Protected Species

Bluefin purse seine fishery bycatch typically consists of undersized target species and non-target finfish (NMFS 2012). The bluefin purse seine fishery is classified as a Category III fishery under the Marine Mammal Protection Act, and operates under a specified Incidental Take Statement that was issued as part of the June 21, 2001 Biological Opinion (BiOp) on HMS fisheries.

NMFS has limited observer data on the bluefin purse seine fishery. There are no recorded instances of non-tuna finfish, other than minimal numbers of blue sharks, caught in Atlantic tuna purse seines. Anecdotal evidence indicates that if fish are discarded, they are easily released out of the net with minimal bycatch mortality.

3.3.5 Trap Category

Owners of vessels conducting trap operations that may result in the incidental taking of large medium and giant BFT must obtain a Trap category permit in order to land an incidentally-caught bluefin tuna. There were eight permits issued in this category during the 2012 season. Authorized gears include only pound net and fish weir. Trap category permit holders may retain one large medium or giant bluefin tuna per vessel per year. No other Atlantic tunas taken incidentally may be retained. Very few Atlantic bluefin tuna are taken with trap gear; between 2007 and 2011, only one bluefin tuna was landed (710 pounds or 0.3 metric tons). Landings of bluefin under this gear category are typically rare.

Table 3.36 Trap category landings of bluefin tuna and BAYS tunas between 2007 and 2011. Source: 2012 ICCAT National Report; December 2008 HMS Landings Report for Bluefin Tuna.

Species	2007	2008	2009	2010	2011
Bluefin tuna	0	0.3	0	0	0
Yellowfin Tuna	0	0.05	0.1	0.5	0
Bigeye Tuna	0	0	0.3	1.2	0
Albacore Tuna	0.4	0.005	0.01	0.01	0
Skipjack tuna	0	0	0	0	0

3.4 Reporting and Monitoring

The reporting requirements implemented in the 2006 Consolidated HMS FMP vary according to the permit category, as well as the relevant species. Reporting requirements regarding bluefin are summarized in the following sections.

3.4.1 General Category, Harpoon Category, Purse Seine, and Trap Category

Monitoring of the commercial bluefin fishery is conducted primarily through the dealer reporting system. Dealer permits are required for the commercial receipt of Atlantic tuna, swordfish, and sharks. A separate dealer permit is required for each of the fisheries. Dealers are required to record each Atlantic bluefin purchase of on a landing card and provide the information to NMFS within 24 hours of the purchase or receipt of the fish. The landing cards, which are used to monitor the bluefin quota, include the following information: dealer number, dealer name, date the fish was landed, harvest gear, fork length, weight (whole or dressed), identification tag number, area where fish was caught, port where landed, Atlantic tunas or HMS permit number, vessel name, and the name and dated signature of the vessel's master. Discard information is not obtained. In 1998, NMFS began using FAX/Optical Character Recognition (OCR) technology for bluefin landing cards in order to facilitate data entry and quota monitoring. Bluefin dealers are also required to submit summary reports to NMFS on a biweekly basis, which provide additional economic data including the destination of the fish, price per pound, and quality rating. Permits for dealers to purchase species in the swordfish or shark management unit are issued by the NMFS Southeast Regional Office and permits for the Atlantic tuna fishery, including bluefin, are issued by the NMFS Northeast Regional Office. Atlantic tuna dealer permits are issued for a calendar year (January 1 through December 31). Dealer reports must be submitted to NMFS twice a month for all swordfish, sharks and tunas.

As of January 1, 2013, Federal Atlantic swordfish, shark, and tuna dealers were required to report receipt of Atlantic sharks, swordfish, and BAYS tunas to NMFS through an electronic reporting system on a weekly basis (77 FR 47303; August 8, 2012). HMS dealers will not be required to report bluefin through this electronic reporting system, as the previously described reporting system is in place for bluefin.

NMFS regulations for international trade of commercially landed bluefin tuna have permitting, documentation, and reporting components. These regulations implement recommendations of ICCAT and other regional fishery management organizations which were developed as a means to ensure that bluefin tuna entering into trade among member nations are harvested in a manner that does not diminish the effectiveness of ICCAT's bluefin tuna conservation and management measures. In the United States, each business importing or exporting bluefin tuna, swordfish, frozen bigeye tuna, or shark fins must obtain an International Trade Permit from NMFS, and submit biweekly reports summarizing trading activity. In addition, traders must ensure that each imported or exported shipment of bluefin tuna is accompanied by a bluefin tuna catch document that includes data about the harvest and previous trade of the shipment. Although this tracking system is currently paper-based, ICCAT is developing an electronic system which is scheduled to be effective in 2014.

NMFS currently has the authority to select for at-sea observer coverage any vessel that has an Atlantic HMS tunas, shark, or swordfish permit (50 CFR § 635.7), but, as described below, currently only deploys observers on vessels fishing with pelagic longline gear.

3.4.2 Longline Category

Vessel Monitoring System (VMS) Requirements

All vessels with pelagic longline on board must have a VMS unit installed and operating. The VMS unit must be a NMFS-approved Enhanced Mobile Transmitting Unit (E-MTU) (76 FR 75492; and 76 FR 75523; December 2, 2011). VMS units are used to track the location and fishing activity of pelagic longline vessels year-round, and must report vessel position at one hour intervals. At least two hours prior to each trip, the vessel owner must report to NMFS any HMS fishery in which the vessel will participate and the type(s) of fishing gear that will be on board the vessel ("hail out"). At least 3 hours prior to landing, a vessel owner or operator must report a notice of landing to NMFS ("hail in"). Vessels are allowed to turn off their VMS units once they return to port at the end of a fishing trip. If suspicious fishing activity is detected via a vessel's VMS signal (including sudden failure of a vessel's VMS unit to report positional information), NMFS Office of Law Enforcement and/or the U.S. Coast Guard may investigate, including at-sea boarding, overflight, or meeting the fishing vessel once it returns to port. VMS may be used to determine compliance with the closed area restrictions, and allows pelagic longline vessels to transit through areas closed to the use of pelagic longline gear. Owners or operators of vessels with VMS units may be eligible for reimbursement of the cost of their VMS unit up to $3,100.

Logbook Requirement

In 1986, a comprehensive logbook program was initiated for the pelagic longline fisheries in the Atlantic, Gulf of Mexico, and Caribbean. Because the pelagic longline fishery uses gear deployed for a relatively long period (6 to 10 hours), catch and effort data are collected for each set. Thus, a separate form is required for each set. Fishermen are required to report the numbers of each species caught, the numbers of animals retained or discarded alive or discarded dead, the location of the set, the types and size of gear, and the duration of the set.

Because some of the needed catch/effort information for pelagic longline fisheries remains the same for the entire trip (i.e., it would be redundant to report it for every set), a supplemental form is used to report this type of data. Information on the port of departure and return, unloading dealer and location, number of sets, number of crew, date of departure and landing are reported on the Trip Summary form. In addition, information on costs associated with the trip can be reported on this form. Through the logbooks, NMFS collects data on the disposition of bycatch species in addition to bluefin. In conjunction with the observer reports, the data are used to estimate the weight of bluefin dead discards, and post-release mortality of sea turtles and marine mammals.

Pelagic Observer Program

The Southeast Fisheries Science Center (Miami, FL), has been managing NMFS' pelagic observer program (POP) since 1992. POP observers monitor a mobile U.S. pelagic longline fleet ranging from the Grand Banks to Brazil to the Gulf of Mexico while onboard fishing vessels. The POP targets a minimum 8% level of coverage of the vessels based on the fishing effort of the fleet (8% of sets), and an expanded observer coverage with target coverage of 50-100 percent of the trips in the Gulf of Mexico has been implemented during the bluefin spawning season since 2007 to better characterize the interaction of the U.S. pelagic longline fleet with this species. The 8 percent target minimum coverage level was mandated by the 2004 biological opinion for sea turtles (http://sero.nmfs.noaa.gov/pr/esa/Fishery%20Biops/HMS%20BO%206_01_04%20secured%20final%20with%20signed%20cover%20page.pdf), while taking into consideration ICCAT guidance and NOAA Fisheries' guidelines for fisheries observer coverage levels. The POP has multiple objectives in addition to the estimation of bluefin discards. The available funds have permitted NMFS to increase coverage within the Gulf of Mexico substantially during the bluefin tuna spawning season, and to exceed the minimum recommended 8% in certain areas and quarters outside of that.

The POP information, which includes fish species, length, weight, sex, location, and environmental information, is used in conjunction with the logbook information to monitor retained bluefin and estimate discarded bluefin. The United States applies the SCRS-approved methodology to calculate and report dead discards for both stock assessment purposes and quota compliance purposes. The amount of dead discards is generated by estimating discard rates from data collected by the POP and extrapolating these estimates using the effort (number of hooks) reported in the Pelagic Logbooks. This methodology is applied within each time/area stratum (e.g., catch rates from the Gulf of Mexico are used to estimate discards from the Gulf of Mexico, not the Northeast Distant area).

Table 3.37 Observer Coverage of the Pelagic Longline Fishery. Source: Yeung, 2001; Garrison, 2003; Garrison and Richards, 2004; Garrison, 2005; Fairfield-Walsh and Garrison, 2006; Fairfield-Walsh & Garrison, 2007; Fairfield & Garrison, 2008; Garrison, Stokes & Fairfield, 2009; Garrison and Stokes, 2010, 2011, 2012

Year	Number of Sets Observed			Percentage of Total Number of Sets		
1999	420			3.8%		
2000	464			4.2%		
2001[1]	Total	Non-NED	NED	Total	Non-NED	NED
	584	398	186	5.4%	3.7%	100%
2002[1]	856	353	503	8.9%	3.9%	100%
2003[1]	1,088	552	536	11.5%	6.2%	100%
	Total	Non-EXP	EXP	Total	Non-EXP	EXP
2004[2]	702	642	60	7.3%	6.7%	100%
2005[2]	796	549	247	10.1%	7.2%	100%
2006	568	-	-	7.5%	-	-
2007	944	-	-	10.8%	-	-
2008[3]	1,190	-	101	13.6%	-	100%
2009[3]	1,588	1,376	212	17.3%	15.0%	100%
2010[3]	884	725	159	11.0%	9.7%	100%
2011[3]	879	864	15	10.9	10.1	100

NED – Northeast Distant Area; EXP – experimental. [1]In 2001, 2002, and 2003, 100 percent observer coverage was required in the NED research experiment. [2]In 2004 and 2005, there was 100 percent observer coverage in EXP. [3]In 2008- 2011, 100 percent observer coverage was required in experimental fishing in the FEC, Charleston Bump, and GOM, but these sets are not included in extrapolated bycatch estimates because they are not representative of normal fishing.

During 2010, NMFS observers recorded 725 pelagic longline sets for overall non-experimental fishery coverage of 9.7 percent. Total reported fishing effort included 7,489 sets during 2010, 884 of which were observed by the POP program, for an overall percent coverage as a proportion of sets of 11 percent (Garrison and Stokes, 2010). In the Pelagic Longline Take Reduction Plan (PLTRP), it was recommended that NMFS increase observer coverage to 12 to 15 percent throughout all Atlantic pelagic longline fisheries that interact with pilot whales and Risso's dolphins to ensure representative sampling of fishing effort. If resources are not available to provide such observer coverage for all fisheries, regions, and seasons, the Pelagic Longline Take Reduction Team (PLTRT) recommended NMFS allocate observer coverage to fisheries, regions,

and seasons with the highest observed or reported bycatch rates of pilot whales. The Pelagic Longline Take Reduction Team recommended that additional coverage be achieved either by increasing the number of NMFS observers who have been specially trained to collect additional information supporting marine mammal research, or by designating and training special "marine mammal observers'' to supplement traditional observer coverage. Table 3.37 below contains information on the observer coverage of the pelagic longline Fishery.

The distribution of observed bluefin interactions between 2006 and 2011 is shown in Figure 3.28. The greatest numbers of interactions were observed off Cape Hatteras, within the Gulf of Mexico, and off Georges Banks. Higher resolution (10' latitude x 10' longitude) distribution data showing observed bluefin interactions are shown in Figure 3.29 (focusing on the Gear Restricted Area alternatives off Cape Hatteras and in the western Gulf of Mexico). Observer data was mapped based on the set location, and therefore the grid cells are an approximation of where the interactions actually occurred. In both Gear Management Areas, boxes were drawn to encompass the approximate locations of a majority of HMS logbook reported fishery interactions. The observer data corroborate these general locations of interest. The total number of observed hooks is shown in Figure 3.30.

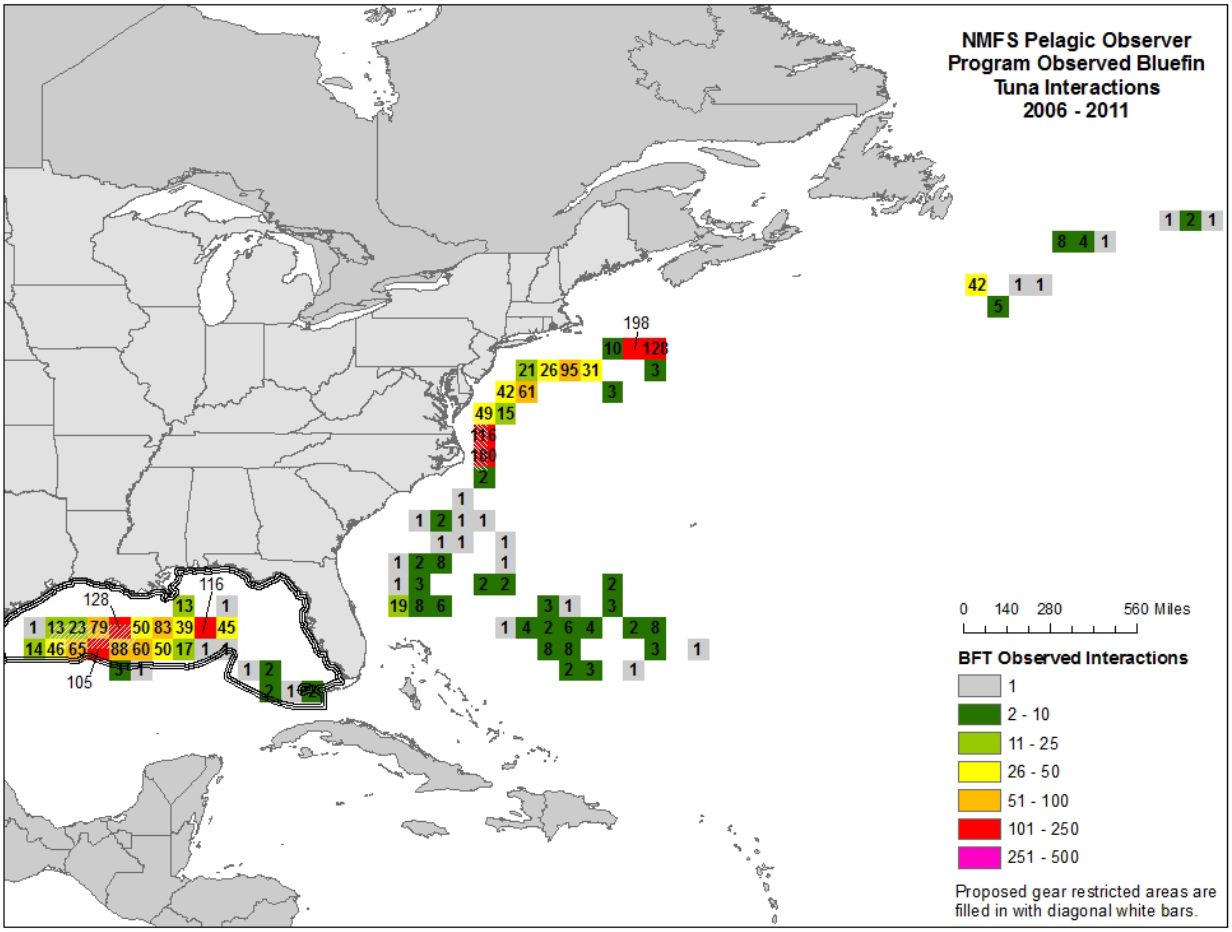

Figure 3.28 Total pelagic longline observed Bluefin tuna interactions between 2006 – 2011. Grid cell values are the sum of all interactions that fall within a 1º latitude x 1º longitude cell. Source: Pelagic Longline Observer data.

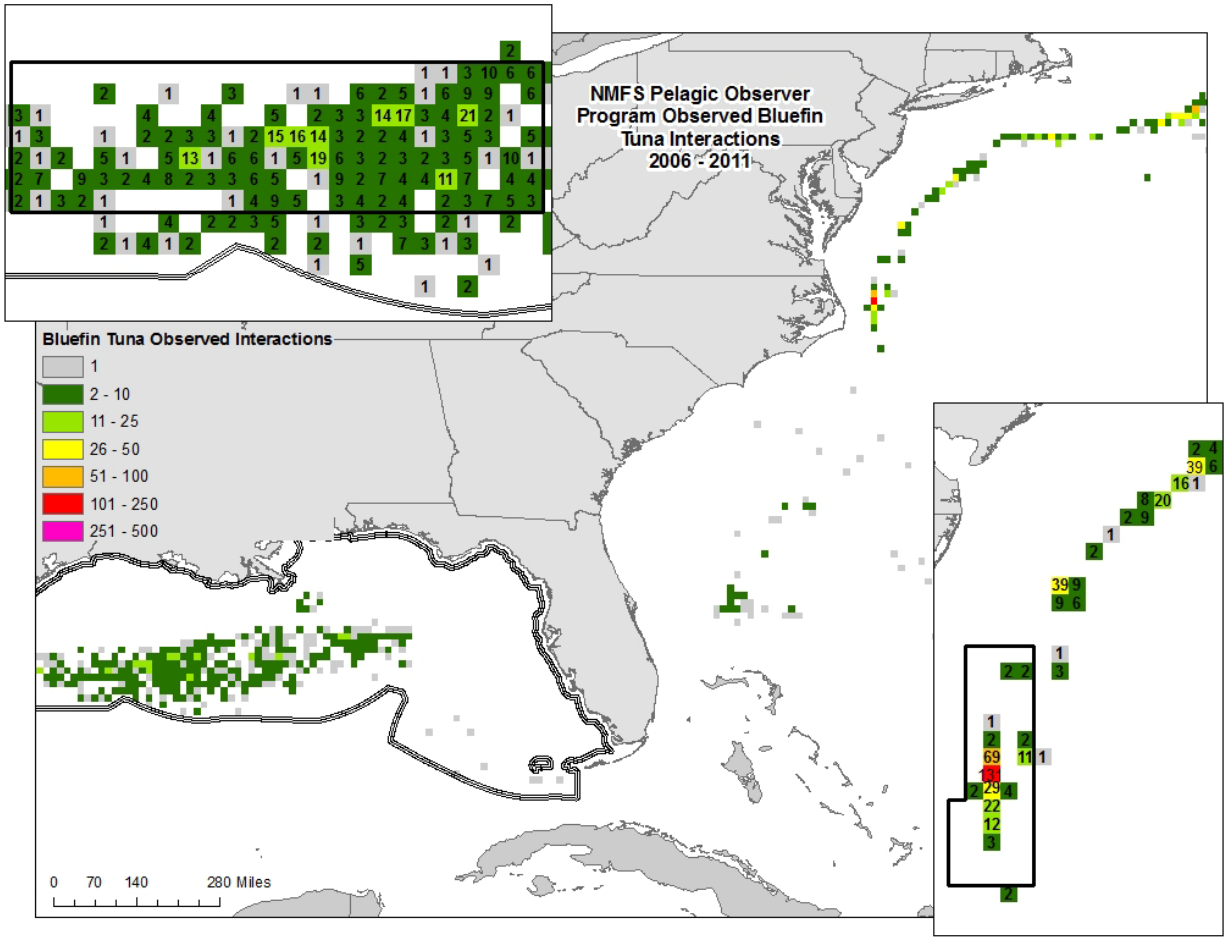

Figure 3.29 Pelagic longline observed Bluefin tuna interactions between 2006 – 2011. Grid cell values are the sum of all interactions that fall within a 10' latitude x 10' longitude cell. Source: Pelagic Longline Observer data.

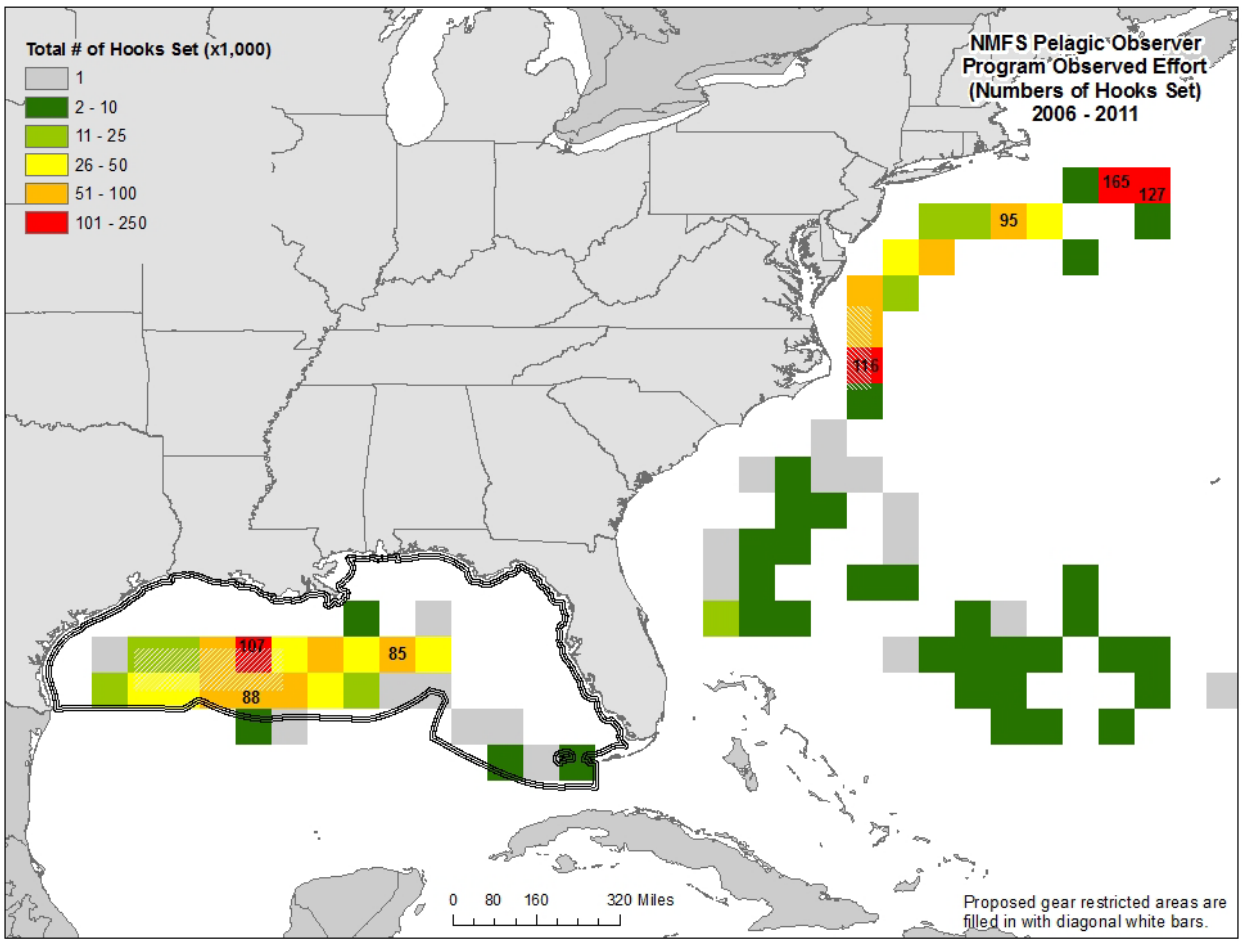

Figure 3.30 Total number of hooks deployed on observed pelagic longline sets between 2006 and 2011. Grid cell values are the sum of all hooks that are deployed on sets that fall within 1º latitude x 1º longitude grid cells. Areas with the greatest number of hooks are labeled. Source: Pelagic Longline Observer data.

3.4.3 Angling and Charter/Headboat Categories

Data used to monitor and manage the recreational bluefin fishery are collected through several programs, including programs in which vessels self-report, surveys administered by NMFS, and state administered programs. The owner of a vessel with an HMS Angling or HMS Charter/Headboat category permit must report all bluefin landings under the Angling category quota through an Automated Landings Reporting System (ALRS)with the exception of tuna landings in North Carolina or Maryland. Individuals may report online (http:///www.hmspermits.noaa.gov/) or through an interactive voice response telephone system (888- USA-TUNA). Reports must be made within 24 hours of the landing. If reporting by phone, the vessel owner must provide their name, phone number, HMS permit number, species caught, size of fish, fish released (both alive and dead), as well as some other data elements. The online program includes these same fields for providing this information. NMFS provides a confirmation number for the reported landing. Vessels landing in the states of North Carolina or

Maryland must instead report bluefin, and some other HMS, landed at state-operated reporting stations (catch-card programs).

Large Pelagic Survey

NMFS administers a recreational survey called the Large Pelagics Survey, LPS, which collects information during the period from June through October, covering the geographic area from Maine south to Virginia. If contacted on the dock or by phone, recreational anglers must participate in the survey as a condition of their permit. The LPS is specifically designed to collect information on recreational fishing directed at bluefin and large pelagic species (e.g., tunas, billfishes, swordfish, sharks, wahoo, dolphin, and amberjack). Offshore trips targeting large pelagics typically make up a relatively small proportion of all recreational fishing trips. Using this specialized survey design allows for higher levels of sampling large pelagic trips, which ultimately improves estimates of catch and effort for large pelagics. The LPS has been conducted since 1992.

The LPS includes two independent, complementary surveys which provide the effort and average catch per trip estimates needed to estimate total catch by species. The Large Pelagics Intercept Survey (LPIS) is a dockside survey of captains who have just completed fishing trips directed at large pelagic species. This survey is conducted at fishing access sites that are likely to be used by offshore anglers, and is primarily designed to collect detailed catch data. The Large Pelagics Telephone Survey (LPTS) collects fishing effort information directly from captains holding HMS permits. The LPTS is stratified by permit category: HMS Angling and Atlantic tunas General permits and HMS Charter/Headboat permits. If NMFS selects an Angling category vessel for observer coverage, the participation of the vessel is voluntary. Data from the phone survey are used to estimate the total number of boat trips on which anglers fished with rod and reel or handline for large pelagic species. The LPS differs from the standard marine recreational fishing surveys mainly in estimating effort and catch by boat, rather than by angler. Information on the number of anglers per boat-trip is collected by the LPIS, but the primary unit for all estimates is the boat-trip, or boat-day of fishing. Additional information collected during LPIS and LPTS interviews include target species, tournament participation, fishing method used, fishing location, water depth, and water temperature.

State of Maryland

In Maryland, NMFS worked with the Maryland Department of Natural Resources (MDNR) to implement an Atlantic Bluefin Tuna Catch Card and Tagging Program as an alternative method to the ALRS system, in 1999. In 2002, billfishes were added to the list of species required to be reported through MDNRs Catch Card and Tagging Program. Since 2002, the Bluefin/Billfish Catch Card and Tagging Program has supplied NMFS with bluefin and billfish landings in the State of Maryland. The objectives of the MDNR catch card program are: 1) continue a long-term monitoring study of all recreationally landed Atlantic bluefin tuna and billfishes (white marlin, blue marlin, swordfish, and sailfish) in Maryland and supply those data to NMFS for use in their coastwide assessment; and 2) continue development of program awareness among recreational anglers in order to increase compliance rates.

Anglers are responsible for completing a catch card when they return to port for each bluefin or billfish on board their vessel. A tag is provided for each completed catch card and the angler is required to place this tag around the tail of the fish before removing it from the vessel. Trailered boats cannot be removed from the water until the tag is in place. Nine marinas qualify as a Recreational BFT/Billfish Reporting Station. Marinas distribute and collect catch cards, issue tags, and return leftover supplies to MDNR at the conclusion of the fishing season. In addition to the marinas, an after-hours kiosk is available at the MDNR field office. Anglers that use the kiosk must complete the catch card and the attached receipt, which replaces the tag. The catch card is deposited into the locked box at the kiosk.

State of North Carolina

As part of a program launched in 1998, more than 25 reporting stations have been established in North Carolina. Angling category vessels landing bluefin in North Carolina are required to comply with the program requirements instead of the NMFS call-in or website reporting process. Vessel operators must report at one of the reporting stations, and are required to fill out a catch reporting card for each bluefin tuna, and must have a landing tag affixed to the tail before removing the fish from the vessel. Information on these angler catch cards is entered into a NMFS database.

3.4.4 Purse Seine Category

Owners or operators of purse seine vessels directing on Atlantic tunas must have their fishing gear inspected for mesh size by a NMFS enforcement agent prior to commencing fishing for the season in any fishery that may result in the harvest of Atlantic tunas. The owner/operator must request such inspection at least 24 hours before commencement of the first fishing trip of the season. If NMFS does not inspect the vessel within 24 hours of such notification, the inspection requirement is waived. In addition, at least 24 hours before commencement of offloading any bluefin after a fishing trip, the owner/operator must request an inspection of the vessel and catch by notifying NMFS. If, after notification by the vessel, NMFS does not arrange to inspect the vessel and catch at offloading, the inspection requirement is waived. As indicated above, NMFS currently has the authority to select Purse Seine category vessels for at-sea observer coverage (50 CFR § 635.7).

3.4.5 Dealer Permits

Dealer permits are required for commercial receipt of Atlantic tuna, swordfish, and sharks, and are described in further detail in the 2006 Consolidated HMS FMP (NMFS 2006). Dealer permits are open access. Anyone who receives Atlantic tunas (bluefin, bigeye, albacore, yellowfin, or skipjack tunas) from U.S. vessels must have a Federal Atlantic tunas dealer permit. Prior to January 1, 2013, bi-weekly reports were required to be completed by all dealers that receive Atlantic bluefin and/or BAYS tunas. Bi-weekly report forms were distributed to dealers along with, or shortly after, their permits. Bi-weekly reports for any Atlantic tunas that were received by a permitted Atlantic tunas dealer between the 1st and 15th of each month were required to be completed and received by the appropriate NMFS office by the 25th of that month. Bi-weekly reports for tunas received between the 16th and the last day of each month were

required to be completed and received by the appropriate NMFS office by the 10th day of the following month. As of January 1, 2013, all Federal Atlantic tunas dealers that receive BAYS tunas must report on a weekly basis through an approved electronic system (FR cite). Dealers must keep copies of all reports for a period of two years from the date that the report was required to be received by NMFS. There were 681 Atlantic HMS dealer permits distributed in 2012, as of October 2012. Three hundred and thirteen of those permits were for bluefin and BAYS tunas, 179 were for swordfish and 92 were for sharks. Please see the 2011 SAFE Report for additional information (NMFS 2012).

3.5 Northern Albacore Tuna Management

Since 1998, ICCAT has made recommendations regarding the North Atlantic albacore fishery.

In 1998, ICCAT recognized that the SCRS' advice to not increase mortality on the northern albacore stock as it was close to full exploitation, and recommended that Contracting Parties limit commercial to the average of the 1993-1995 levels. The United States has complied with submission of lists of commercial vessels that may fish for albacore since that time. A multi-year management measure for northern albacore was first adopted in 2003, setting the TAC at 34,500 mt for 2004 through 2006, with a U.S. annual quota of 607 mt. At the latest northern albacore stock assessment (SCRS 2009), ICCAT's SCRS concluded that the northern albacore stock continues to be overfished with overfishing occurring, and recommended a level of catch no more than 28,000 mt to meet ICCAT management objectives by 2020. In 2009, ICCAT established a North Atlantic albacore rebuilding program via Recommendation 09-05, setting a 28,000-mt TAC and including several provisions to limit catches by individual ICCAT parties (for major and minor harvesters) and reduce the amount of unharvested quota that could be carried forward from 50% to 25% of a party's initial catch quota. The 2009 recommendation expired in 2011.

In 2011, ICCAT Recommendation 11-04 set a TAC of 28,000 mt for 2012 and for 2013 and contained specific recommendations regarding the North Atlantic albacore rebuilding program, including an annual TAC for 2012 and 2013 allocated among the European Union, Chinese Taipei, the United States, and Venezuela. The U.S. quota for 2012 and 2013 is 527 mt. The recommendation limits Japanese North Atlantic albacore catches to 4 percent in weight of its total Atlantic bigeye tuna longline catch, and limits the catches of other ICCAT parties to 200 mt, The recommendation specifies that quota adjustments for underharvest or overharvest during a given year be made for either two or three years from the subject year (e.g., adjustments based on 2013 catches would be made for either 2015 or 2016). Pursuant to this recommendation, it is appropriate for the United States to implement the U.S. quota and establish provisions to adjust the base quota via annual quota specifications.

In the United States, northern Atlantic albacore tuna are caught and landed primarily in rod and reel and pelagic longline fisheries. Catch in the pelagic longline fishery is typically opportunistic as vessels interact with schools of albacore tuna while targeting swordfish or other pelagic tunas in the northwest Atlantic Ocean. Rod and reel fisheries target albacore tuna in the northwest Atlantic and Caribbean Sea. 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 albacore, but have since remained below 4% of the total. Total catches have been variable since 2000, ranging from 189 mt/year to 646 mt/year. Estimated total catches of albacore were 449 mt in 2011, an increase of 134 mt from 2010 (Table 3.39). (NMFS2012b).

Table 3.38 Annual Landings (mt) of North Atlantic Albacore Tuna from 2007 to 2011

Area	Gear	2007	2008	2009	2010	2011
Northwest and North Central Atlantic	Longline	110.2	115.9	141.3	87.8	147.8
	Gillnet	1.0	2.1	5.6	0.5	0.2
	Handline	5.4	0.2	0.5	1.9	0.7
	Trawl	0.3	0.01	0.08	0.2	2.0
	Trap	0.4	0.005	0.01	0.01	0.0
	Troll	0.2	0.2	0.07	0.04	0.0
	Rod and Reel*	393.6	125.2	22.8	46.2	170.6
	Unclassified	4.2	1.9	1.3	2.2	7.8
Gulf of Mexico and Caribbean	Longline	16.6	10.6	17.0	72.1	119.8
	Rod and Reel*	0.0	0.0	0.0	103.4	0.0
	Handline	0.2	0.64	0.01	0.05	0.1
	Total	532.1	256.7	188.8	314.5	449.0

*Rod and Reel estimates based on statistical surveys of the U.S. recreational harvesting sector

Table 3.39 U.S. Northern Albacore Quota, Adjusted Quota, and Landings (mt). Source: Annual Report of the United States to ICCAT, 2012.

	Quota	Adjusted Quota	Landings
2007	607	910.5	532
2008	538	672.5	248
2009	538	672.5	188
2010	527	658.75	315
2011	527	658.75	449

Scientific studies on albacore in the North Atlantic have shown trends in environmental variability having a serious potential impact on albacore stocks, affecting fisheries by changing the fishing grounds (as well as recruitment levels and potential MSY of the stocks which may be a factor in availability to U.S. vessels. U.S. quota and annual landings for the last 5 years are presented in Table 3.39.

Under the current recommendation (Rec. 11-04), any unused portion or excess of a Contracting Party's annual quota may be added or shall be deducted from , according to the case, the respective quota during or before the adjustment year (which is 2 and/or 3 years from the year of catch). For example, if the year of the catch is 2012, the adjustment year would be 2014 or 2015.

Thus far, in submitting information to ICCAT regarding compliance with the recommendation, the United States has reflected adjustments for quota underharvest in the *following* year, e.g., under-harvest of 2011 quota added to 2012 initial quota, within the current limit on carryforward of 25% of the initial U.S. quota. For instance, in the Annual Report to ICCAT, the 2012 initial quota of 527 mt was adjusted to 658.8 mt, the maximum possible under the current annual quota. Although the 2011 adjusted quota was underharvested by over 200 mt, the most the United States can carry forward is 25% of the initial quota, or 131.75 mt.

3.6 Gulf of Mexico Oil Spill

On April 20, 2010, an explosion on the BP/Deepwater Horizon MC252 drilling platform in the Gulf of Mexico caused the rig to sink and oil began leaking into the Gulf. Before it was finally capped in mid-July, almost 5 million barrels of oil were released into the Gulf. The spill caused significant impacts to wildlife, fisheries, habitat, and the fishing community along the large coastal areas of Louisiana, Mississippi, Texas, Alabama, and Florida. The Federal response to the oil spill is a major multi-agency effort. NOAA is a lead federal trustee for coastal and marine natural resources, including marine and migratory fish, endangered species, marine mammals, and their habitats. NOAA acted quickly to begin preliminary assessments and plan for restoration along the coast. To help determine the type and amount of restoration needed to compensate the public for harm to natural resources as a result of the spill, NOAA is conducting a Natural Resource Damage Assessment.

NOAA Fisheries scientists continue to study the possible effects the 2010 Deepwater Horizon/BP oil spill on Atlantic bluefin tuna. Since the April 2010 disaster, NOAA has been monitoring bluefin tuna in the Gulf of Mexico by collecting larval samples during spring spawning seasons, analyzing reports from scientific observers aboard fishing vessels, and tracking the movement of satellite-tagged bluefin tuna. Southeast Area Monitoring and Assessment Program (SEAMAP) surveys have been conducted since 1982, providing a long time-series of information on bluefin tuna larvae that helps scientists analyze trends in the data. April and May are the peak spawning months for the tuna, and scientists have been concerned about possible impacts of oil and dispersants used to clean up spilled oil on this important fish species.

In May 2010, NOAA scientists deployed satellite tags on four bluefin tuna caught in the vicinity of the oil spill. All fish completed their migration up to the Grand Banks and Gulf of St. Lawrence, where the tags separated from the fish on schedule after 90 days, floated to the surface, and reported data on the bluefin's movements via satellites passing overhead. In 2011 and following years researchers deployed additional tags as part of an expanded study to assess the range of depths inhabited by bluefin tuna and the length of time they spend in the Gulf of Mexico each year. The bluefin tagging studies will contribute to the understanding of their potential exposure to hazardous chemical compounds following the BP/Deepwater Horizon spill.

Available information indicates that Deepwater Horizon oil and/or dispersants has had the potential to impact bluefin tuna. Muhling, B.A., et al. (2012), studied the overlap between Atlantic Bluefin tuna spawning grounds and observed Deepwater Horizon surface oil in the northern Gulf of Mexico, and their preliminary estimate of the effects of the spill on larval

bluefin mortality concluded that less than 12% of larval bluefin were predicted to have been located within contaminated waters in the northern Gulf of Mexico, on a weekly basis.

In 2010, in response to a petition to list bluefin under the Endangered Species Act submitted by the Center for Biological Diversity, NMFS convened a status review team (Team) to review the status of western Atlantic bluefin. As described on pages 48 through 50 of the Bluefin Status Review Report (published in May 2011 and available at: www.nmfs.noaa.gov/stories/2011/05/docs/bluefin_srr_final.pdf), the Team evaluated the potential effect of the Deepwater Horizon/BP oil spill on the future abundance of bluefin under various scenarios for oil spill impacts, ranging from lower to greater, at different life stages of bluefin tuna. Details of the evaluation may be found at the reference above and are not repeated here.

NOAA continues to study and assess the impacts of the oil and is expected to release a report in the future that includes more definitive information about impacts of the oil spill on bluefin tuna. NOAA and NMFS maintain publicly -accessible websites regarding the oil spill and its impacts at: http://www.noaa.gov/deepwaterhorizon/index.html and http://sero.nmfs.noaa.gov/deepwater_horizon/index.html.

3.7 Economic Status of Highly Migratory Species Fisheries

Consumers spent an estimated $85.9 billion for fishery products in 2011, including $57.7 billion at food service establishments, $27.6 billion in retail sales for home consumption, and $625 million for industrial fish products. The commercial marine fishing industry contributed $43.9 billion (in value added) to the U.S. Gross National Product in 2011 (NMFS 2012b).

3.7.1 Commercial HMS Fisheries

Economic information presented in this section is reviewed in greater detail in Chapter 5 of this document and in the 2012 HMS SAFE Report (NMFS 2012). The average ex-vessel prices per pound dressed weight (dw) for 2004 to 2011 by HMS species and area are summarized in Table 3.40. Prices are reported in nominal dollars. The ex-vessel price depends on a number of factors including the quality of the fish (e.g., freshness, fat content, method of storage), the weight of the fish, the supply of fish, and consumer demand. Table 3.40 summarizes the average annual revenues of the Atlantic HMS fisheries based on average ex-vessel prices. Data for Atlantic HMS landings weight is as reported per the U.S. National Report (NMFS 2012b), the information used in the shark stock assessments, information given to ICCAT (Cortés pers. comm., 2011), as well as price and weight reported to the NMFS Northeast Regional Office by Atlantic bluefin tuna dealers. These values indicate that the estimated total annual revenue of Atlantic HMS fisheries has increased in 2011 to $52.4 million from $42.4 million in 2010. From 2010 to 2011, the Atlantic tuna fishery's total revenue increased by $6.0 million. A majority of that increase can be attributed to the increased commercial landings of bigeye and yellowfin tuna and an increase in price for bluefin tuna. From 2010 to 2011, the annual revenues for the shark fisheries remained virtually unchanged. Finally, the annual revenues for swordfish increased by $4 million from 2010 to 2011 due to an increase in landings.

Table 3.40 Average ex-vessel price per pound, total weigh (lb dw) and total fishery revenue for various HMS species. Source: 2012 HMS SAFE Report; HMS Logbook Data.

Species		2004	2005	2006	2007	2008	2009	2010	2011
Bigeye tuna	Ex-vessel $/lb dw	$5.73	$5.24	$5.47	$6.04	$6.35	$6.23	$7.40	$7.85
	Weight lb dw	556,270	563,325	960,863	706,361	736,520	774,087	799,934	1,122,619
	Fishery revenue	$3,187,427	$2,951,823	$5,255,921	$4,266,420	$4,676,902	$4,822,562	$5,919,512	$8,812,559
Bluefin tuna	Ex-vessel $/lb dw	$7.68	$6.43	$8.51	$8.63	$9.35	$8.18	$8.35	$10.08
	Weight lb dw	1,010,599	772,500	528,404	515,176	720,823	899,477	1,119,937	996,661
	Fishery revenue	$7,761,400	$4,967,175	$4,496,718	$4,445,969	$6,739,695	$7,357,722	$9,351,474	$10,046,343
Yellowfin tuna	Ex-vessel $/lb dw	$2.31	$2.66	$2.50	$2.90	$3.22	$2.87	$3.46	$3.59
	Weight lb dw	4,999,908	3,379,951	3,849,095	4,521,240	2,423,498	3,159,665	2,154,728	2,676,682
	Fishery revenue	$11,549,787	$8,990,670	$9,622,738	$13,111,596	$7,803,664	$9,068,239	$7,455,359	$9,609,288
Skipjack tuna	Ex-vessel $/lb dw	$0.95	$1.16	$0.75	$0.75	$1.01	$0.91	$1.15	$1.17
	Weight lb dw	307,942	26,103	21,693	26,455	32,628	30,688	16,269	12,931
	Fishery revenue	$292,545	$30,279	$16,270	$19,841	$32,954	$27,926	$18,709	$15,129
Albacore tuna	Ex-vessel $/lb dw	$0.60	$0.82	$0.86	$0.97	$1.15	$1.11	$1.36	$1.29
	Weight lb dw	307,942	232,808	203,354	244,272	216,759	291,187	290,827	491,133
	Fishery revenue	$184,765	$190,903	$174,884	$236,944	$249,273	$323,218	$395,525	$633,562
Total tunas	Fishery revenue	$22,975,925	$17,130,850	$19,566,530	$22,080,770	$19,502,488	$21,599,666	$23,140,579	$29,116,881
Swordfish	Ex-vessel $/lb dw	$3.60	$3.66	$3.54	$3.99	$3.68	$3.46	$4.41	$4.51
	Weight lb dw	4,301,003	3,466,728	3,002,597	3,643,926	3,414,513	3,762,280	3,676,324	4,473,140
	Fishery revenue	$15,483,611	$12,688,224	$10,629,193	$14,539,265	$12,565,408	$13,017,489	$16,212,589	$20,173,861
Large coastal sharks	Ex-vessel $/lb dw	$0.57	$0.64	$0.62	$0.48	$0.70	$0.54	$0.60	$0.53
	Weight lb dw	3,213,896	3,147,196	3,808,662	2,329,272	1,363,021	1,513,201	1,519,603	1,485,467
	Fishery revenue	$1,831,921	$2,014,205	$2,361,370	$1,118,051	$954,115	$817,129	$911,762	$787,298
Pelagic sharks	Ex-vessel $/lb dw	$0.99	$1.19	$1.17	$1.12	$1.21	$1.18	$1.22	$1.35
	Weight lb dw	679,469	252,815	192,843	262,179	234,546	225,575	312,195	314,314
	Fishery revenue	$672,674	$300,850	$225,626	$293,640	$283,801	$266,179	$380,878	$424,324
Small coastal sharks	Ex-vessel $/lb dw	$0.62	$0.65	$0.61	$0.70	$0.69	$0.69	$0.69	$0.75
	Weight lb dw	451,651	634,885	763,327	618,191	623,848	667,815	357,855	583,364
	Fishery revenue	$280,024	$412,675	$465,629	$432,734	$430,455	$460,792	$246,920	$437,523
Shark fins (5% of all sharks landed)	Ex-vessel $/lb dw	$12.87	$14.22	$14.80	$11.63	$12.43	$12.45	$13.99	$11.90
	Weight lb dw	217,251	201,745	238,242	160,482	111,071	120,330	110,539	110,539
	Fishery revenue	$2,796,018	$2,868,811	$3,525,976	$1,866,407	$1,380,609	$1,498,103	$1,531,662	$1,417,971
Total sharks	Fishery revenue	$5,580,636	$5,596,542	$6,578,602	$3,710,832	$3,048,980	$3,042,202	$3,071,222	$3,067,116
Total HMS	Fishery revenue	$44,040,172	$35,415,616	$36,774,326	$40,330,867	$35,116,875	$37,659,357	$42,424,389	$52,357,858

NMFS has collected operating cost information from commercial permit holders via logbook reporting. Each year, 20 percent of active Atlantic HMS commercial permit holders are selected to report economic information along with their Atlantic HMS logbook or Coast Fisheries logbook submissions. In addition, NMFS also receives voluntary submissions of the trip expense and payment section of the logbook form from non-selected vessels.

The primary expenses associated with operating an Atlantic HMS permitted pelagic longline commercial vessel include labor, fuel, bait, ice, groceries, other gear, and light sticks on swordfish trips. Unit costs are collected on some of the primary variable inputs associated with trips. The unit costs for fuel, bait, and light sticks from vessels selected for reporting are shown in Table 3.41. Fuel costs increased over 170 percent from 2004 to 2011 while the cost per pound for bait remained fairly constant from 2004 to 2010 but nearly doubled between 2010 and 2011. The unit cost per light sticks has actually declined from 2004 to 2011.

Table 3.42 provides the median total cost per trip of vessels selected for reporting for the major variable inputs associated with Atlantic HMS trips taken by pelagic longline vessel. Fuel costs are one of the largest variable expenses and the total costs of fuel increased substantially per trip in 2011 in line with the increase in the unit cost of fuel.

Labor costs are also an important component of operating costs for HMS pelagic longline vessels. Table 3.43 lists the number of crew on a typical pelagic longline trip of vessels selected for reporting. The median number of crew members has been consistently three from 2004 to 2011. Most crew and captains are paid based on a lay system. According to Atlantic HMS logbook reports, owners are typically paid 50 percent of revenues. Captains receive a 20 percent share and crew in 2011 received 29 percent on average. These shares are typically paid out after costs are netted from gross revenues. Median total shared costs per trip on pelagic longline vessels have ranged from $4,903 to $11,306 from 2004 to 2011.

Table 3.41 Pelagic longline vessel median unit costs for fuel, bait, and light sticks (2004 – 2011). Source: 2012 HMS SAFE Report; HMS Logbook Data.

Input Unit Costs ($)	2004	2005	2006	2007	2008	2009	2010	2011
Fuel (per gallon)	1.25	1.85	2.15	2.25	3.55	1.73	2.50	3.38
Bait (per lb)	0.80	0.84	0.85	0.85	0.81	0.81	0.85	1.53
Light sticks (per stick)	0.50	0.50	0.46	0.36	0.37	0.37	0.28	0.25

Table 3.42 Median input costs for pelagic longline vessel trips (2004 – 2011). Source: 2012 HMS SAFE Report; HMS Logbook Data.

Input Costs ($)	2004	2005	2006	2007	2008	2009	2010	2011
Fuel	2,029	2,786	1,728	3,012	3,600	3,000	2,480	3,445
Bait	1,110	1,200	1,115	1,200	1,500	1,875	1,731	3,671
Light sticks	715	700	728	648	600	600	493	663
Ice costs	480	495	498	540	540	625	225	726
Grocery expenses	790	793	696	786	800	1,000	752	900
Other trip costs	1,000	1,500	1,200	1,500	1,651	1,670	1,500	2,000

Table 3.43 Median labor inputs for pelagic longline vessels (2004 – 2011). Source: 2012 HMS SAFE Report; HMS Logbook Data.

Labor	2004	2005	2006	2007	2008	2009	2010	2011
Number of crew	3	3	3	3	3	4	3	3
Owner share (%)	50	50	50	47	45	45	50	50
Captain share (%)	20	20	20	20	20	20	23	20
Crew share (%)	13	12	13	15	15	30	29	29
Total shared costs ($)	4,903	5,000	5,657	5,566	6,037	7,000	6,500	11,306

NMFS created a cost model (see Appendices) to estimate trip expenses (Table 3.44) across the entire fishery. Trip expenses included fuel, bait, light sticks, grocery expenses, and other trip costs. Average trip expenses, trip revenue, and trip net-income are presented by region and year in Table 3.45, and Table 3.46 , respectively. Revenue equals total ex-vessel sale of all species landed on a particular trip. Net revenue per trip is trip revenue minus trip expenses. Average profit margin by trip is shown in Table 3.47.

Table 3.44 Average trip expenses by region and year for Atlantic HMS fisheries between 2006 and 2011. Source: HMS Cost Earnings Database; HMS Logbook Data

Region	2006	2007	2008	2009	2010	2011	Average
Gulf	$10,643	$10,025	$13,207	$10,537	$11,533	$12,918	$11,233
MidAtl	$7,428	$6,344	$8,414	$7,585	$8,060	$11,019	$8,088
NorthEast	$17,127	$18,171	$18,577	$16,522	$15,933	$21,925	$18,156
SouthAtl	$4,694	$5,115	$6,945	$6,396	$7,245	$8,737	$6,622
Caribbean	$42,731	$17,788	$25,592	$17,655	$20,195	$19,055	$26,014
Average*	$9,603	$8,239	$10,665	$8,971	$9,538	$11,544	$9,714

Table 3.45 Average trip revenue by region and year for Atlantic HMS fisheries between 2006 and 2011. Source: HMS Cost Earnings Database; HMS Logbook Data

Region	2006	2007	2008	2009	2010	2011	Average
Gulf	$14,205	$16,281	$17,086	$17,781	$16,675	$29,003	$17,692
MidAtl	$19,402	$20,079	$16,771	$17,856	$22,881	$33,449	$21,486
NorthEast	$38,776	$42,631	$34,749	$40,341	$36,580	$50,424	$40,726
SouthAtl	$14,364	$17,542	$15,917	$17,422	$17,913	$21,302	$17,575
Caribbean	$40,769	$47,897	$38,036	$37,411	$42,883	$38,036	$40,862
Average*	$18,256	$20,200	$19,049	$20,371	$21,992	$28,082	$21,233

Table 3.46 Average trip net-income by region and year for Atlantic HMS fisheries between 2006 and 2011. Source: HMS Cost Earnings Database; HMS Logbook Data

	2006	2007	2008	2009	2010	2011	Average
Gulf	$3,563	$6,256	$3,879	$7,244	$5,142	$16,086	$6,459
MidAtl	$11,974	$13,735	$8,266	$10,271	$14,820	$22,430	$13,376
NorthEast	$21,649	$24,460	$16,171	$23,818	$20,646	$28,498	$22,570
SouthAtl	$9,670	$12,426	$8,972	$11,026	$10,668	$12,566	$10,954
Caribbean	-$1,962	$30,109	$12,444	$19,756	$22,687	$18,981	$14,848
Average*	$8,653	$11,962	$8,371	$11,400	$12,454	$16,538	$11,516

Table 3.47 Average operating profit margin per trip by region and year for Atlantic HMS fisheries between 2006 and 2011. Source: HMS Cost Earnings Database; HMS Logbook Data

Region	2006	2007	2008	2009	2010	2011	Average
Gulf	25%	38%	23%	41%	31%	55%	37%
MidAtl	62%	68%	49%	58%	65%	67%	62%
NorthEast	56%	57%	47%	59%	56%	57%	55%
SouthAtl	67%	71%	56%	63%	60%	59%	62%
Caribbean	-5%	63%	33%	53%	53%	50%	36%
Average*	47%	59%	44%	56%	57%	59%	54%

It should be noted that operating costs for the Atlantic HMS commercial fleet vary considerably from vessel to vessel. The factors that impact operating costs include unit input costs, vessel size, target species, and geographic location among other things.

Average ex-vessel prices for bluefin tuna have risen 21 percent since 2010 (Table 3.48). The ex-vessel prices for bluefin tuna can be influenced by many factors, including market supply and the Japanese Yen/U.S. Dollar (¥/$) exchange rate. Figure 3.32 shows the average ¥/$ exchange rate, plotted with average ex-vessel bluefin tuna prices, from 1971 to 2011.

Table 3.48 Average ex-vessel prices for Bluefin tuna by region and year. Source: 2012 HMS SAFE Report.

Species	Area	2003	2004	2005	2006	2007	2008	2009	2010
Bluefin tuna	Gulf of Mexico	$6.32	$4.64	$4.67	$4.39	$5.87	$4.83	$4.65	$6.50
	S. Atlantic	$4.11	$4.91	$4.60	$6.36	$7.07	$6.00	$14.43	$7.03
	Mid-Atlantic	$7.38	$9.62	$10.30	$9.81	$10.05	$12.56	$9.40	$8.83
	N. Atlantic	$5.71	$7.42	$5.57	$7.92	$8.31	$8.33	$7.09	$9.29

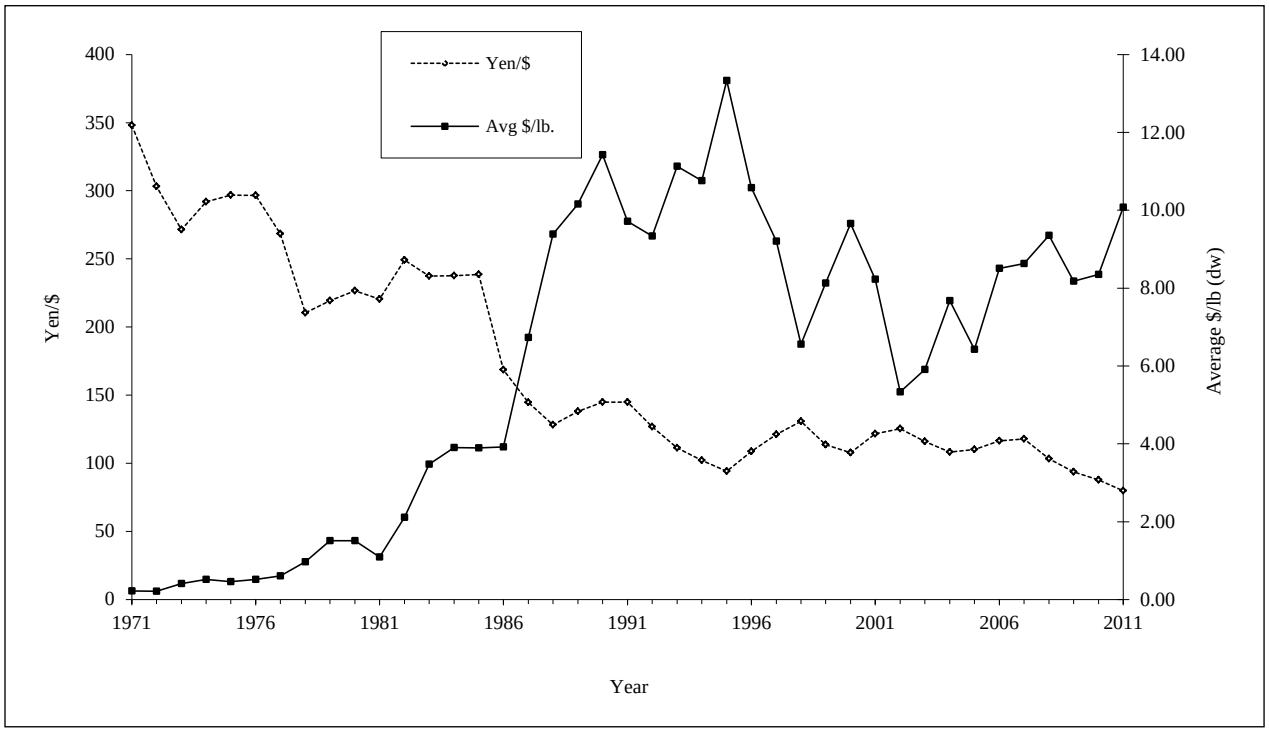

Figure 3.31 Average price per pound (dw) of Atlantic bluefin tuna landed in the U.S. (right-axis) compared to the exchange rate between the Japanese yen and the U.S. dollar (left-axis) by year for all gears. Source: 2012 HMS SAFE Report; Federal Reserve Bank (research.stlouisfed.org) and NMFS Northeast Regional Office.

Distribution of average set revenue is shown in Figure 3.31. Set revenue for all sets reported within 1º x 1º grid cells were averaged to protect confidential business information. Across the 2006 to 2011 time period of interest, the greatest average set revenue for HMS occurred in high seas regions of the Sargasso Sea and in the NED. The Appendices show the spatial distribution of mean set revenue by month. Coastal Atlantic regions had higher average set revenue between March – June and October – December.

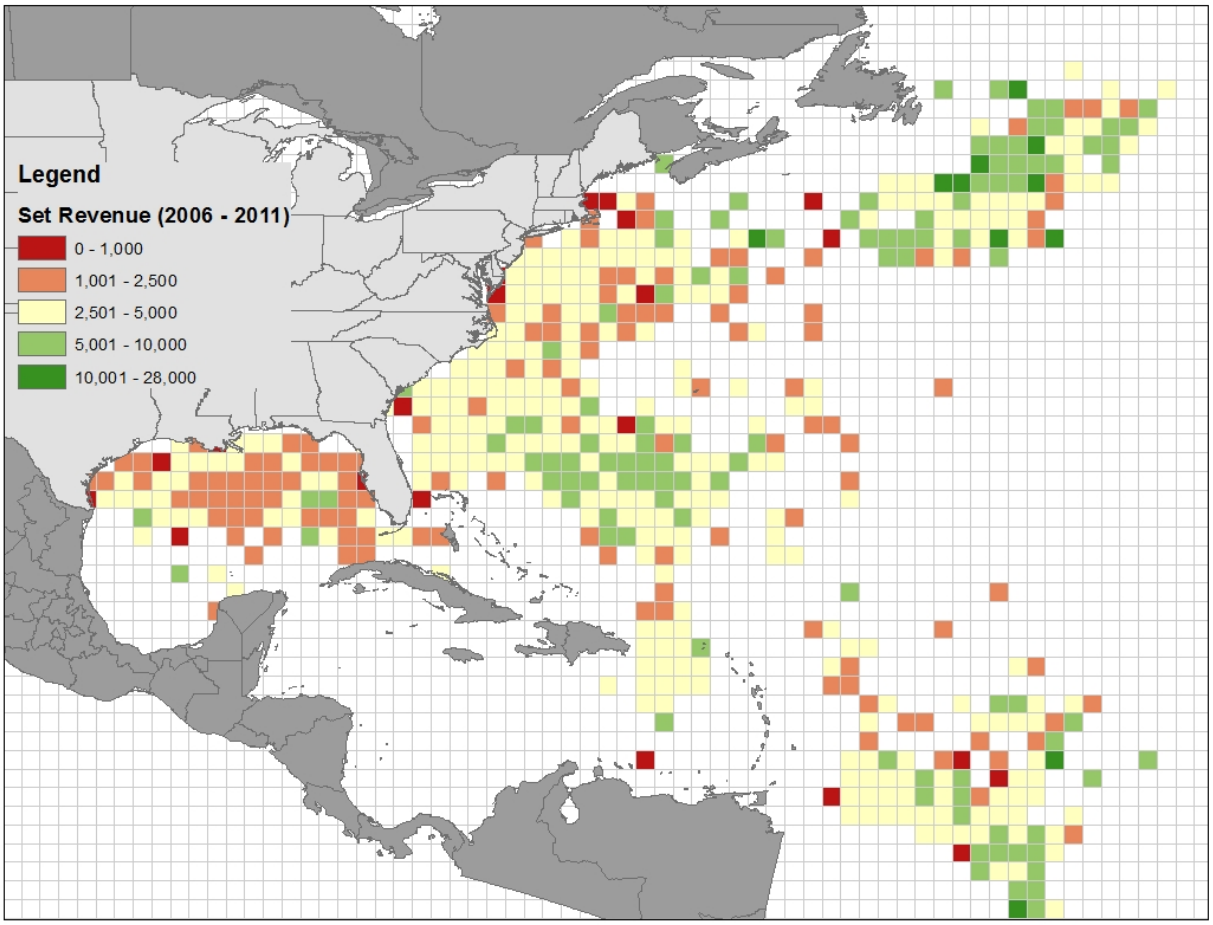

Figure 3.32 Average Pelagic Longline Set Revenue (2006 – 2011) by One Degree Grids. Source: HMS Logbook Data.

3.7.2 Recreational fisheries

The 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation was released in August 2012. The final national report and the data CD-ROM are available from the U.S. Fish and Wildlife Service (USFWS). The 2011 National Survey data show that hunters, anglers and wildlife watchers spent $145 billion last year on related gear, trips and other purchases such as licenses, tags and land leasing or ownership. More information on the 2011 national survey is available at http://www.fws.gov/pacific/news/news.cfm?id=2144375111.

The most recent complete survey by the USFWS was conducted in 2006. The economic survey found that for the entire United States, 7.7 million saltwater anglers (including anglers in state waters) went on approximately 67 million fishing trips and spent approximately $8.9 billion (USFWS and USCB 2006). These participation rates are down from the 2001 survey which found 9.1 million saltwater anglers (including anglers in state waters) went on approximately 72 million fishing trips and spent approximately $8.4 billion (USFWS, 2001). The 2006 survey found saltwater anglers spent $5.3 billion on trip-related costs and $3.6 billion on equipment

(USFWS, 2006). Expenditures on trip-related costs increased 17 percent from 2001, but equipment expenditures declined by seven percent. These expenditures included lodging, transportation to and from the coastal community, vessel fees, equipment rental, bait, auxiliary purchases (e.g., binoculars, cameras, film, foul weather clothing, etc.), and fishing licenses. Approximately 79 percent of the saltwater anglers surveyed fished in their home state in 2006, compared to 76 percent in 2001 (USFWS and USCB 2001).

The American Sportfishing Association (ASA) also has a report listing the 2006 economic impact of sportfishing on specific states. This report states that all sportfishing (in both federal and state waters) has an overall economic importance of $125 billion dollars. ASA estimates 8,528,000 anglers participate in saltwater fishing. These saltwater anglers spent $11 billion in retail sales, resulting in 263,000 jobs, and $9 billion in salaries, wages, and business earnings in 2006. Saltwater fishing contributed $30 billion of the overall economic impact estimated. Florida, Texas, South Carolina, and North Carolina are among the top ten states in terms of overall economic expenditures for both saltwater and freshwater fishing. Florida is also one of the top states in terms of economic impact of saltwater fishing with $3.0 billion in angler expenditures, $5.1 billion in overall economic impact, $1.6 billion in salaries and wages related to fishing, and 51,588 fishing related jobs (ASA 2008).

HMS recreational fishing provide significant positive economic impacts to coastal communities that are derived from individual angler expenditures, recreational charters, tournaments, and the shoreside businesses that support those activities.

Specific information regarding angler expenditures for trips targeting HMS species was extracted from the recreational fishing expenditure survey add-on (1998 in the Northeast, 1999 – 2000 in the Southeast) to the NMFS' MRFSS. These angler expenditure data were analyzed on a per-person per trip-day level and reported in 2003 dollars. The expenditure data includes the costs of tackle, food, lodging, bait, ice, boat fuel, processing, transportation, party/charter fees, access/boat launching, and equipment rental. The overall average expenditure on HMS related trips is estimated to be $122 per person per day. Specifically, expenditures are estimated to be $686 per person per day on billfish directed trips (based on a low sample size), $85 on pelagic shark directed trips, $95 on LCS directed trips, $81 on SCS directed trips, and $106 on tuna directed trips.

Fishing tournaments can sometimes generate a substantial amount of money for surrounding communities and local businesses (NMFS 2011). Generally, HMS tournaments last from three to seven days, but lengths can range from one day to an entire fishing season. Similarly, average entry fees can range from approximately $0 to $5,000 per boat (average approximately $500/boat – $1,000/boat), depending largely upon the magnitude of the prize money that is being awarded. The entry fee would pay for a maximum of two to six anglers per team during the course of the tournament. Additional anglers can, in some tournaments, join the team at a reduced rate of between $50 and $450. The team entry fee did not appear to be directly proportional to the number of anglers per team, but rather with the amount of money available for prizes and, possibly, the species being targeted.

Cash awards distributed in HMS tournaments can be quite substantial; see Chapter 5 of the 2011 HMS SAFE Report for a description of some of the high-dollar tournaments. Prizes may include citations, T-shirts, trophies, fishing tackle, automobiles, boats, or other similar items, but most often consists of cash awards. In general, it appears that billfish and tuna tournaments charge higher entry fees and award more prize money than shark and swordfish tournaments, although all species have a wide range. Prize money is often determined by the number of tournament participants. Compared to recent previous years, overall prize money and number of participants declined noticeably in 2011.

Ditton et al., (2000) estimated that the total expenditure (direct economic impact) associated with the 1999 Pirates Cove Billfish Tournament, not including registration fees, was approximately $2,072,518. The total expenditure (direct economic impact) associated with the 2000 Virginia Beach Red, White, and Blue Tournament was estimated at approximately $450,359 (Thailing et al., 2001). These estimated direct expenditures do not include economic effects that may ripple through the local economy leading to a total impact exceeding that of the original purchases by anglers (i.e., the multiplier effect). Less direct, but equally important, fishing tournaments may serve to generally promote the local tourist industry in coastal communities. In a survey of participants in the 1999 Pirates Cove Billfish Tournament, Ditton et al., (2000) found that almost 80 percent of tournament anglers were from outside of the tournament's county. For this reason, tourism bureaus, chambers of commerce, resorts, and state and local governments often sponsor fishing tournaments.

At the end of 2004, NMFS collected market information regarding advertised charterboat rates (NMFS 2011). The analysis of this data focused on observations of advertised rates on the internet for full day charters. Full day charters vary from 6 to 14 hours long with a typical trip being 10 hours. Most vessels can accommodate six passengers, but this also varies from two to 12 passengers. The average price for a full day boat charter was $1,053 in 2004. Sutton *et al.*, (1999) surveyed charterboats throughout Alabama, Mississippi, Louisiana, and Texas in 1998 and found the average charterboat base fee to be $762 for a full day trip. Holland *et al.* (1999) conducted a similar study on charterboats in Florida, Georgia, South Carolina, and North Carolina and found the average fee for full day trips to be $554, $562, $661, and $701, respectively. Comparing these two studies conducted in the late 1990s to the average advertised daily HMS charterboat rate in 2004, it is apparent that there has been a significant gain in charterboat rates.

3.8 Description of Fishing Communities

The Magnuson-Stevens Act requires, among other things, that all FMPs include a fishery impact statement intended to assess, specify, and describe the likely effects of the measures on fishermen and fishing communities (§303(a)(9)).

NEPA requires federal agencies to consider the interactions of natural and human environments by using a "systematic, interdisciplinary approach which will 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. The consequences of management actions need to be examined to better ascertain and, to the fullest extent possible, mitigate regulatory impacts on affected constituents.

Social impacts are generally the consequences to human populations resulting from some type of public or private action. Those consequences may include alterations to the ways in which 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 impact analyses help determine the consequences of policy action in advance by comparing the status quo with the projected impacts. Community profiles are an initial step in the social impact assessment process. Although public hearings and scoping meetings provide input from those concerned with a particular action, they do not constitute a full overview of the fishery.

The Magnuson-Stevens Act outlines a set of National Standards (NS) that apply to all fishery management plans and the implementation of regulations. Specifically, NS 8 notes that:

"Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to: (1) provide for the sustained participation of such communities; and (2) to the extent practicable, minimize adverse economic impacts on such communities" (§301(a)(8)). See also 50 CFR §600.345 for NS 8 Guidelines.

"Sustained participation" is defined to mean continued access to the fishery within the constraints of the condition of the resource (50 CFR §600.345(b)(4)). It should be clearly noted that NS 8 "does not constitute a basis for allocation of resources to a specific fishing community nor for providing preferential treatment based on residence in a fishing community" (50 CFR §600.345(b)(2). The Magnuson-Stevens Act further defines a "fishing community" as: "a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, crew, and fish processors that are based in such communities" (§301(16)).

Likewise, specific to development and amendment of HMS FMPs, the Magnuson-Stevens Act, paragraph 304(g)(1)(C), requires the Secretary to:

1. Evaluate the likely effects, if any, of conservation and management measures on participants in the affected fisheries; and
2. Minimize, to the extent practicable, any disadvantage to U.S. fishermen in relation to foreign competitors.

NMFS (2001) guidelines for social impact assessments specify that the following elements are utilized in the development of FMPs and FMP amendments:

The size and demographic characteristics of the fishery-related work force residing in the area; these determine demographic, income, and employment effects in relation to the work force as a whole, by community and region.

The cultural issues of attitudes, beliefs, and values of fishermen, fishery-related workers, other stakeholders, and their communities.

The effects of proposed actions on social structure and organization; that is, on the ability to provide necessary social support and services to families and communities.

The non-economic social aspects of the proposed action or policy; these include life-style issues, health and safety issues, and the non-consumptive and recreational use of living marine resources and their habitats.

The historical dependence on and participation in the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution and rights.

Methodology and Previous Community Profiles and Assessments

A complete description of the updated community profiles and assessments can be found in Chapter 6 of the 2012 SAFE Report (NMFS 2012). Chapter 6 of the 2012 SAFE Report is an update of the 2008 SAFE Report (NMFS 2008), and included available 2010 U.S. Census information. The 2008 SAFE Report consolidated all of the communities profiled in previous HMS FMPs or FMP amendments and updated the community information where possible. Of the communities profiled, ten (Gloucester and New Bedford, Massachusetts; Barnegat Light and

Brielle, New Jersey; Hatteras Village and Wanchese, North Carolina; Islamorada and Madeira

Beach, Florida; and Dulac and Venice, Louisiana) were originally selected due to the proportion of HMS landings in the town, the relationship between the geographic communities and the fishing fleets, the existence of other community studies, and input from the HMS and Billfish Advisory Panels. The remaining 14 communities (Wakefield, Rhode Island; Montauk, New York; Cape May, New Jersey; Ocean City, Maryland; Atlantic Beach, Beaufort, and Morehead City, North Carolina; Apalachicola, Destin, and Port Salerno, Florida; Orange Beach, Alabama; Grand Isle, Louisiana; and Freeport and Port Aransas, Texas), although not selected initially, have been identified as communities that could be impacted by changes to the current HMS regulations because of the number of HMS permits associated with these communities, and their community profile information has been incorporated into the document. The descriptive community profiles are organized by state and include information provided by Wilson, *et al.* (1998), Kirkley (2005), Impact Assessment, Inc. (2004), and recent information obtained from MRAG Americas, Inc. (2008).

Each of the management alternatives in Chapter 5 includes an assessment of the potential social and economic impacts associated with the alternatives. The preferred alternatives were selected to minimize economic impacts and provide for the sustained participation of fishing communities, while taking the necessary actions to end overfishing and/or rebuild overfished

fisheries as required by the Magnuson-Stevens Act. Please see Chapter 6 for additional information on how preferred alternatives were selected to minimize social and economic impacts.

3.9 International Trade and Fish Processing

Data and information regarding international trade and fish processing of HMS species is annually updated in the HMS SAFE Report. The most recent information may be found in the 2012 HMS SAFE Report (Chapter 5, Section 5.3). The following information is specific to international trade and processing of bluefin tuna.

Table 3.49 gives bluefin tuna export data for exports from the United States since 2001 and includes data from the NMFS BCD program and Census Bureau data. The Census Bureau usually reports a greater amount of bluefin tuna exported when compared to the amount reported by NMFS. Additional quality control measures are taken by NMFS to ensure data for other species (e.g., Southern bluefin tuna) or other transaction types (e.g., re-exports) are not erroneously included with bluefin tuna export data.

In the time series shown in Table 3.50 and depicted in Figure 3.32 through Figure 3.34, U.S. exports of Atlantic bluefin tuna generally increased when commercial landings increased, while domestic consumption of U.S. landings remained fairly constant from year to year. Most U.S. bluefin tuna exports are destined for the sushi markets in Japan. As shown in Figures Figure 3.32 and Figure 3.33, the percentage of the commercial U.S. bluefin tuna catch that was exported was lowest when landings declined to their lowest point, from 2006 to 2008.

Table 3.49 United States exports of Atlantic and Pacific Bluefin tuna (2001 – 2011). Source: [1] Northeast Regional Office, [2] NMFS Bluefin Catch Document Program, and [3] U.S. Census Bureau.

Year	Atlantic BFT Commercial Landings[1] (mt dw)	Atlantic BFT Exports[2] (mt dw)	Pacific BFT Exports[2] (mt dw)	Total U.S. Exports[2] (mt dw)	Total U.S. Exports[3] (mt)	Value of U.S. Exports[3] ($ million)
2001	987.0	812.3	67.0	879.0	1,020	10.70
2002	964.0	730.4	0.1	730.5	922	10.74
2003	756.9	578.7	2.1	580.8	998	11.36
2004	428.6	247.3	0.0	247.3	370	4.50
2005	419.4	245.7	125.1	370.8	454	5.30
2006	204.6	93.1	0.0	93.1	281	3.60
2007	196.4	85.4	8.2	93.6	238	2.90
2008	266.4	146.5	0.0	146.5	177	2.49
2009	408.5	236.2	0.0	236.2	300	4.05
2010	509.5	334.2	0.0	334.2	346	4.90
2011	566.7	329.5	0.8	330.5	293	4.03

Note: most exports of Pacific bluefin tuna (BFT) were in round (whole) form, although some exports were of dressed and gilled/gutted fish; Atlantic exports were almost entirely dressed, but also included whole and other product forms (dw); data are preliminary and subject to change.

Table 3.50 Atlantic Bluefin Imports and Re-exports and Value (2001 – 2011). Source: NMFS Bluefin Tuna Catch Document Program and U.S. Customs and Border Protection.

Year	NMFS BFT Catch Document Program		U.S. Customs and Border Protection Data	
	Imports (mt)	Re-exports (mt)	Imports (mt)	Value ($ million)
2001	512.9	7.0	532.3	8.21
2002	529.8	9.9	605.0	9.75
2003	649.9	38.4	780.3	11.67
2004	823.4	17.1	886.1	15.25
2005	966.1	10.4	1,064.0	19.96
2006	791.5	18.5	865.2	17.05
2007	584.6	17.7	697.1	13.97
2008	412.7	16.8	487.1	11.91
2009	407.7	33.6	476.8	10.29
2010	569.5	61.6	682.5	15.75
2011	442.5	35.1	555.4	14.01

Note: Most imports of bluefin tuna (BFT) were in dressed form, and some were round and gilled/gutted fish, fillets or belly meat (dw); data are preliminary and subject to change. Southern BFT trade was included in figures for Atlantic and Pacific BFT trade prior to 2002.

All import shipments must be reported to the CBP. “General” imports are reported when a commodity enters the country, and "consumption" imports consist of entries into the United States for immediate consumption combined with withdrawals from CBP bonded warehouses. “Consumption” import data reflect the actual entry of commodities originating outside the United States into U.S. channels of consumption. As discussed previously, CBP data for certain products are provided to NMFS for use in implementing consignment document programs. U.S. Census Bureau import data are used by NMFS as well. United States imports and re-exports of bluefin tuna for 2000 through 2011, as reported through both CBP and BCD program data, are shown in Table 3.49.

The rise in popularity of sashimi in the United States may have generated the increase in imports of bluefin tuna in the mid part of the decade, as seen in Table 3.49. Dealers have reported an expanded domestic market for both locally-caught and imported raw tuna. U.S. consumption of bluefin tuna (landings + imports – exports – re-exports) generally increased from 1996 through 2005, and has generally declined since then, with a slight uptick in 2011 (Figure 3.35). Consumption of domestic landings was fairly consistent and ranged between about 100 mt to 200 mt per year. Consumption of imported bluefin tuna is more variable and ranged from a low in 1997 of less than 50 mt to a high in 2006 of almost 700 mt. Figure 3.36 shows U.S. domestic landings of Atlantic bluefin tuna and trade of bluefin tuna since 1996. From 2004 through 2011, the United States imported more bluefin tuna than it exported (except for 2010). This trade gap was greatest between 2005 and 2007, but narrowed over the last several years and ended in 2010.

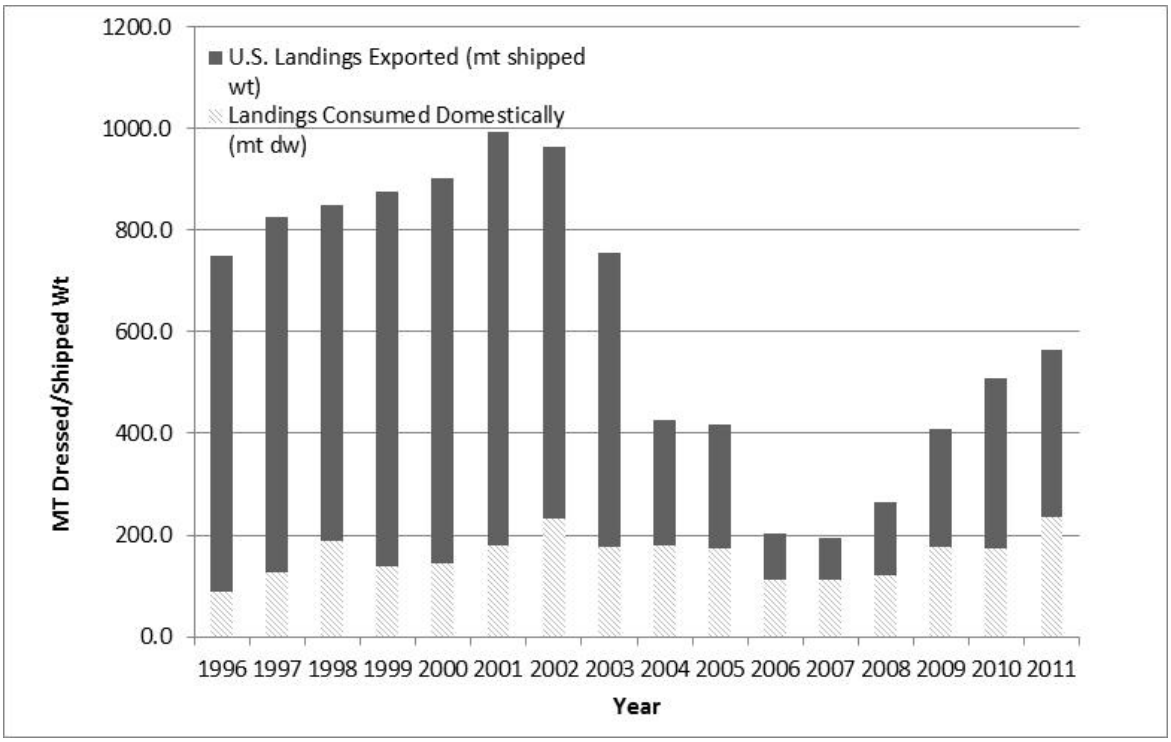

Figure 3.33 Annual U.S. domestic landings of Atlantic Bluefin tuna, divided into U.S. export (mt shipped weight) and U.S. domestic consumption (mt dw) (1996 – 2011). Source: 2012 HMS SAFE Report

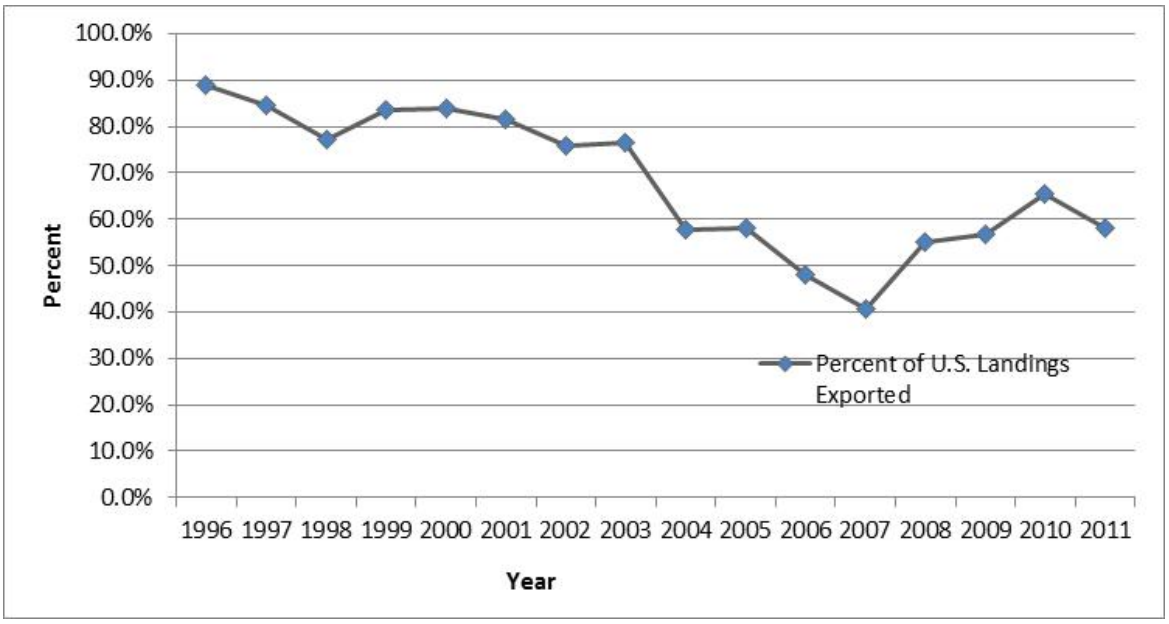

Figure 3.34 Annual percentage (by weight) of commercially-landed U.S. Atlantic Bluefin tuna that was exported (1996 – 2011). Source: 2012 HMS SAFE Report.

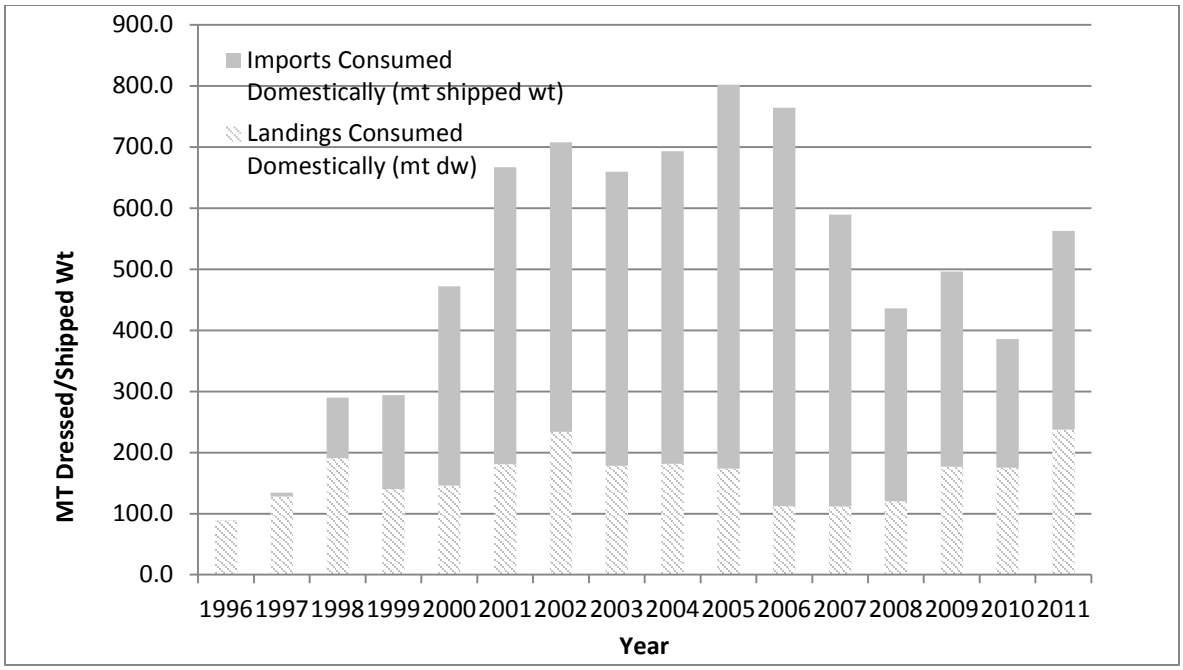

Figure 3.35 U.S. annual consumption of Bluefin tuna, by imports and U.S. Landings (1996 – 2011). Source: 2012 HMS SAFE Report.

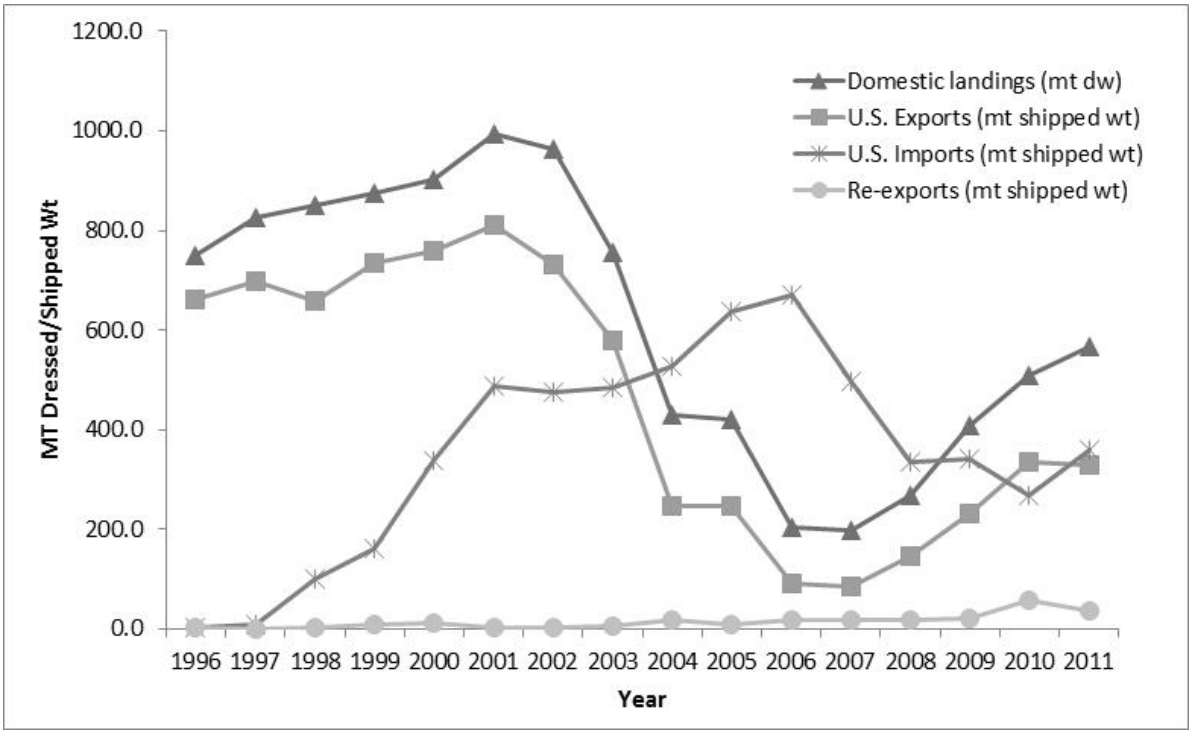

Figure 3.36 U.S. domestic landings (mt dw) and trade (mt shipped wt) of Bluefin tuna (1996 – 2011). Source: 2012 HMS SAFE Report.

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4.0 BIOLOGICAL AND ECOLOGICAL CONSEQUENCES

The purpose of this chapter is to analyze the biological and ecological effects of the alternatives described in Chapter 2. The impacts focus on the impacts of the alternatives on bluefin tuna, other HMS species, protected species, and essential fish habitat.

4.1 Impacts on Bluefin and Other HMS

Methods

Management measures have either quantitative or quantitative analyses associated with them (or both). The biological impacts of the measures are analyzed individually and/or combined into groups of measures. Individual alternatives are analyzed as a group if the biological impacts of the individual alternatives are very similar (i.e., reporting requirements). The organizational structure of the analysis mirrors the structure of Chapter 2, but in addition, the principal management tools applicable to each quota category were combined together for analysis because the quota categories are subject to the same regulations. Several analyses were conducted in order to analyze different combinations of alternatives that would encompass the full range of impacts. For example, for the Longline category, the area-based measures (Section 2.2) were analyzed separately. The quota related measures (Sections 2.1 and 2.3) were analyzed separately and then combined. All of the possible combinations of all measures were not analyzed for several reasons. Not all measures have the same scale or type of impacts, and analyzing such measures together is not particularly useful to the evaluation of measures. For example, the biological impacts of each of the area-based measures (Longline category) is not combined with the analysis of alternatives applicable to the General category. The area-based measures affect the Longline category, which targets primarily swordfish, yellowfin, and bigeye tunas, and therefore affect a different group of fishermen and has different biological impacts than changes to the General category, which targets bluefin. Secondly, analyzing all possible combinations of measures would be too long, complicated, and include combinations that are not likely to achieve the action's stated objectives and ultimately would not inform the decision-making process but would confuse the analyses and the regulated community.

What are the Biological Impacts of the individual alternatives and groups of similar alternatives?

Table 4.2 , Table 4.18, Table 4.26, Table 4.27 and Table 4.30 in Sections 4.1.1.5; 4.1.2.4; 4.1.3; 4.1.4.5; and 4.1.5.7 summarize the impacts of individual and similar alternatives.

What are the Biological Impacts by Quota Category?

Sections 4.1.6.1, 4.1.6.2, 4.1.6.3, 4.1.6.4, and 4.1.6.5 summarize the impacts by Quota Category for the Longline, Purse Seine, General, Harpoon, and Angling Categories, respectively.

Are All Possible Combinations of Alternatives Shown?

Sections 4.1.6.1 through 4.1.6.5 discuss the impacts of all the alternatives, but not all combinations of alternatives are analyzed. Information with which to evaluate each combination of alternatives is contained in the tables.

What are the Biological Impacts of All the Preferred Alternatives?

Table 4.55 lists the preferred alternatives and the biological impacts.

4.1.1 Allocation Alternatives

The biological impacts of each of the allocation alternatives are discussed below. The biological impacts of the quota allocation alternatives are short-term and indirect. The quota allocation alternatives would not modify the annual quota, nor the fishing mortality associated with that quota. Each alternative would implement the total allowable catch of bluefin tuna set by ICCAT consistent with the existing rebuilding plan, which considers scientific uncertainties related to the status of the stock. All of the alternatives manage the domestic fisheries within the United States' overall quota, which is expected to allow for continued stock growth under the both the low and high stock recruitment scenarios. The TAC and resulting quotas comprise a step in a longer-term stock rebuilding program designed to stabilize fishing pressure and allow the stock to rebuild to higher levels (NMFS 2011). The allocation alternatives contribute to determining when and where fishing mortality occurs, but would not alter the overall allowable mortality allowed under the quota. Due to the small amount of the potential quota shifts proposed relative to the size of the bluefin stock as a whole (spawning stock biomass of approximately 18,000 mt), potential changes in allocations under the preferred alternatives would not affect the overall size composition of the stock.

Due to the differences in the bluefin size restrictions among quota categories, the reallocation alternatives may result in differences in the total number of each size class of bluefin caught. The number of bluefin caught in each size class may affect the overall size composition of the stock. The size composition of a stock may be important to the reproduction of the species, maintenance of stock size, and the likelihood of stock growth. The impact of the identified reallocation alternatives on other HMS species would be neutral because substantial changes in fishing effort are not expected in the long-term. The bluefin reallocation alternatives would not impact the amount of Longline category fishing effort for target species, unless combined with a bluefin quota control alternative as discussed in Section 4.1.6.1.

4.1.1.1 Alternative A 1 - No Action

The No Action alternative would make no changes to the current percentages of the quota that each quota category is allocated (General: 47.1%; Harpoon: 3.9%; Purse Seine: 18.6%; Longline: 8.1%; Trap: 0.1%; Angling: 19.7%; Reserve: 2.5%). The biological impacts on bluefin tuna would depend upon whether the current allocation system can account for all catch (landings and dead discards), and whether catch remains within the total U.S. quota. The biological impacts on other HMS stocks would depend upon the specific quota category and the amount of fishing effort. For the directed categories, the bluefin quota would not affect fishing effort for other HMS species. The Longline category could have fishing effort constrained if the

No Action alternative were combined with a Quota Control alternative (see discussion under Section 4.1.3). The No Action alternative facilitates catch accounting for bluefin, especially if all quota categories catch their full allocations. As noted in Chapter 1, annual implementation of the domestic quota system has become more difficult due to increases in bluefin dead discards, a larger percentage of the adjusted quota being landed, and changed ICCAT requirements regarding accounting for dead discards and allowable carry-forward of unharvested quota. The No Action alternative may result in neutral, or minor, adverse, short-term ecological impacts on bluefin. The No Action alternative would have a minor adverse impact if the quota is exceeded or all bluefin dead discards are not accounted for. There are numerous hypothetical scenarios in which the Longline category quota or the overall U.S. quota could be exceeded under the No Action alternative, and it is difficult to precisely project the impacts. If the Purse Seine and other non-Longline categories fully harvest their quotas and there are continuing dead discards by the Longline category which results in exceeding the U.S. total quota, the impacts of the No Action alternative could be moderate and adverse, but short term. If the total U.S. quota were exceeded the overharvest would be accounted for during the following year, consistent with ICCAT requirements and domestic regulations. The No Action alternative would have a neutral effect on other HMS stocks if the overall bluefin quota is not exceeded, and dead discards are accounted for, because Longline category effort should continue at recent levels. It is likely to be increasingly difficult to operate within the allowable overall quota, and therefore, maintaining the current allocation in the No Action alternative would have adverse impacts.

4.1.1.2 Alternative A 2 – Codified Reallocation

Codified reallocation Alternatives A 2a (Reallocation to Longline Category Reflecting the Historical 68 mt Dead Discard Allowance), A 2b (Reallocation Incorporating Recent Catch), and A 2c (Reallocation from Purse Seine category to Longline category) would reallocate quota and result in increased bluefin quota for the Longline category, and would therefore alleviate some of the current challenges associated with the domestic quota system. Under Alternative A 2a,the quota percentages for all quota categories with the exception of the Longline category would be reduced and, under Alternative A 2b, the quota percentages for all categories except the Angling and Longline categories would be reduced. Under Alternative A 2c, only the quota percentage for the Purse Seine category would be reduced. Table 4.1 compares the percentage change in quota allocation for the three codified reallocation alternatives (with the No Action Alternative).

Table 4.1 Percent Change in Quota Allocation Compared to the No Action Alternative, under a Total Quota of 927.3 mt

Category	Alternative A 2a (68 mt) (Preferred)	Alternative A 2b (Based on Current Allocation and Recent Catch)	Alternative A 2c (From Purse Seine to Longline)
General	-7.4 %	-10.8 %	na
Harpoon	-7.5 %	-15.4 %	na
Purse Seine	-7.4 %	-48.9 %	-39.8 %
Longline	+83.6 %	+84.0 %	+91.4 %
Trap	-7.6 %	-50%	na
Angling	-7.4 %	+47.2 %	na
Reserve	-7.4 %	-48 %	na

Impacts on Bluefin Tuna

The biological impacts of this codified reallocation on bluefin would be neutral or minor beneficial because the total amount of bluefin tuna caught (and the overall fishing mortality) are determined primarily by the size of total quota. In conjunction with the ICCAT minimum size, the size of the quota recommended by ICCAT is the management tool utilized to limit fishing mortality. The biological impacts would be indirect because the reallocation would not affect the total amount of bluefin quota available for harvest. The size of the quota is based upon ICCAT recommendations (as described in Chapter 3). These quota reallocations would make it more likely that bluefin quota accounting would ensure that catch is within the total quota, but would not alter the size of the total U.S. quota. Therefore, the reallocations are not likely to affect the total amount of bluefin tuna catch or bluefin tuna rebuilding. The quota shifts are principally from directed categories to the incidental (Longline) category. The amount of bluefin quota landed by the Longline category, and the amount of dead discards would depend also upon what other Amendment 7 alternatives would be implemented (such as Alternative C 2, the IBQ, or Alternative C 4, NMFS Closure of the Pelagic Longline Fishery, etc.).

The commercial directed categories have the same minimum size as the Longline category, and such a shift would have a neutral impact on bluefin tuna. A shift from the Angling category, (which catch smaller fish than the commercial categories) to the Longline category would slightly increase the number of large medium bluefin caught and decrease the number of school, large school, and small medium bluefin caught. However, due to the small amount of the potential quota shift (from one category to another) relative to the size of the bluefin stock as a whole (spawning stock biomass of approximately 18,000 mt), potential changes in the catch of different sized bluefin tuna under this alternative would not affect the overall size composition of the stock (Guillermo Diaz, personal communication). Increased quota to the Longline category may not affect the number of bluefin caught by pelagic longline vessels because currently the bluefin quota does not constrain the directed fishing effort of the Longline category and associated incidental catch as long as the United States' quota is not exceeded. An increase to the allocation of the Longline category in concert with the other effort control measures in this DEIS is not expected to result in an increase in incidental bluefin tuna catch in the pelagic

longline fishery over historical levels. The level of incidental catch would depend upon the net effects of all the relevant regulations (and other non-regulatory factors). Historical average total catch (landings and dead discards) of bluefin by the Longline category (2006 to 2011) has been 216.3 mt, which exceeds the Longline category allocation of 8.1%. Therefore, if the future bluefin catch is greater than 216.3 mt, it would represent an increase, and if future catch is less than 216.3 mt, it would represent a decrease (compared with the historical average). Section 4.1.6.1 contains quantitative information on the range of quotas that would be associated with the combinations of the alternatives applicable to the Longline category.

Impacts on Fishing Effort

Reductions in allocations for non-longline, or directed, categories may reduce fishing effort for bluefin by vessels fishing in such categories, because they direct on bluefin tuna, and may not land bluefin once the quota is attained. However, there are other important factors that determine fishing effort in addition to quota, such as fish availability, weather, and fuel prices, etc., such that this alternative is only one of many factors affecting effort.

The impacts of an increase in quota on Longline category fishing effort would depend on the other measures implemented in conjunction with the quota, as well as other important influences on fishing effort such as other regulations (e.g., gear requirements and closed areas), fuel costs, market conditions, fish availability, oceanographic conditions (e.g., the Gulf Stream location), weather, and safety considerations. The limited increase in quota to the Longline category may not affect the effort expended by pelagic longline vessels because currently the bluefin quota does not constrain the directed fishing effort of the Longline category and associated incidental catch as long as the United States' quota is not exceeded. This limited increase reflects historic catch levels, therefore historic levels of fishing effort may be anticipated. Overall, the level of fishing effort in the pelagic longline fishery is not likely to increase because the increase in quota would be implemented in conjunction with other measures, would be within the historic range of catch, and quota would be used to account for dead discards. If implemented with a bluefin tuna quota control alternative, fishing effort would be constraining for some vessels.

Impacts on Other HMS

If reductions to bluefin allocations for non-pelagic longline quota categories that target bluefin affect the amount of fishing effort of vessels in those categories, the amount catch of other HMS species could be affected. As described above, codified reallocation to the Longline category is not likely to result in a meaningful change to the amount of fishing effort by that category, and therefore would have little impact on the catch of other HMS species. The combined impacts of both a codified reallocation with other measures such as annual reallocation and catch caps are described in Section 4.1.6.1.

4.1.1.3 Alternative A 3 - Annual Reallocation

Annual reallocation Alternatives A 3a (Annual reallocation from the Purse Seine category) and A 3b (Annual Purse Seine allocation based on permitted vessels) would reallocate anticipated

unharvested quota from the Purse Seine category to other quota categories, and allocate to the Purse Seine category in proportion to the number of permitted vessels (respectively).

Impacts on Bluefin Tuna

The biological impacts of annual reallocation on bluefin would be neutral or minor beneficial because the total amount of bluefin caught is determined primarily by the size of total quota. The biological impacts would be indirect because the reallocation would not affect the total amount of bluefin quota available for harvest, and would be short term, because quota allocations are annual. The size of the quota is based upon ICCAT recommendations (as described in Chapter 3). These alternatives would provide flexibility within the domestic quota system and therefore would facilitate catch accounting, especially if all quota categories catch their full allocations. Therefore, with respect to quota accounting, the impacts of the annual reallocation options on bluefin would be neutral or minor beneficial. As noted above, an increase to the allocation of the Longline category would not necessarily result in an increase in bluefin catch over historical levels. Since Longline category and Purse Seine category catch same size bluefin, there would not be any effects on the number of bluefin of various sizes caught. Reallocation from the Purse Seine category to the Angling category would increase the number of bluefin caught less than 73 inches, but due to the small amount of the potential quota shift relative to the size of the bluefin stock as a whole (spawning stock biomass of approximately 18,000 mt), potential changes in the catch of different sized bluefin would not affect the overall size composition of the stock.

Impacts on Fishing Effort

Potential impacts to fishing effort would depend upon how the annual reallocation was distributed amount the quota categories. An increase in quota allocation to one of the directed bluefin categories may result in increased fishing effort. As described above, an increase in quota to the Longline category may not affect the amount of bluefin caught by the pelagic longline fishery because currently the bluefin quota does not constrain the directed fishing effort of the Longline category and associated incidental catch as long as the United States' TAC is not exceeded. Increasing the Longline category quota would not impact fishing effort, unless combined with a quota control alternative that could cause the bluefin quota to become constraining for some vessels. In the absence of a quota control alternative, the amount of fishing effort in the pelagic longline fishery is not likely to change due to a change in the amount of bluefin allocation because other factors are likely to be more important. For example, other regulations such as gear requirements and closed areas, as well as many other potential constraints such as fuel costs, market conditions, fish availability, oceanographic conditions (e.g., the Gulf Stream location), weather, and safety considerations would be more important in determining fishing effort. Annual reallocation to the Longline category is not likely to result in a meaningful change to the amount of fishing effort by that category. The combined impacts of both an annual reallocation with other measures such as codified reallocation and catch caps are described in Section 4.1.6.1.

Impacts on other HMS

There would be little or no impact on the catch of other HMS species by those categories directing on bluefin tuna because the allocation of bluefin has little or no impact on the catch of these other species. The Longline category however is the only category that directs on non-bluefin species of HMS and as such, if bluefin management measures such as the annual reallocation alternatives impact the amount of Longline category fishing effort, they could impact the amount of other HMS species caught. As described above, annual reallocation to the Longline category is not likely to result in a meaningful change to the amount of fishing effort by that category, and therefore would have little impact on the catch of other HMS species.

4.1.1.4 Alternative A 4 - Modifications to Reserve Category

This alternative would give NMFS management flexibility to augment the amount of quota in the Reserve category beyond the current allocation (2.5%) and add to the determination criteria NMFS considers in moving/redistributing quota to or from the Reserve category.

The current determination criteria do not address why quota adjustments can or should be made, and are limited to specific considerations of data, the fishery, and impacts. The additional authority would include allocations to any quota category for inseason or annual adjustments and make the objectives explicit: To optimize fishing opportunity, account for dead discards, or facilitate quota accounting; support fishery monitoring programs through quota allocations and/or generation of revenue; or research.

Impacts on Bluefin Tuna

These modifications are intended to provide flexibility to enhance and facilitate the management of the fishery. It would therefore have a neutral or minor beneficial impact on bluefin. These impacts would be indirect and short term. The total amount of bluefin quota would remain unaffected by this measure, and there may be minor shifts in the relative amounts of bluefin caught by the different quota categories, as well as minor shifts in location of catch because fishing practices vary among the quota categories.

Impacts on Fishing Effort

The reserve category would be used as a means to hold quota in reserve for potential future use, and the placement of quota in the Reserve category would not have any impacts on fishing effort. The potential impacts on fishing effort would depend upon the subsequent disposition of the quota from the Reserve category. The impacts on fishing effort of providing additional quota to the various quota categories are described above under description of impacts of the codified and annual reallocation alternatives.

Impacts on other HMS

There would be little or no impact on the catch of other HMS because substantial changes in fishing effort are not expected and the amount of bluefin quota has limited impact on the catch of other HMS. The Longline category is the only category that directs on non-bluefin species of HMS. As such, if bluefin management measures such as the annual reallocation alternatives

impact the amount of Longline category fishing effort, they could impact the amount of other HMS species caught.

4.1.1.5 Summary of Impacts of Allocation Alternatives

Symbol Key:

O	Neutral Impacts	Θ –	Minor Adverse Impacts
Θ +	Minor Beneficial Impacts	Ø –	Moderate Adverse Impacts
Ø +	Moderate Beneficial Impacts	● –	Significant Adverse Impacts
● +	Significant Beneficial Impacts		

Table 4.2 Summary of Biological Impacts of the Allocation Alternatives.

Allocation Alternatives			
Alternative	Quality	Timeframe	Impacts
No Action	Indirect	Short-term	O / Θ –
Codified Reallocation			
Reallocation to Longline category [based on 68 mt]	Indirect	Short-term	O / Θ +
Reallocation Incorporating Recent Catch Data	Indirect	Short-term	O / Θ +
Reallocation from Purse Seine to Longline category	Indirect	Short-term	O / Θ +
Annual Reallocation			
Annual Reallocation of Bluefin Quota from Purse Seine Category	Indirect	Short-term	O / Θ +
Annual Purse Seine Allocation Commensurate with Number of Purse Seine vessels	Indirect	Short-term	O / Θ +
Modifications to Reserve Category			
No Action	Indirect	Short-term	o
Modify Reserve Category	Indirect	Short-term	O / Θ +

Shaded alternatives are preferred alternatives.

4.1.2 Area Based Alternatives

4.1.2.1 Gear Restricted Areas

NMFS considered a range of alternatives from maintaining existing pelagic longline closures (the no action alternative) to a year-round gear restricted area of the entire Gulf of Mexico EEZ

(west of 82º longitude) in order to reduce pelagic longline interactions with bluefin tuna when directing on other species. NMFS is considering a new gear restricted area to pelagic longline gear off the coast of North Carolina, a gear restricted area in the western Gulf of Mexico, and allowance of the use of handgear by pelagic longline vessels in the Cape Hatteras Gear Restricted Area. Alternatives B 1c (Cape Hatteras Gear Restricted Area with Access based on Performance), B 1d (Allow Pelagic Longline Vessels to Fish under General Category Rules), and B 1f (Small Gulf of Mexico Gear Restricted Area) are the preferred alternatives and are in italics below.

NMFS included tables that outline the impact to fishing effort (hooks) and ecological impacts to designated species and protected/restricted species for each gear restricted area considered (Table 4.3-Table 4.9; Table 4.55-Table 4.59). Impacts to species are calculated by averaging the data from 2006-2011 (referred herein as the "average annual number of interactions") in an effort to reduce interannual variability. References to average annual number of interactions therefore are the total number of interactions that occurred within a given area divided by 6 (2006 to 2011 represents 6 years of data). All of the tables have a consistent layout throughout the description of each gear restricted area, with the exception of the Gulf of Mexico EEZ alternatives (Alternative B 1d and Alternative B 1e) since NMFS assumed no redistribution of effort would occur. The following paragraphs are a description of how best to read and interpret the redistribution tables below.

The following description applies to Table 4.4 (Alternative B 1b, Cape Hatteras Gear Restricted Area Without Performance-Based Access), Table 4.5 (Alternative B 1c, Cape Hatteras Gear Restricted Area With Performance-Based Access), and Table 4.9 (Alternative B 1e, Small Gulf of Mexico Gear Restricted Area).

- The first 12 rows of data (A-L) show the average annual number of hooks and species that occur during each month in the gear restricted area (see "Methods – Data Sources (Gear Restricted Areas)" for a description of the data). Months that are bolded and italicized indicate when the preferred gear restricted area alternative(s) would be effective for pelagic longline gear.
- Row M is the anticipated reduction in the amount of hooks and species without redistribution of effort, which can be calculated by summing the numbers for all months that are bolded.
- The number of hooks and change in species interactions anticipated to occur through redistribution is located in row N. A detailed description about the methods NMFS used to redistribute effort can be found later in section 4.1.2.1.
- The net change in effort and species interactions with redistribution is found in row O and is calculated by summing rows M and N.
- Row P is the average number of hooks deployed, or the average number of species interactions that occurred, in the gear restricted area for the entire year. Row P is calculated by summing the first 12 rows of data.
- Row Q is the percent change in hooks or interactions in each gear restricted area and is calculated by dividing the number of hooks or interactions occurring with redistribution (row O) by the average annual number of hooks or interactions in each area (row P) and multiplying by 100.

- Average fishery-wide pelagic longline effort and interactions are found in row R.
- The percent change fishery-wide for each gear restricted area is found in row S. Similar to calculation for percent change in area, the fishery-wide percent change was calculated by dividing the number of hooks or interactions occurring with redistribution (row O) by the average annual number of hooks or species interactions fishery-wide (row R) by and multiplying by 100.

NMFS assumed no redistribution of effort would occur in the Gulf of Mexico EEZ gear restricted area alternatives based on analyses of pelagic longline logbook data in section 4.1.2.1. Therefore, the tables (Table 4.8, Alternative B 1e, Gulf of Mexico EEZ Gear Restricted Area (March – May); and Table 4.10, Alternative B 1g, Gulf of Mexico EEZ Gear Restricted Area (Year-Round) for both Gulf of Mexico EEZ alternatives did not include rows for the anticipated numbers of hooks or species redistributed, or the net change in effort and species interactions with redistribution.

- The first 12 rows of data (A-L) show the average annual number of hooks and species that occur during each month in the gear restricted area (see "Methods – Data Sources (Gear Restricted Areas)" for a description of the data). Months that are bolded indicate when the preferred gear restricted area alternative(s) would be effective for pelagic longline gear.
- Row M is the anticipated reduction in the amount of hooks and species without redistribution of effort, which can be calculated by summing the numbers for all months that are bolded.
- Row N is the average annual reduction in the number of hooks deployed that is expected to occur as a result of the proposed gear restricted area (and is the same across the entire row). Row O contains the average annual number of hooks and species interactions in the proposed gear restricted area for the entire year, and is calculated by summing Rows A-L.
- Row P is the average annual percent change in species interactions or hooks deployed as a result of the proposed closure. Row P is calculated by dividing Row M by Row O, and multiplying by 100.
- Row Q contains the average annual hooks and species interactions across the entire fishery.

The average annual percent change in species interactions as a result of the proposed alternative across the entire fishery is presented in Row R.

Methods - Data Sources (Gear Restricted Areas)

Fishery dependent data were used to determine the current levels of bluefin interactions in the pelagic longline fishery. The pelagic longline fishery, targeting swordfish and BAYS tunas, reports harvest and discard data on a set-specific basis in the HMS logbook. Bluefin interactions reported by pelagic longline fishermen targeting tuna and swordfish include latitude and longitude coordinates, permitting delineation of bluefin interactions on individual sets. NMFS used the number of bluefin interactions reported in the HMS logbook from 2006-2011; this time series was chosen because the last significant bluefin fishery management action was the 2006

Consolidated HMS FMP. Extending the time series further back in time to include additional years might encompass fishing effort that occurred under different regulations, making them less representative of the existing regulatory environment. The HMS logbook data were used to calculate bluefin interactions because they provide specific latitude/longitude coordinates for sets that interacted with bluefin, this approach alleviates the need to extrapolate interactions for the entire fishery based on observed trips, and the data encompass all of the fishery dependent interactions with HMS-permitted participants in the pelagic longline fishery. However, NMFS recognizes that these are self-reported data, and therefore, could under-represent the number of interactions of bluefin interactions. However, because observer data do not cover the entire fleet and extrapolations would not provide the spatial detail needed to define the smallest areas for potential gear restrictions, NMFS decided that the fishery dependent logbook data provides the most comprehensive approach for determining spatially-explicit interactions of bluefin within the pelagic longline fishery.

Each of the gear restricted area alternatives would have varying degrees of ecological impacts on different species, dependent on how and to what extent fishing effort is redistributed. Summary tables show the changes in the numbers of landings and discards by species. The summary tables describe the impacts of each gear restricted area, with and without redistribution of fishing effort, using individual vessel fishing performance within each pelagic longline statistical area and fishery-wide impacts. In general, the text in this section highlights ecological impacts to designated species, restricted/protected species, and essential fish habitat on a fishery-wide basis because that is consistent with how species are managed. Within this chapter, NMFS focuses on bluefin, swordfish, yellowfin tuna, bigeye tuna, dolphin, wahoo, and shortfin mako sharks that either are the common targets of pelagic longline trips, or tend to comprise the majority of pelagic longline landings reported in the HMS logbooks. Summary tables for skipjack tuna, albacore tuna, porbeagle shark, and thresher shark, which are periodically encountered by HMS-permitted pelagic longline fishermen and are a smaller component of landings, are presented in Appendix. Summary tables for protected/restricted species (white marlin, blue marlin, sailfish, and sea turtles) are presented in section 4.2 of this Chapter.

NMFS used a Geographic Information System (ArcGIS10) program to plot observed (Pelagic Observer Program) and reported (HMS logbook) interactions of all bluefin to spatially delineate potential gear restricted areas that would reduce overall bluefin interactions. NMFS analyzed catch per unit effort (CPUE: number of animals per 1,000 hooks) of bluefin but did not use the CPUE data results to determine the areas warranted for a gear restricted area. Rather, NMFS compared the logbook and observer data to confirm general distribution and interaction patterns of bluefin within the logbook data to identify potential gear restricted areas. Maps with HMS logbook and Pelagic Observer Program data are available in the Appendices.

Analytical Methods - Redistribution of Effort (Gear Restricted Areas)

NMFS determined the anticipated effects of each gear restricted area on a fishery-wide level using individual vessel CPUEs and effort. Pelagic longline set data from 2006-2011 were plotted using ArcGIS10. Sets that fell within gear restricted areas were isolated to determine which vessels fished within the time periods of each area. The percentage of those selected vessels' sets inside and outside of the gear restricted areas were calculated. Vessels were sorted

by the proportion of sets made inside the gear restricted area and plotted to visualize patterns within the fleet; natural breaks from the resulting histogram (Figure 4.1) were identified and used as thresholds which identified how a vessel was classified in redistribution analyses. Vessels that had less than or equal 40 percent of their sets inside a gear restricted area had 100 percent of their effort redistributed to outside the gear restricted area; vessels that had between 40 and 75 percent of their sets inside a gear restricted area had 50 percent of their effort redistributed to outside the gear restricted area; and vessels that made greater than 75 percent of their sets inside a gear restricted area had none of their effort redistributed and were captured in the no redistributions calculations. Summary data tables (Table 4.4, Table 4.5, Table 4.8, Table 4.9, and Table 4.10) that describe anticipated ecological impacts (both with and without redistribution of effort, depending on the alternative) for each gear restricted area can be found under the description of ecological impacts for each alternative.

In addition to fleet-wide analyses, NMFS calculated the ecological impacts of redistribution of effort on an individual vessel level for all gear restricted area alternatives. NMFS calculated vessel-specific, regional CPUE rates for each species and disposition (landed, discarded dead, and discarded alive). First, NMFS totaled all the landings and discards for designated pelagic longline species and protected/prohibited species, by number of animals, in the logbook data by vessel and U.S. domestic pelagic longline statistical area. A sum of the total number of hooks fished by each vessel in each U.S. domestic pelagic longline statistical area was calculated. To determine the regional CPUE for each species for each vessel, in each gear restricted area, NMFS divided the total number of each species landed and discarded by the sum of hooks fished within each statistical reporting area.

NMFS calculated the percent frequency of sets made in open portions of U.S. domestic statistical reporting areas (outside of the gear restricted area) for each vessel during the period of restriction to identify probable redistribution areas for each vessel. The total number of hooks displaced due to the gear restricted area was calculated for each vessel. The respective redistribution percentages (100 percent or 50 percent) were applied to the displaced hooks. The portion of displaced hooks was multiplied by percent frequency of sets made in each of the U.S. domestic pelagic longline statistical reporting area outside of the gear restricted area. This determined the proportion of displaced hooks to apply to each U.S. domestic pelagic longline statistical area for each vessel.

Once CPUEs and displaced hooks of each vessel were calculated for each of the U.S. domestic pelagic longline statistical areas, NMFS estimated the number of designated pelagic longline species and protected/restricted species interactions with redistribution of effort from gear restricted areas. In past FMPs and FMP Amendments, NMFS used a general method to estimate the impacts of redistribution of effort by the pelagic longline fleet. In the 2006 Consolidated HMS FMP, NMFS assumed that any new closures occurring in the U.S. EEZ would cause effort to be redistributed evenly across the open areas of the U.S. EEZ. Comments received on that action stated that even distribution across open areas did not accurately reflect historic fishing effort patterns.

In contrast, in the Draft Amendment 5 to the 2006 Consolidated HMS FMP, effort from each proposed closure was redistributed evenly to the respective U.S. domestic pelagic longline

statistical area in which each proposed closure occurred. During the comment period on Draft Amendment 5, NMFS received a range comments that criticized this approach to the redistribution of effort estimated by NMFS as being too general and not fully describing regional or vessel-specific impacts. Stakeholders requested a vessel-specific estimation of biological and socio economic impacts in addition to fleet-level impacts.

In part in response to comments on Draft Amendment 5, as described above in this Chapter and in Appendix 8 (Redistribution of Effort Analysis), Amendment 7 modified the previous methodology of analyzing area-based measures. NMFS calculated the ecological impacts of redistribution of effort on an individual vessel level for all gear restricted area alternatives. NMFS calculated vessel-specific, regional CPUE rates for each species and disposition (landed, discarded dead, and discarded alive). NMFS developed these methods to use each vessel's unique fishing history to estimate where that vessel would fish if new gear restricted areas were implemented. This method of redistribution represents a more focused approach to estimating how vessels may redistribute their effort and potential impacts on a more localized scale by using vessel- specific fishing history in addition to fleet-wide impacts. As a result, Amendment 7 does not estimate that same level of impacts bycatch species due to redistribution of effort that the 2006 Consolidated HMS FMP or Draft Amendment 5 predicted. Additional information on the redistribution analysis is available in Appendix 8.

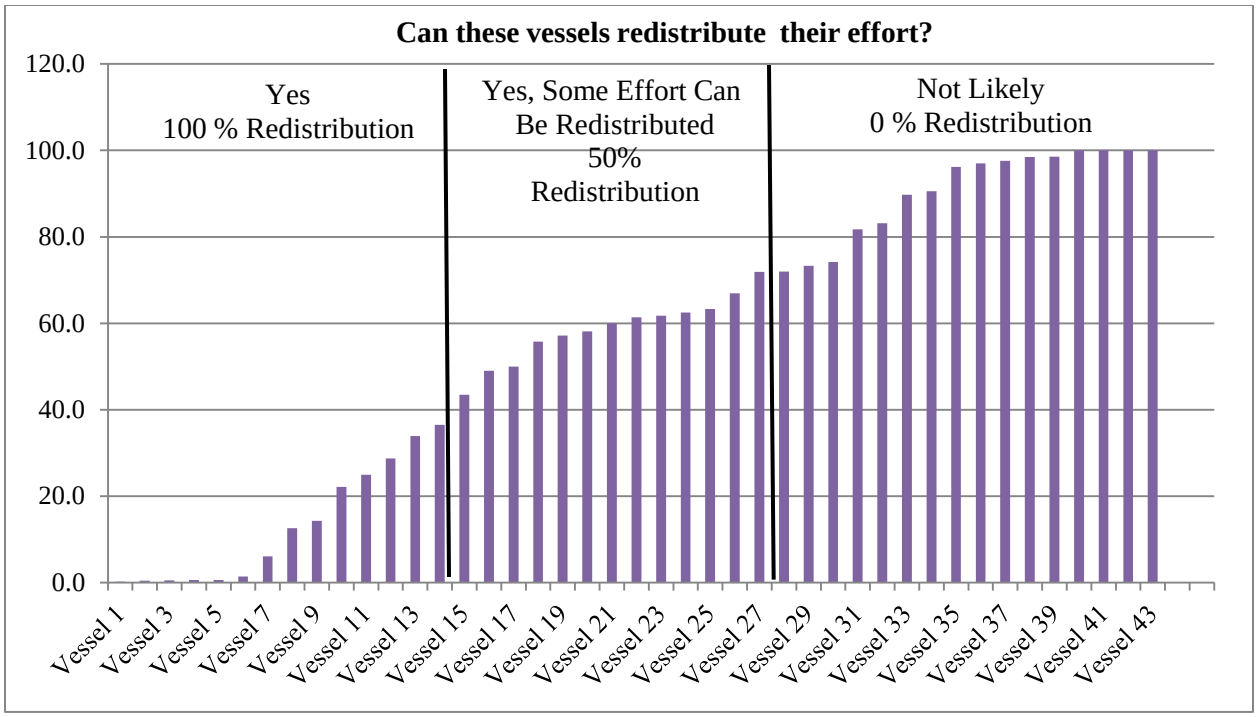

Figure 4.1 Per-vessel percentage of sets deployed inside the gear restricted area. Natural categorical percentage breaks (<40 percent; 40 to 75 percent; >75 percent) were visualized from the data curve and used to identify the likelihood that a vessel could redistribute effort outside of the redistribution area. Vessels that made between 40 to 75 percent of their sets in the gear restricted area were assumed to be able to redistribute 50% of their effort outside of the gear restricted area.

4.1.2.1.1 Alternative B 1a – No Action

Effects on Bluefin

The No Action alternative would maintain the existing closed areas (see Figure 3.8), and result in long-term neutral or minor negative impacts on bluefin. Although the current closed areas would remain in place, the data indicate that large numbers of interactions of pelagic longline gear with bluefin occur in consistent areas during predictable time periods, which are outside the current closed areas. Dead discard estimates by area and year are presented in Chapter 3, in Table 3.20 and Table 3.21. The average amount of dead discards by the pelagic longline fishery from 2006 through 2012 has been 152.4 mt (based on adding dead discard estimates from Table 3.20 and Table 3.21 and dividing by 6) and has ranged from 111.3 mt in 2007 to 204.4 mt in 2009. Preliminary estimates for 2012 bluefin discards (239.5 mt ww) became available from the Southeast Fisheries Science Center in late May; however, this estimate is not finalized (NMFS 2013)

Section 3.6.1.1 in Chapter 3 ("bluefin interaction and discard hotspots") shows the total number of Bluefin tuna interactions self-reported in the HMS logbooks that occurred in the selected hotspot areas between 2006 and 2011. In the Cape Hatteras Gear Restricted Area, there were

3,065 bluefin reported as either kept, discarded alive, or discarded dead. Observer data corroborate the high number of interactions in this area (see "Pelagic Observer Program" section under Chapter 3; Figure 3.28– Figure 3.30). The NMFS Pelagic Observer Program observed 296 bluefin interactions off the coast of North Carolina in an area that roughly corresponds to the Cape Hatteras Gear Restricted Area. A total of 1,371 bluefin interactions were reported from fishing locations within the Gulf of Mexico in the HMS logbook by pelagic longline vessels. The NMFS POP reported at least 1,049 bluefin in observed sets that occurred either within the Gulf of Mexico during this time.

The No Action alternative would not reduce dead discards. The magnitude of the discards in the fishery are more likely to stay the same under the No Action alternative, without implementation of a new gear restricted area, because bluefin are caught consistently in certain areas and time periods and no changes in fishing effort are expected.

Impacts on Fishing Effort

There were 6,195,209 hooks fished annually, on average, across the pelagic longline fishery between 2006 and 2011 (Table 4.4, Row F under the "Hooks" column). A thorough discussion of total fishing effort (Figure 3.31), fishing effort across the U.S. EEZ and adjacent high seas (Figure 3.31 and Figure 3.7), fishing effort (number of hooks deployed) by species (Figure 3.8) and area (Figure 3.6, Table 3.16) is available in Chapter 3. The no action alternative would not be expected to change fishing effort, and NMFS therefore expects this level of fishing effort to continue under the no action alternative across the fishery.

Impacts on other HMS

There would be little or no impact on the catch of other HMS because substantial changes in pelagic longline fishing effort are not expected. Under the No Action Alternative, NMFS expects that the average annual number of other pelagic longline designated target species kept and discarded would likely be comparable to the estimates for the 2006 – 2011 time period (Table 4.3). These estimates of average annual interactions incorporate fishery behavior as it occurs under current regulations.

Table 4.3 Average annual number of fishery interactions with selected target species in the pelagic longline fishery. Source: HMS Logbook Data

Average Annual Interactions Across the Entire PLL Fishery		Bluefin Kept	Bluefin Discarded	Swordfish Kept	Swordfish Discarded	Yellowfin Kept	Yellowfin Discarded
		385	1,190	40,803	9,038	43,479	1,295
Bigeye Kept	Bigeye Discarded	Dolphin Kept	Dolphin Discarded	Wahoo Kept	Wahoo Discarded	Shortfin Mako Kept	Shortfin Mako Discarded
11,988	365	43,417	477	2,428	66	2,927	984

4.1.2.1.2 Alternative B 1b – Cape Hatteras Gear Restricted Area

This alternative would define a modified rectangular area in the Atlantic and would prohibit the use of pelagic longline gear during a five-month period from December through April. The specific time and area of the Cape Hatteras Gear Restricted Area represents a time and area combination likely to result in reduced interactions based on past patterns of interactions. NMFS analyzed and delineated the Cape Hatteras Gear Restricted Area using a 10' latitude x 10' longitude grid; this is a much finer scale that what has been used in previous rulemakings to delineate areas for gear restrictions or closures. The goal with using a finer scale analysis was to maximize the reductions in bluefin tuna interactions and minimize the area where pelagic longline gear is restricted.

In addition to the modified rectangle described above, NMFS also developed a buffer area when considering the impacts to pelagic longline vessels fishing in the Cape Hatteras Gear Restricted Area. During the Draft Amendment 5 to the 2006 Consolidated HMS FMP comment period, NMFS considered a time/area closure for pelagic longline gear in a similar area to the Cape Hatteras Gear Restricted Area. Comments received on the Draft Amendment 5 closure informed NMFS that the affected area was much larger than the closure boundaries, due to the Northwest current of the Gulf Stream. Pelagic longline gear would need to be set further to the southeast to prevent the gear from drifting into the gear restricted area from December through April, therefore making the Cape Hatteras Gear Restricted Area affected area much larger. During the consideration of biological and socioeconomic impacts of the Cape Hatteras Gear Restricted Area; NMFS delineated a "buffer area" to the southeast of the Cape Hatteras area.

Using a sample of 1,109 HMS logbook sets off the coast of North Carolina in the mid-Atlantic and South Atlantic Bights between 2006 and 2011, NMFS calculated an average set time of 17 hours per set. Based on comments received on Draft Amendment 5 to the 2006 Consolidated HMS FMP, NMFS used a 6 knot (~7 mph) current speed as the maximum current speed found in the Cape Hatteras area. Based on average soak time and current speed, NMFS determined that an appropriate buffer area extends 119 miles due south from the southernmost seaward point (34°50'N, 74°20'W) of the Cape Hatteras gear restricted area, and due west encompassing all sets to the shore. Figure 4.2 shows the buffer area plotted on Arc GIS 10.

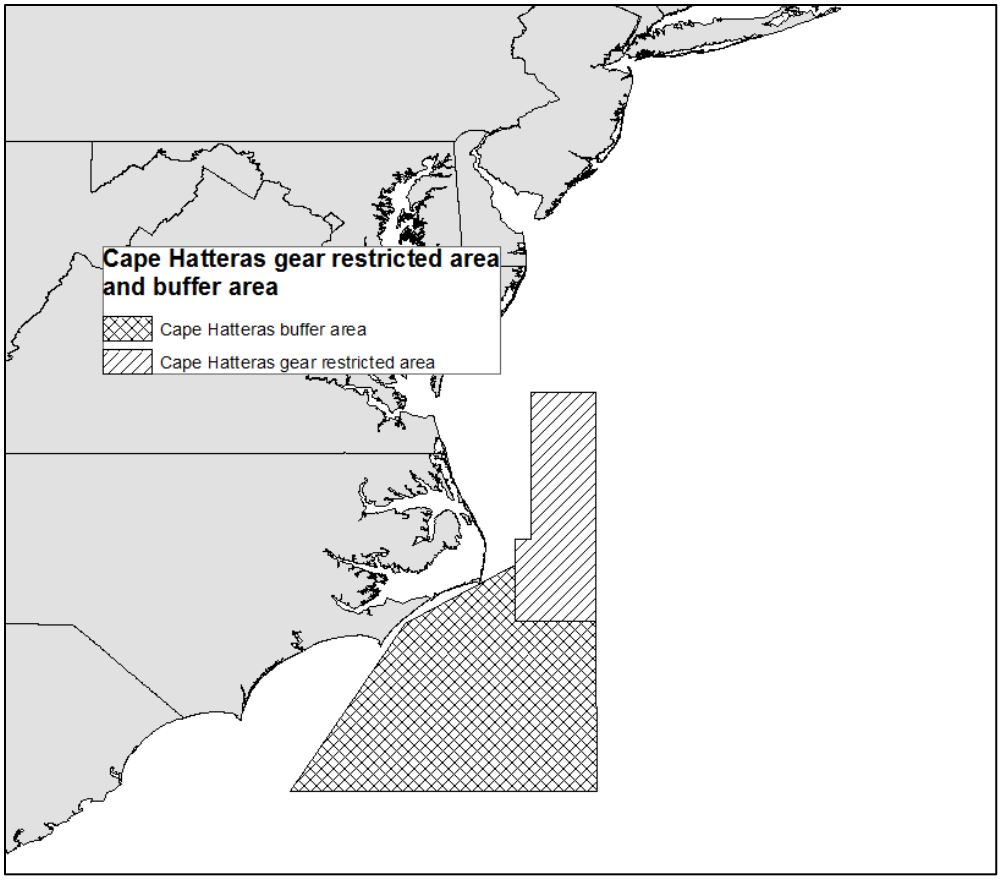

Figure 4.2 Map of Cape Hatteras gear restricted area and buffer area.

Impacts on Bluefin

The Cape Hatteras Gear Restricted Area is one of the areas where there are seasonal concentrations of bluefin, as well as consistent catches by the pelagic longline fleet by season and by year. Pelagic longline logbook and observer data indicate that historically there have been relatively high bluefin catches and catch rates of bluefin by pelagic longline vessels in this region. An analysis of recent logbook data (2006 – 2011) indicated that discards in the Cape Hatteras Gear Restricted Area are elevated from December through April and are particularly high in February, March, and April; between 2006 and 2011, there were 3,065 bluefin interactions reported in the pelagic longline logbooks during these months (see Chapter 3, Table 3.23, for reported logbook interactions in the Cape Hatteras Gear Restricted Area).

Expected ecological effects on bluefin as a result of this alternative are presented in Table 4.2. The analysis of this alternative redistributed fishing effort outside of the Cape Hatteras Gear Restricted Area and a buffer region to the south of the gear restricted area. This alternative would result in a 39 percent (-29 fish/year, on average) in bluefin kept and 78 percent (-486 fish/year, on average) reduction in bluefin discarded with redistribution of effort. Fishery-wide, this alternative is expected to result in an average annual reduction of bluefin kept by 5 percent and an average annual reduction of bluefin discarded by 33 percent. Large numbers of bluefin often congregate seasonally in this area due to the unique bathymetric and oceanographic

conditions which result in an extremely productive environment. This alternative would restrict all HMS-permitted pelagic longline vessels from the use of pelagic longline gear within the boundaries of the Cape Hatteras Gear Restricted Area to maximize the likelihood of reduced interactions and dead discards. Given the notable localized reductions in bluefin kept and discarded, and the reduction fishery-wide of bluefin discards by one-third, NMFS anticipates long-term, direct, moderate beneficial ecological impacts on bluefin as a result of this alternative. These reductions in bluefin kept and discarded by pelagic longline vessels equates to 123.43 mt on average per year.

Impacts on Fishing Effort

This alternative is expected to have an annual average reduction in localized fishing effort by 24 percent (159,151 hooks/year, on average). Fishery-wide, this alternative would result in an average annual reduction in fishing effort by 4 percent. This would result in longterm, direct, minor to moderate beneficial ecological impacts on bluefin and other HMS stocks.

Impacts on other HMS

Expected ecological effects on designated target species as a result of this alternative are presented in Table 4.2. NMFS estimates the potential effects of this alternative fishery-wide for all designated target species were considered to be minimal (~1 percent or less) with redistribution. This five-month gear restriction, with redistribution, would result in localized average annual area reduction of the number of swordfish kept by 35 percent (-2,284 fish/year, on average) and discarded by 9 percent (-409 fish/year, on average) and the number of yellowfin tuna kept by 15 percent (-1,561 fish/year, on average) and discarded by 31 percent (-62 fish/year, on average). NMFS anticipates the following localized effects: bigeye tuna kept (-391fish/year, on average) and discarded (-4 fish/year, on average) would decrease by 11 percent each; wahoo kept would decrease by 20 percent (-90 fish/year, on average) and discards would not change (0 percent, 0 fish/year); and shortfin mako kept (-772 fish/year, on average) and discarded (-40 fish/year, on average) would decrease by approximately 63 percent each. Because there would be minimal impacts fishery-wide for these designated target species (likely due to the small size of the gear restricted area compared to the range of these stocks), NMFS determined that this alternative would have minor, beneficial ecological effects due to the localized impacts of the gear restricted area.

Table 4.4 Summary of logbook data (2006 – 2011) and calculation of anticipated ecological effects of Alternative B 1b (Cape Hatteras Gear Restricted Area) on bluefin and designated target species. Values are rounded to the nearest whole number. Source: HMS logbook data.

	2006-2011 Average Annual Interactions	Hooks	Bluefin Kept	Bluefin Discards	Swordfish Kept	Swordfish Disc	Bigeye Kept	Bigeye Discarded	Yellowfin Kept	Yellowfin Discards	Dolphin Kept	Dolphin Discards	Wahoo Kept	Wahoo Discards	Shortfin Mako Kept	Shortfin Mako Discards
(A)	January	42,058	4	59	403	123	128	1	319	31	14	0	18	0	161	17
(B)	February	34,052	7	108	367	66	29	1	221	2	12	0	29	0	173	6
(C)	March	44,418	7	134	326	43	23	1	311	6	52	1	20	0	71	5
(D)	April	74,169	5	140	551	39	43	0	336	3	643	0	14	0	253	8
(E)	May	87,502	8	10	498	64	73	1	662	5	22,351	22	21	0	146	6
(F)	June	82,153	9	3	218	36	94	1	1161	23	20,092	34	37	0	40	3
(G)	July	60,501	2	2	91	23	205	2	1737	23	2,845	19	50	0	26	1
(H)	August	37,010	1	0	48	11	261	2	734	14	254	4	40	0	10	1
(I)	September	47,686	0	0	54	20	489	5	1373	10	163	1	58	0	7	0
(J)	October	59,193	0	0	166	68	461	3	1505	21	112	0	42	0	32	2
(K)	November	50,249	2	7	500	121	242	5	1018	26	38	0	34	0	112	6
(L)	December	49,275	6	45	637	138	169	1	375	20	6	0	9	0	115	4
(M)	Dec-Apr Reduction of Catch/Hooks with no redistribution -((A+B+C+D+L))	-243,972	-29	-486	-2284	-409	-392	-4	-1562	-62	-727	-1	-90	0	-773	-40

	2006-2011 Average Annual Interactions	Hooks	Bluefin Kept	Bluefin Discards	Swordfish Kept	Swordfish Disc	Bigeye Kept	Bigeye Discarded	Yellowfin Kept	Yellowfin Discards	Dolphin Kept	Dolphin Discards	Wahoo Kept	Wahoo Discards	Shortfin Mako Kept	Shortfin Mako Discards
(N)	Dec-Apr change in catch with redistribution	84,822	9	91	919	341	144	1	146	5	125	1	14	0	42	3
(O)	Net Change with redistribution (M +N)	-159,150	-20	-395	-1365	-68	-248	-3	-1416	-57	-602	0	-76	0	-731	-37
(P)	Average Annual # Interactions in Proposed Gear Restricted Area (SUM of A to L)	668,266	51	508	3,859	752	2,217	23	9,752	184	46,582	81	372	0	1,146	59
(Q)	Percent change in Area with redistribution ((O/P)*100)	-24%	-39%	-78%	-35%	-9%	-11%	-13%	-15%	-31%	-1%	0%	-20%	0%	-64%	-63%
(R)	Average # Interactions in entire fishery(Σ(All PLL Interactions 2006 - 2011)/6)	6,195,209	385	1,190	40,803	9,038	11,988	365	43,479	1,295	43,417	477	2,428	66	2,927	984

	2006-2011 Average Annual Interactions	Hooks	Bluefin Kept	Bluefin Discards	Swordfish Kept	Swordfish Disc	Bigeye Kept	Bigeye Discarded	Yellowfin Kept	Yellowfin Discards	Dolphin Kept	Dolphin Discards	Wahoo Kept	Wahoo Discards	Shortfin Mako Kept	Shortfin Mako Discards
(S)	Percent change in fishery ((O/R)*100)	-3%	-5%	-33%	-3%	-1%	-2%	-1%	-3%	-4%	-1%	0%	3%	0%	25%	4%

4.1.2.1.3 Alternative B 1c -Cape Hatteras Gear Restricted Area with Access Based on Performance (Preferred)

This alternative would implement the Cape Hatteras Gear Restricted Area and buffer area as described in Alternative B 1b and define criteria for access by HMS-permitted vessels fishing with pelagic longline gear during the five-month period from December through April. Vessels that are determined by NMFS to have relatively low rate of interactions with bluefin based on past performance, and that are compliant with reporting and monitoring requirements, would be allowed to fish in the area using pelagic longline gear. Vessels that have not demonstrated their ability to avoid bluefin would not be allowed to fish with pelagic longline gear in this area; or if a vessel can avoid bluefin, but has poor compliance with reporting and monitoring requirements, that vessel would not be allowed to fish with pelagic longline gear in this area, from December through April. Individual vessel data would be evaluated annually for the purpose of determining access, in order to provide future opportunities and reflect changes in fishing behavior, both positively and negatively, based on performance.

Based on the performance criteria outlined in Chapter 2 and in the Appendices, NMFS determined that, of 161 active vessels in the entire pelagic longline fleet, 43 vessels fished in the Cape Hatteras Gear Restricted Area or buffer region. Of these 43 active vessels, 18 vessels that fished in the Cape Hatteras Gear Restricted Area or buffer region did not meet the performance criteria for access based on their inability to avoid bluefin, and/or compliance with POP observer and logbook reporting requirements. Six of the 18 restricted vessels made at least 75 percent of their sets in the Cape Hatteras Gear Restricted Area. Performance criteria for access to this area is described is (Section 2.X)

Impacts on Bluefin

Expected ecological effects on bluefin as a result of this alternative are presented in Table 4.4. The Cape Hatteras Gear Restricted Area is one of the areas where there are seasonal concentrations of bluefin, as well as consistent catches by the pelagic longline fleet by season and by year (see Chapter 3, Table 3.22 for reported logbook interactions in the Cape Hatteras Gear Restricted Area). In research designed to determine the extent, duration, and composition of seasonal aggregations of bluefin (Walli et al., 2009), high residence times were identified in four spatially confined regions on a seasonal scale. Numbers of bluefin interactions reported in the HMS logbook declined between 2006 and 2011. The total number of bluefin interactions (kept and discarded) peaked in May 2008. This five-month gear restriction, with redistribution and access for vessels that only meet performance criteria, would result in localized average annual area reduction of bluefin kept by 43 percent (-10 fish/year, on average) and bluefin discards by 77 percent (-347 fish/year, on average); fishery-wide, restricted access would reduce bluefin kept by 3 percent and bluefin discards by 29 percent. Consequently, this alternative would have direct, moderate beneficial impacts for bluefin due to reductions in interactions with HMS-permitted pelagic longline vessels. These reductions in bluefin kept and discarded by pelagic longline vessels equates to 106.55 mt on average per year.

Impacts on Fishing Effort

This alternative is expected to have an annual average reduction in localized fishing effort for vessels that do not have access to the area, by 32 percent (159,151 hooks/year, on average). Fishery-wide, this alternative would result in an average annual reduction in fishing effort by 4 percent. This would result in longterm, direct, minor to moderate beneficial ecological impacts on bluefin and other HMS stocks. Vessels that will maintain access to the Cape Hatteras Gear Restricted Area, are not expected to have any change in their historical effort.

Impacts on other HMS

Expected direct ecological effects on designated target species as a result of this alternative are presented in Table 4.5. This five-month gear restriction, with redistribution and access for vessels that only meet performance criteria, would result in localized average annual area reduction of: swordfish kept by 40 percent (-626 fish/year, on average) and discarded by 28 percent (-120 fish/year, on average); the number of yellowfin kept by 16 percent (-380 fish/year, on average) and discarded by 16 percent (-15 fish/year, on average); the number of bigeye kept by 17 percent (-105 fish/year, on average) and discarded by 15 percent (-2 fish/year, on average); and the number of shortfin mako kept by 57 percent (-254 fish/year, on average) and discarded by 67 percent (-24 fish/year, on average). Fishery-wide, this alternative would result in a reduction of swordfish, yellowfin tuna, bigeye tuna, dolphin, and wahoo kept and discarded equal to or less than 2 percent; shortfin mako kept and discarded, however, would decrease by 9 percent and 2 percent, respectively. Alternative B1c would result in long-term direct, moderate localized benefits and neutral to minor fishery-wide ecological benefits on swordfish, yellowfin tuna, bigeye tuna, and shortfin mako. Catches of dolphin and wahoo would have long-term, neutral, localized ecological benefits due to very low interaction rates (5 dolphin fish kept/year and -3 wahoo kept/year, on average) and neutral fishery-wide ecological benefits.

Table 4.5 Summary of logbook data (2006 – 2011) and calculation of anticipated ecological effects of Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance on bluefin and selected species. Values are rounded to the nearest whole number. Source: HMS Logbook data.

	2006 – 2011 Average Annual Interactions	Hooks	Bluefin Kept	Bluefin Discards	Swordfish Kept	Swordfish Disc	Bigeye Kept	Bigeye Discarded	Yellowfin Kept	Yellowfin Discards	Dolphin Kept	Dolphin Discards	Wahoo Kept	Wahoo Discards	Shortfin Mako Kept	Shortfin Mako Discards
(A)	January	42,058	3	48	157	76	55	0	144	9	1	0	1	0	73	11
(B)	February	34,052	4	102	176	46	16	1	23	1	1	0	1	0	73	5
(C)	March	44,418	3	119	122	23	9	0	56	2	1	0	0	0	31	4
(D)	April	74,169	2	125	205	24	21	0	76	2	17	0	1	0	48	4
(E)	May	87,502	4	10	222	42	23	1	236	4	512	1	1	0	58	4
(F)	June	82,153	3	2	61	20	25	1	438	16	792	1	1	0	21	1
(G)	July	60,501	1	1	27	8	59	1	388	17	102	0	1	0	15	0
(H)	August	37,010	0	0	19	7	58	1	134	14	16	1	1	0	5	0
(I)	September	47,686	0	0	20	10	115	1	219	4	7	0	1	0	2	0
(J)	October	59,193	0	0	66	29	129	3	353	14	6	0	2	0	12	1
(K)	November	50,249	1	2	206	68	62	3	255	9	1	0	1	0	52	4
(L)	December	49,275	2	40	286	79	54	1	127	3	0	0	0	0	53	2
(M)	Dec-Apr Reduction of Catch/Hooks with no redistribution - (A+B+C+D+L)	-243,973	-14	-434	-946	-248	-155	-2	-426	-17	-20	0	-3	0	-278	-26
(N)	Dec-Apr change in catch during restriction with redistribution	28,588	4	87	320	128	50	0	46	2	25	0	6	0	24	2
(O)	Net Change with redistribution (M+N)	-215,385	-10	-347	-626	-120	-105	-2	-380	-15	5	0	3	0	-254	-24
(P)	Average Annual # Interactions in Proposed	668,266	24	448	1,566	430	626	13	2,448	95	1,456	3	12	0	442	36

	2006 – 2011 Average Annual Interactions	Hooks	Bluefin Kept	Bluefin Discards	Swordfish Kept	Swordfish Disc	Bigeye Kept	Bigeye Discarded	Yellowfin Kept	Yellowfin Discards	Dolphin Kept	Dolphin Discards	Wahoo Kept	Wahoo Discards	Shortfin Mako Kept	Shortfin Mako Discards
	Gear Restricted Area (SUM of A to L)															
(Q)	Percent change in Area with redistribution ((O/P)*100)	-32%	-43%	-77%	-40%	-28%	-17%	-15%	-16%	-16%	0%	0%	27%	0%	-57%	-67%
(R)	Average # Interactions in entire fishery (Σ(All PLL Interactions 2006 - 2011)/6)	6,195,209	385	1,190	40,803	9,038	11,988	365	43,479	1,295	43,417	477	2,428	66	2,927	984
(S)	Percent change in fishery ((O/R)*100)	-4%	-3%	-29%	-2%	-1%	-1%	1%	-1%	-1%	0%	0%	0%	0%	-9%	-2%

4.1.2.1.4 Alternative B 1d – Allow Pelagic Longline Vessels to Fish under General Category Rules (Preferred)

This option would allow vessels with an Atlantic Tunas Longline category permit to fish under the rules/regulations applicable to the General category as they pertain to targeting bluefin using non-pelagic longline gear (gear authorized under the General category, including: rod and reel, handline, harpoon, etc.), in the area defined as the Cape Hatteras Gear Restricted Area, during the time of the restriction (December through April), when the General category fishery is open. The bluefin landed with authorized handgear would be counted against the General category quota.

This alternative is equivalent to increasing the number of participants in the General category fishery from December until the January sub-quota is caught (or the end of March, whichever comes first). This alternative would have a neutral impact on bluefin because the catch of bluefin would count towards, and be limited by, the December and January bluefin sub-quotas allocated to the General category fishery. It is difficult to predict the impact of this alternative on bigeye, albacore, yellowfin, and skipjack tunas, but it is likely that the amount of fishing effort on these tuna species under General category rules in the Cape Hatteras Gear Restricted Area (with handgear) would be less than if the vessel were fishing elsewhere with pelagic longline or under the status quo of fishing with pelagic longlines in the Cape Hatteras Gear Restricted Area. Table 4.6 and Table 4.7 show information on historic catches of yellowfin and skipjack by pelagic longline gear and handgear (handline and rod and reel) for vessels landing in North Carolina.

Table 4.6 Yellowfin (YFT) and Skipjack (SKJ) Tuna Landings in North Carolina by Commercial Handgear, in 2010 and 2011 by month (dw, lb). NMFS Dealer Data.

	2010		**2011**	
Month	YFT	SKJ	YFT	SKJ
Jan			18	
Feb				
Mar				
Apr	2,787			
May	7,134	80	854	17
Jun	26,098	1,054	6,255	354
Jul	2,963	124	14,410	618
Aug	913		13,400	310
Sep			445	
Oct			702	
Nov	447		1,112	
Dec	1,540		3,379	31

Table 4.7 Yellowfin (YFT) and Skipjack (SKJ) Tuna Landings in North Carolina by Pelagic Longline gear, in 2010 and 2011 by month (dw, lb). NMFS Dealer Data

	2010		**2011**	
Month	YFT	SKJ	YFT	SKJ
Jan	3,867		2,834	
Feb	2,507		11,533	
Mar	16,325		2,916	
Apr	9,250		4,688	
May	11,905	16	5,647	17
Jun	11,846	12	27,628	311
Jul	56,089		80,602	86
Aug	53,761	6	80,304	30
Sep	24,729		39,758	193
Oct	17,087		26,470	17
Nov	4,657		12,002	2
Dec	1,058		6,718	

December through April, the months during which the pelagic longline vessels would be fishing under General category rules, are months of relatively few landings of yellowfin and skipjack tuna (by vessels using pelagic longline or handgear).

Based on historical data, the December sub-quota period has generally remained open until through the end of the December and the January sub-quota period has remained open until at least the third week of January and, following the 2011 change to allow the "January" fishery to remain open until March 31 or until the available quota is caught, it has remained open as late as the middle of February. Based on the analysis of the Cape Hatteras Gear Restricted Area above, there are approximately 39 pelagic longline vessels that typically fish in this area and therefore, would be most affected by the Cape Hatteras Gear Restricted Area, which may be interested in fishing with handgear gear. However, 30 of the pelagic longline vessels that typically fish in the Cape Hatteras Gear Restricted Area also fish in other areas during December through April and so may choose to move to continue fishing with pelagic longline gear in those areas.

The vessels that decide to fish under the General category rules would also be able to target yellowfin tuna or other tunas. Yellowfin and skipjack tuna are two of the species caught by the pelagic longline fleet in this area, during all the months of the year, with the highest catches from July to September. In 2011, 3% of the commercial yellowfin catch and 81% of the commercial skipjack catch was attributed to commercial handgear. In contrast, commercial handgear caught less than one percent of the commercial albacore and bigeye tuna catch (SAFE 2012).

4.1.2.1.5 Alternative B 1e – Gulf of Mexico Exclusive Economic Zone (EEZ) Gear Restricted Area (March – May)

The Gulf of Mexico is one of the areas where there are seasonal concentrations of bluefin as a result of spawning behavior. Pelagic longline logbook and observer data indicate that historically there have been consistent, relatively high annual catch and catch rates of bluefin

with pelagic longline gear in the Gulf of Mexico. An analysis of recent logbook data (2006 – 2011) indicated that discards in the Gulf of Mexico EEZ Gear Restricted Area are particularly high in March, April, and May; between 2006 and 2011, there were 1,013 bluefin interactions reported in the Pelagic longline logbooks during these months (see Chapter 3, Table 3.24, for reported logbook interactions in the Gulf of Mexico EEZ Gear Restricted Area).

Impacts on Bluefin

Expected ecological effects on bluefin as a result of this alternative are presented in Table 4.8 The analysis of this alternative did not include a step where effort was redistributed outside of the Gulf of Mexico, as an analysis of logbook data indicated that very few vessels that fished in the Gulf of Mexico also fished in Atlantic regions (< 1 percent of vessels). Previous analyses in the 2006 Consolidated HMS FMP analyzed a range of redistribution of effort including no redistribution of effort for large pelagic longline time/area closures, similar to this alternative, as well as some level of redistribution of effort for smaller pelagic longline time/area closure alternatives, and concluded that the actual redistribution would likely fall within the range analyzed and vary for individual vessels based on individual circumstances. Based on the more refined vessel-specific analyses in Amendment 7, as well as additional years of logbook data indicating few Gulf of Mexico vessels fished in the Atlantic region, NMFS therefore presumes that these vessels would not redistribute their effort outside of the Gulf of Mexico region. This alternative would reduce average annual numbers of bluefin kept by 56 percent (- 45 bluefin per year) and discarded by nearly 84 percent (-123 bluefin per year) within the Gulf of Mexico EEZ. Fishery-wide, this alternative is expected to result in an average annual reduction of bluefin kept and discarded by approximately 12 percent and 10 percent. Because bluefin in the Gulf of Mexico consist of large fish that are sexually mature and/or spawning, reducing interactions with pelagic longline gear during March, April, and May in the Gulf of Mexico may also enhance spawning potential and stock growth. The Gulf of Mexico EEZ Gear Restricted Area would maximize the likelihood that the gear restricted area would account for the variability of bluefin distribution and reduce interactions and dead discards. Therefore, this alternative is expected to have direct, moderate beneficial impacts for bluefin due to reductions in interactions with HMS-permitted pelagic longline vessels and overall reduction of fishing effort in the only known western Atlantic spawning grounds. These reductions in bluefin kept and discarded by pelagic longline vessels equates to 49.8 mt on average per year.

Impacts on Fishing Effort

This alternative would cease pelagic longline fishing by HMS-permitted vessels in the region from March through May, and therefore reduce fishing effort by all vessels fishing in the Gulf of Mexico during these months. Vessels fishing in the Gulf of Mexico are assumed to not redistribute to regions outside of the Gulf of Mexico.

Impacts on Other HMS

Expected direct ecological effects on designated target species as a result of this alternative are presented in Table 4.8 This three-month gear restriction would reduce Gulf of Mexico swordfish kept by 37 percent (-2,206 fish, on average) and discarded by 38 percent (-1,050 fish, on

average); the Gulf of Mexico EEZ Gear Restricted Area would reduce swordfish kept and discarded fishery-wide by 5 percent and nearly 12 percent, respectively. NMFS therefore anticipates long-term, direct moderate ecological benefits to swordfish stocks from this alternative. This alternative would also result in localized reductions in numbers of yellowfin tuna kept by 15 percent (-2,472 fish, on average) and fishery-wide reductions by 6 percent. Localized reductions in numbers of shortfin mako kept in this area would be 56 percent (-68 fish, on average) and discarded by 34 percent (-20 fish, on average). However, from a fishery-wide perspective, this gear restricted area would result in only a 2 percent change in shortfin mako kept and discarded; therefore direct ecological impacts for this species are considered to be minor and beneficial. Localized discards of bigeye tuna (-2 fish, on average), yellowfin tuna (-123 fish, on average), dolphin (-24 fish, on average), and wahoo (-3 fish, on average) would be reduced by 20 percent, 23 percent, 21 percent, and 14 percent, respectively. Fishery-wide reductions in catch and discards of these species as a result of the gear restriction would be less than 10 percent. Alternative B 1e would likely result in longterm, direct, moderate localized benefits and minor fishery-wide ecological benefits on these three designated species caught or targeted by the pelagic longline fishery, as this alternative would cease pelagic longline fishing by HMS-permitted vessels from March to May, and therefore reduce fishing effort on these stocks.

Table 4.8 Summary of logbook data (2006 -2011) and calculation of anticipated ecological effects of Alternative B 1e, Gulf of Mexico EEZ Gear Restricted Area, on bluefin and selected species. Values are rounded to the nearest whole number. Source: HMS logbook data.

	2006-2011 Average Annual Interactions	Hooks	Bluefin Kept	Bluefin Disc	Swordfish Kept	Swordfish Disc	Bigeye Kept	Bigeye Disc	Yellowfin Kept	Yellowfin Disc	Dolphin Kept	Dolphin Disc	Wahoo Kept	Wahoo Disc	SF Mako Kept	SF Mako Disc
(A)	January	175,963	7	2	545	254	56	0	1,635	33	25	3	71	3	5	4
(B)	February	155,759	15	4	601	248	32	0	948	26	13	1	57	0	9	2
(C)	March	172,811	14	20	891	296	14	1	652	20	17	1	52	0	15	9
(D)	April	143,877	12	48	784	375	3	0	541	25	37	2	24	0	39	7
(E)	May	185,842	19	55	531	379	2	1	1,278	78	706	21	84	3	14	4
(F)	June	195,361	5	13	288	196	12	2	1,828	155	2,321	50	279	7	5	6
(G)	July	223,595	1	2	281	137	11	1	2,188	69	1,648	18	470	3	5	7
(H)	August	219,095	0	1	337	137	13	2	2,066	39	693	7	538	4	5	4
(I)	September	193,510	0	2	403	149	14	0	1,597	25	121	3	155	1	7	3
(J)	October	159,666	0	0	426	168	33	1	1,288	16	44	1	60	0	5	3
(K)	November	178,902	1	0	515	210	83	1	1,500	22	52	2	50	0	8	5
(L)	December	168,324	7	1	420	226	37	1	1,444	34	34	3	38	1	5	4
(M)	Average Annual Reduction of Catch or Hooks (-(C+D+E))	-502,530	-45	-123	-2,206	-1,049	-19	-2	-2,471	-123	-760	-24	-160	-3	-68	-20
(N)	Total Average Annual # Interactions (or Hooks) in Proposed Gear Restricted Area (SUM A to L)	2,172,705	81	148	6,022	2,775	310	10	16,965	542	5,711	112	1,878	22	122	58

(O)	Average Annual Percent change in Area ((M/N)*100)	-23%	-57%	-83%	-37%	-38%	-6%	-20%	-15%	-23%	-13%	-21%	-9%	-14%	-56%	-34%
(P)	Average Annual # Interactions (Σ(All PLL Interactions 2006 - 2011))	6,195,209	385	1,190	40,803	9,038	11,988	365	43,479	1,295	43,417	477	2,428	66	2,927	984
(Q)	Average Annual Percent change in fishery ((M/P)*100)	-8%	-12%	-10%	-5%	-12%	-0%	-1%	-6%	-9.5%	-2%	-5%	-7%	-5%	-2%	-2%

4.1.2.1.6 Alternative B 1f – Small Gulf of Mexico Gear Restricted Area (April – May) (Preferred)

This alternative would define a rectangular area in the Gulf of Mexico and prohibit the use of pelagic longline gear during April and May. The specific time and area of the Small Gulf of Mexico Gear Restricted Area represents a time and area combination likely to result in reduced bluefin interactions based on past patterns of interactions by the pelagic longline fishery. The small gear restricted area would provide a narrower restriction based upon the locations of historical bluefin interactions, and would provide a different balance of achieving the principal objectives than the Gulf of Mexico EEZ Gear Restricted Area. Since the Small Gulf of Mexico Gear Restricted Area is smaller in size and shorter in time than the Gulf of Mexico EEZ Gear Restricted Area, NMFS expects a smaller ecological impact on commercial fisheries. Pelagic longline logbook and observer data indicate that historically there have been relatively high bluefin catches and catch rates of bluefin by pelagic longline vessels in this region. An analysis of recent logbook data (2006 – 2011) indicated that discards in the Small Gulf of Mexico Gear Restricted Area were highest in this area in April and May. Seventy percent (n = 439) bluefin interactions were reported from this area in the HMS logbooks during these months (see Chapter 3, Table 3.27, for reported logbook interactions in the Small Gulf of Mexico Gear Restricted Area). Because bluefin in the Gulf of Mexico are comprised of large fish that are sexually mature and/or spawning, reducing interactions with pelagic longline gear in the Gulf of Mexico may also enhance spawning potential and stock growth.

Impacts on Bluefin

Expected direct ecological effects on bluefin as a result of this alternative are presented in the analysis of ecological effects of this alternative included a step where effort was redistributed outside of the Small Gulf of Mexico Gear Restricted Area to adjacent, open fishing grounds in the Gulf of Mexico. This alternative would reduce bluefin kept by 31 percent (-10 fish/year, on average) and discarded by 58 percent (-41 fish/year, on average). Fishery-wide, the number of bluefin kept and discarded is expected to be reduced by 3 percent. However, this alternative is not realistically expected to affect the number of bluefin kept fishery-wide because Gulf of Mexico vessels typically do not retain bluefin. When the total reduction of catch with and without redistribution from the Small Gulf of Mexico Gear Restricted Area is compared to total reduction in the Gulf of Mexico (Table 4.10, row “O” for bluefin tuna), there are notable ecological gains from this proposed gear restricted area in the Gulf of Mexico. Without redistribution (Table 4.9, row “M” for bluefin divided by Table 4.10, row “O” for bluefin tuna), this alternative would account for 18.5 percent and 39 percent of the reduction in bluefin kept and discarded within the entire Gulf of Mexico. With redistribution, (Table 4.9, row “O” for bluefin tuna divided by Table 4.9,row “O” for bluefin tuna), this alternative would account for 12 percent of the reduction in bluefin tuna kept and 28 percent of the bluefin tuna discarded within the entire Gulf of Mexico. When considering the comparison of relative impacts in the Gulf of Mexico, it is important to note that the Small Gulf of Mexico Gear Restricted Area covers roughly 8 percent of the Gulf of Mexico EEZ. While the savings are not as significant under this alternative as they would be under a year-round Gulf of Mexico EEZ Gear Restricted Area, Alternative B 1f could result in a notable reduction (-28 percent) of bluefin discards within the Gulf of Mexico.

However, NMFS determined that this alternative would have direct, minor, beneficial ecological impacts due to the local ecological benefits of reducing pelagic longline interactions within this gear restricted area. Bluefin tuna in the Gulf of Mexico are comprised of large fish that are sexually mature or spawning fish. Reducing interactions with pelagic longline gear in the Small Gulf of Mexico Gear Restricted Area would protect a portion of the spawning stock, and could increase spawning potential and stock growth. These reductions in bluefin kept and discarded by pelagic longline vessels equates to 11.0 mt on average per year.

Impacts on Fishing Effort

This alternative is expected to have an annual average reduction in localized fishing effort for vessels that do not have access to the area by 7 percent (45,911 hooks/year, on average). Fishery-wide, this alternative would result in an average annual reduction in fishing effort by 1 percent. This would result in longterm, direct, minor to moderate beneficial ecological impacts on bluefin and other HMS stocks.

Impacts on Other HMS

Expected direct ecological effects on designated target species as a result of this alternative are presented in Table 4.9. This two-month gear restriction, with redistribution, would result in localized average annual area reduction of swordfish kept by 3 percent (-35 fish/year, on average) and discarded by 13 percent (-106 fish/year, on average). The localized average annual area reduction of yellowfin tuna kept would decrease by 6 percent (-317 fish/year, on average) and discarded by 15 percent (-15 fish/year, on average). With redistribution, NMFS anticipates potential localized increases in the number of dolphin kept (+ 15 percent, +71 fish/year, on average); dolphin discarded (+13 percent, 2 fish/year, on average); and shortfin mako kept (+20 percent, +2 fish/year, on average). Localized effects of this alternative on bigeye tuna kept, with redistribution, are expected to be minimal (0 percent, 0 fish). Due to the smaller restricted area and the relatively small increase in the expected number of interactions for these species, localized ecological impacts as a result of this alternative are expected to be neutral. Fishery-wide changes as a result of this alternative for all designated target species were considered to be minimal (~1 percent or less) with redistribution (Table 4.9). NMFS therefore expects the fishery-wide longterm overall direct impact on designated target stocks to be minor and beneficial due to a localized reduction in fishing effort.

Table 4.9 Summary of logbook data (2006-2011) and calculation of anticipated ecological effects of Alternative B 1f (Small GOM Gear Restricted Area) on bluefin and selected species. Values are rounded to the nearest whole number. Source: HMS logbook data

	2006 – 2011 Average Annual Interactions	Hooks	Swordfish Kept	Swordfish Disc	Bluefin Tuna Kept	Bluefin Tuna Discards	Yellowfin Tuna Kept	Yellowfin Tuna Discards	Bigeye Tuna Kept	Bigeye Tuna Discarded	Dolphin Kept	Dolphin Discards	Wahoo Kept	Wahoo Discards	Shortfin Mako Kept	Shortfin Mako Discards
(A)	January	54,924	117	70	3	0	634	10	15	0	11	1	14	0	0	1
(B)	February	42,465	107	48	6	2	270	6	6	0	5	1	5	0	1	1
(C)	March	34,721	54	48	5	9	149	5	2	1	5	0	9	0	1	1
(D)	April	51,698	108	106	7	30	254	10	1	0	8	1	5	0	1	2
(E)	May	67,966	136	139	8	28	434	27	1	0	31	3	16	1	1	0
(F)	June	34,324	53	44	0	2	237	9	3	0	77	2	54	1	1	0
(G)	July	53,883	66	36	0	0	596	8	3	1	149	3	177	1	1	2
(H)	August	73,198	128	68	0	0	619	7	2	2	128	2	277	1	2	1
(I)	September	61,395	155	56	0	0	410	2	3	0	22	1	56	0	1	0
(J)	October	46,914	148	67	0	0	398	4	9	0	9	1	13	0	0	0
(K)	November	61,816	170	76	1	0	622	3	17	0	12	0	12	0	1	1
(L)	December	63,071	117	84	2	0	581	10	9	0	13	1	12	0	0	2
(M)	Apr-May Reduction of Catch (or Hooks) with no redistribution (-(D+E))	-119,664	-244	-245	-15	-58	-688	-37	-2	0	-39	-4	-21	-1	-2	-2
(N)	Apr-May change in catch during closure with redistribution	74153	209	139	5	17	371	22	2	0	110	6	15	1	3	2
(O)	Net Change with redistribution (M+N)	-45,511	-35	-106	-10	-41	-317	-15	0	0	71	2	-6	0	1	0
(P)	Total # Interactions (or Hooks) in Proposed Gear Restricted Area (SUM of A to L)	646,375	1,359	842	32	71	5,204	101	71	4	470	16	650	4	10	11
(Q)	Percent change in Area with redistribution -((O/P)*100)	-7%	-3%	-13%	-31%	-58%	-6%	-15%	0%	0%	15%	13%	-1%	0%	10%	0%
(R)	Total # Interactions (Σ(All PLL Interactions 2006 - 2011))	6,195,209	40,803	9,038	385	1,190	43,479	1,295	11,988	365	43,417	477	2,428	66	2,927	984
(S)	Percent change in fishery with	-1%	0%	-1%	-3%	-3%	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%

	redistribution ((O/R)*100)															

4.1.2.1.7 Alternative B 1g – Gulf of Mexico Gear EEZ Restricted Area (year-round)

Alternative B 1f would implement a year-round gear restriction in the entire Gulf of Mexico EEZ (west of 82º longitude). Pelagic longline logbook and observer data indicate that historically there have been relatively high catches and catch rates between pelagic longline gear and bluefin in this region (Chapter 3, Table 3.20). Bluefin are known to annually congregate in the Gulf of Mexico to spawn. An analysis of recent logbook data (2006 – 2011) indicated that most interactions in the Gulf of Mexico EEZ Gear Restricted Area occurred between December and June, coinciding with the seasonal distribution and migratory nature of the species (Chapter 3, Table 3.27). There were 1,336 bluefin interactions reported in the pelagic longline logbooks during these months (see Chapter 3, Table 3.25 for reported logbook interactions in the Gulf of Mexico EEZ Gear Restricted Area).This alternative would provide additional protection for bluefin during the other months of the year (July through November) compared to Alternatives B 1e (Gulf of Mexico EEZ March through May) and Alternative B 1f (Small Gulf of Mexico April and May).

Impacts on Bluefin

Expected direct ecological effects on bluefin as a result of this alternative are presented in Table 4.10. The analysis of this alternative did not include a step where effort was redistributed outside of the Gulf of Mexico, as logbook data from 2006 - 2011 indicate that very few vessels that fished in the Gulf of Mexico also fished in Atlantic regions (< 1 percent of vessels). NMFS therefore presumes that these vessels would not redistribute their effort outside of the Gulf of Mexico region. Within the Gulf of Mexico, this alternative would result in a 100 percent reduction in the number of bluefin kept (-81 fish/year, on average) and discarded (-148 fish/year, on average). Fishery-wide, this would result in a decrease in bluefin kept by 21 percent and discarded by 12 percent. Because bluefin in the Gulf of Mexico are comprised of large fish that are sexually mature and/or spawning, and this is the only known spawning ground for western Atlantic bluefin, this alternative is expected to provide the maximum amount of ecological benefit to the bluefin stock. NMFS has determined that this alternative would have longterm direct, moderate beneficial ecological effects on the western Atlantic bluefin tuna stock. These reductions in bluefin kept and discarded by pelagic longline vessels equates to 67.1 mt on average per year.

Impacts on Fishing Effort

This alternative would cease pelagic longline fishing by HMS-permitted vessels in the region, and therefore reduce fishing effort by all vessels fishing in the Gulf of Mexico. Vessels are assumed not to redistribute.

Impacts on Other HMS

Expected indirect ecological effects on designated target species as a result of this alternative are presented in Within the Gulf of Mexico, this alternative would result in a 100 percent reduction in the number of swordfish, bigeye tuna, yellowfin tuna, dolphin, wahoo, and shortfin mako kept

and discarded. Fishery-wide, a year-round gear restriction in the Gulf of Mexico EEZ would result in a decrease in swordfish kept by nearly 15 percent (-6,020 fish) and discarded by 30 percent (-2,772 fish). Yellowfin tuna kept would be reduced by approximately 39 percent (-16,965 fish) and discarded by 42 percent (-541 fish). Fishery-wide, the number of dolphin kept under this alternative is expected to decrease by 13 percent (-5,708 fish); discards would decrease by nearly 23 percent (-109 fish). The number of wahoo kept, under this alternative, would decrease by 77 percent (an average annual reduction of 1,878 fish per year); wahoo discards would decrease by 33 percent (-22 fish/year, on average). This alternative is expected to result in a fishery-wide reduction in the percentage of bigeye tuna kept (-310 fish/year, on average) and discarded (-10 fish/year, on average) by 3 percent each. Under this alternative, shortfin mako kept and discarded fishery-wide are expected to decrease by 4 percent (-119 fish/year, on average) and 6 percent (- 57 fish/year, on average), respectively. Depending on the target species, there could also be substantial reductions in the number of animals kept and discarded, fishery-wide. Therefore, NMFS has determined that implementing a year-round Gulf of Mexico EEZ Gear Restricted Area would likely result in direct, moderate ecological benefits for designated target species.

Table 4.10 Summary of logbook interactions (2006-2011) and calculation of anticipated ecological effects of Alternative B 1f (Gulf of Mexico EEZ Year-Round), on bluefin and selected species. Values are rounded to the nearest whole number. Source: HMS logbook data

	2006 – 2011 Average Annual Interactions	Hooks	Bluefin Kept	Bluefin Disc	Swordfish Kept	Swordfish Disc	Bigeye Kept	Bigeye Disc	Yellowfin Kept	Yellowfin Disc	Dolphin Kept	Dolphin Disc	Wahoo Kept	Wahoo Disc	SF Mako Kept	SF Mako Disc
(A)	January	175,963	7	2	545	254	56	0	1,635	33	25	3	71	3	5	4
(B)	February	155,759	15	4	601	248	32	0	948	26	13	1	57	0	9	2
(C)	March	172,811	14	20	891	296	14	1	652	20	17	1	52	0	15	9
(D)	April	143,877	12	48	784	375	3	0	541	25	37	2	24	0	39	7
(E)	May	185,842	19	55	531	379	2	1	1,278	78	706	21	84	3	14	4
(F)	June	195,361	5	13	288	196	12	2	1,828	155	2,321	50	279	7	5	6
(G)	July	223,595	1	2	281	137	11	1	2,188	69	1,648	18	470	3	5	7
(H)	August	219,095	0	1	337	137	13	2	2,066	39	693	7	538	4	5	4
(I)	September	193,510	0	2	403	149	14	0	1,597	25	121	3	155	1	7	3
(J)	October	159,666	0	0	426	168	33	1	1,288	16	44	1	60	0	5	3
(K)	November	178,902	1	0	515	210	83	1	1,500	22	52	2	50	0	8	5
(L)	December	168,324	7	1	420	226	37	1	1,444	34	34	3	38	1	5	4
(M)	Average Annual Reduction of Catch or Hooks (-(SUM A-L))	-2,172,704	-81	-148	-6,022	-2,775	-310	-10	-16,965	-542	-5,711	-112	-1,878	-22	-122	-58
(N)	Average Annual # Interactions (or Hooks) in Proposed Gear Restricted Area (Sum of A to L)	2,172,704	81	148	6,022	2,775	310	10	16,965	542	5,711	112	1,878	22	122	58
(O)	Average Annual Percent change in Area ((M/N)*100)	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00
(P)	Average Annual # Interactions (Σ(All PLL. Interactions 2006 - 2011))	6,195,209	385	1,190	40,803	9,038	11,988	365	43,479	1,295	43,417	477	2,428	66	2,927	984

(Q)	Average Annual Percent change in fishery ((M/P)*100)	-35%	-21%	-12%	-15%	-31%	-3%	-3%	-39%	-42%	-13%	-23%	-77%	-33%	-4%	-6%

4.1.2.1.8 Summary Table of Impacts of Gear Restricted Area Alternatives on Bluefin and Other HMS

Table 4.11-Table 4.17 contain a summary of the impacts of the gear restricted area alternatives on selected species. The two Cape Hatteras Gear Restricted Area alternatives and the Small Gulf of Mexico Gear Restricted Area analyses took into consideration the fact that fishing effort will likely be redistributed to other locations outside of the gear restricted area. The second and third columns from the left show estimated annual change in numbers of animals and in metric tons whole weight (mt ww). These estimates are derived from the data summary tables presented under each alternative, and include both the numbers of fish kept and discarded. The last row in each table shows the total overall estimated annual savings (both raw numbers of fish and the corresponding mt ww), and the total overall fishery-wide percent change in numbers of selected species kept and discarded. These overall estimates were derived from summing the numbers of fish/year, the corresponding mt ww, and the fishery-wide percent reduction in selected species of the preferred alternatives. The fishery-wide percent change for each alternative is calculated based on the total number of a particular species kept or discarded across the entire fishery. Therefore, these numbers can be added to derive an estimated impact of the preferred alternatives combined. Percent change within an area or region is relative to the total number of animals kept or discarded within that region; therefore, these estimates are not comparable and cannot be added together.

Table 4.11 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Bluefin

				Area/Region % Change		Fishery-Wide % Change	
Alternative		**Estimated Annual Change (# of bluefin)**	**Estimated Annual Change (mt ww)**	**Numbers of Bluefin Kept**	**Numbers of Bluefin Discarded**	**Numbers of Bluefin Kept**	**Numbers of Bluefin Discarded**
B 1b	Cape Hatteras GRA; all vessels	-415 fish/year	-53.09 mt	-39%	-78%	-5%	-33%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	-358 fish/year	-45.59 mt	-46%	-77%	-3%	-29%
B 1e	GOM EEZ GRA (March – May)	-169 fish/year	-49.8 mt	-56%	-84%	-12%	-10%
B 1f Preferred	Small GOM GRA (April – May)	-51fish/year	-11.0 mt	-31%	-58%	0%	-3%
B 1g	GOM EEZ GRA (year round)	-229 fish/year	-67.1 mt	-100%	-100%	-21%	-12%
B 1c+ B1f	Combined Preferred	-409fish/year	-56.59 mt	--	--	-3%	-33%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution .							
Estimated annual savings = net change # of BFT kept with redistribution + net change # of BFT discarded without redistribution (see data summary tables under each alternative in Section 4.1.2.1 in Chapter 4)							

The annual change in bluefin tuna catch was estimated by adding together the number of bluefin kept and discarded (see Row M in the anticipated ecological effects tables in areas where redistribution of effort was not considered, and Row O in the anticipated ecological effects tables in areas where redistribution of effort was considered, under each alternative in this chapter). The estimated annual reduction (mt ww) in the Gulf of Mexico was estimated by multiplying the number of fish by the mean weight of bluefin kept (286 kg) and discarded (298 kg), and then multiplying by 0.001 to convert kg to mt. The estimated annual change (mt ww) within the Cape Hatteras Gear Restricted Area was estimated by multiplying the number of fish by the mean weight of bluefin kept (160 kg) and discarded (126.3 kg), and then multiplying by 0.001 to convert kg to mt. Landed bluefin weights were calculated from the dealer data and averaged from 2006-2011 for the Gulf of Mexico and North Carolina regions. Discard data from the Pelagic Observer Program from 2006-2011 was used to determine the average weight of bluefin

discarded in the pelagic longline fishery. Similar to landed bluefin, the average weights were regionalized between the Gulf of Mexico and North Carolina.

NMFS estimates that, from a fishery-wide perspective, Alternative B 1b, the Cape Hatteras Gear Restricted Area without Performance-Based Access, would generate the greatest overall reduction in the percentage of bluefin discarded (-33 percent), while Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (Year Round), would generate the greatest overall reduction in the numbers of bluefin kept (-21 percent). In contrast the Cape Hatteras Gear Restricted Area with Access and the Small Gulf of Mexico Gear Restricted Area would achieve substantial reductions, but lessen the adverse economic impacts (Chapter 5). The Cape Hatteras Gear Restricted Area with Access would reduce fishery wide discards by 32 percent and the Small Gulf of Mexico Gear Restricted Area would reduce discards in the Gulf of Mexico by 29 percent while only restricting fishing in 8 percent of the Gulf of Mexico.

Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access based on Performance, could result in a fishery-wide reduction of bluefin discards by 29 percent. Preferred Alternative B 1f, Small Gulf of Mexico Gear Restricted Area (April-May), would reduce bluefin discards by 3 percent. The Small Gulf of Mexico Gear Restricted Area is expected to generate an average annual reduction of 41 bluefin discards per year (Table 4.9, Row "O" for bluefin discards). NMFS estimates average annual discards within the Gulf of Mexico EEZ to be 148 bluefin per year (Table 4.10, Row "O" for bluefin discards). Therefore, NMFS estimates that the Small Gulf of Mexico closure would result in a regional reduction of bluefin discards by 28 percent while restricting access to approximately 8 percent of the Gulf of Mexico.

Total fishery-wide impacts of the preferred alternatives are shown in the bottom row of Table 4.11. NMFS estimates that the preferred alternatives would generate average annual reductions of 409 bluefin tuna per year (56.59 mt). For bluefin tuna, the preferred alternatives would result in a collective reduction in bluefin kept and discarded by 3 percent (- 21 fish/year on average) and 30 percent (-388 fish/year on average).

Bluefin tuna interactions in the Gulf of Mexico are broadly distributed and smaller in number than in other locations within the Atlantic. Between 2006 and 2011, annual bluefin discards within the Gulf of Mexico EEZ ranged between 19 fish (2011) and 228 fish (2009). Protection of spawning Gulf of Mexico bluefin is an important part of bluefin management; however, to achieve appreciable reductions in dead discards NMFS also had to consider areas outside of the Gulf of Mexico. The Cape Hatteras Gear Restricted Area, which is just over one-third the size of the Small Gulf of Mexico Gear Restricted Area, accounts for nearly one-third of bluefin discards in the fishery.

Table 4.12 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Swordfish

				Area/Region % Change		Fishery-Wide % Change	
Alternative		Estimated Annual Change (# of Fish)	Estimated Annual Change (mt ww)	Numbers of Fish Kept	Numbers of Fish Discarded	Numbers of Fish Kept	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	-1,433 fish/year	-80.5 mt	-35%	-9%	-3%	-1%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	-746 fish/year	-30.5 mt	-40%	-28%	-2%	-1%
B 1e	GOM EEZ GRA (March – May)	-3,254 fish/year	-84.6 mt	-37%	-38%	-5%	-12%
B 1f Preferred	Small GOM GRA (April – May)	-142 fish/year	-9.4 mt	-3%	-13%	-0%	-1%
B 1g	GOM EEZ GRA (year round)	-8,792 fish/year	-239.0 mt	-100%	-100%	-15%	-31%
B 1c + B1f	Combined Preferred	-888 fish/year	-39.9 mt	--	--	-2%	-2%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution.							
Estimated annual savings = net change # of SWO kept with redistribution + net change # of SWO discarded without redistribution (see data summary tables under each alternative in Section 4.1.2.1 in Chapter 4)							

NMFS estimates that, from a fishery-wide perspective, Alternative B 1f, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the percentage of swordfish discarded (- 31 percent) and swordfish kept (-15 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance, could result in a fishery-wide reduction of swordfish discards by 1 percent and swordfish kept by 2 percent. Preferred Alternative B 1e, the Small Gulf of Mexico Gear Restricted Area (April-May), would reduce swordfish discards by 1 percent. This alternative is not expected to appreciably change the number of swordfish kept across the fishery (0 percent).

Total fishery-wide impacts of the preferred gear restricted area alternatives on swordfish landings and discards are shown in the bottom row of Table 4.12. NMFS estimates that the preferred alternatives would generate average annual reductions of 888 swordfish per year (39.9

mt) due to a reduction in swordfish kept by 2 percent (-661 fish/year on average) and discarded by 2 percent (-227 fish/year on average).

Table 4.13 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Yellowfin Tuna.

				Area/Region % Change		Fishery-Wide % Change	
Alternative		Estimated Annual Change (# of Fish)	Estimated Annual Change (mt ww)	Numbers of Fish Kept	Numbers of Fish Discarded	Numbers of Fish Kept	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	-1472 fish/year	-23.5 mt	-15%	-31%	-3%	-0%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	-396 fish/year	-4.36 mt	-16%	-16%	-1%	-1%
B 1e	GOM EEZ GRA (March – May)	-2,595 fish/year	-96.6 mt	-15%	-23%	-6%	-10%
B 1f Preferred	Small GOM GRA (April – May)	-332 fish/year	-26.2 mt	-6%	-15%	-1%	-1%
B 1g	GOM EEZ GRA (year round)	-17,506 fish/year	-674.0 mt	-100%	-100%	-39%	-42%
B 1c + B1f	Combined Preferred	-728 fish/year	-30.56 mt	--	--	-2%	-2%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution .							
Estimated annual savings = net change # of YFT kept with redistribution + net change # of YFT discarded without redistribution (see data summary tables under each alternative in Section 4.1.2.1 in Chapter 4)							

NMFS estimates that, from a fishery-wide perspective, that Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the percentage of yellowfin discarded (- 42 percent) and yellowfin kept (- 39 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance, could result in a fishery-wide reduction of yellowfin kept and discarded by 1 percent, respectively. Preferred Alternative B 1f, Small Gulf of Mexico Gear Restricted Area (April-May), would also reduce yellowfin kept and discard by 1 percent, respectively.

Total fishery-wide impacts of the gear restricted area preferred alternatives on yellowfin tuna landings and discards are shown in the bottom row of Table 4.13. NMFS estimates that the preferred alternatives would generate average annual reductions of 728 yellowfin tuna per year (30.56 mt) due to a reduction in yellowfin kept and discarded by 2 percent (-698 fish/year on average) and 30 percent (-30 fish/year on average), respectively.

Table 4.14 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Bigeye Tuna.

				Area/Region % Change		**Fishery-Wide % Change**	
Alternative		**Estimated Annual Change (# of Fish)**	**Estimated Annual Change (mt ww)**	**Numbers of Fish Kept**	**Numbers of Fish Discarded**	**Numbers of Fish Kept**	**Numbers of Fish Discarded**
B 1b	Cape Hatteras GRA; all vessels	-250 fish/year	-14.0 mt	-11%	-14%	-2%	-1%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	-107 fish/year	-4.5 mt	-17%	-13%	-1%	0%
B 1e	GOM EEZ GRA (March – May)	-21 fish/year	-1.1 mt	-6%	-22%	0%	-1%
B 1f Preferred	Small GOM GRA (April – May)	+1 fish/year	+0.05 mt	+1%	-4%	0%	0%
B 1g	GOM EEZ GRA (year round)	-320 fish/year	-13.4 mt	-100%	-100%	-3%	-3%
B 1c + B1f	Combined Preferred	-106 fish/year	-4.45 mt	--	--	-1%	0%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution .							
Estimated annual savings = net change # of BET kept with redistribution + net change # of BET discarded without redistribution (see data summary tables under each alternative in Section 4.1.2.1 in Chapter 4)							

NMFS estimates that, from a fishery-wide perspective, that Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the percentage of bigeye discarded (- 3 percent) and kept (-3 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance, could result in a fishery-wide reduction of bigeye kept by 1 percent. NMFS would not expect a noticeable change in the numbers of bigeye discarded under Preferred Alternative B 1c. Preferred Alternative B 1f,

Small Gulf of Mexico Gear Restricted Area (April-May), would not be expected to result in an appreciable change in the numbers of bigeye tuna kept or discarded.

Total fishery-wide impacts of the gear restricted area preferred alternatives on bigeye tuna landings and discards are shown in the bottom row of Table 4.14. NMFS estimates that the preferred alternatives would generate average annual reductions of 106 bigeye tuna per year (4.55 mt) due to a reduction in bigeye tuna kept by 1 percent (-104 fish/year on average). NMFS would expect a negligible decrease in the number of bigeye tuna discarded across the fishery as a result of the preferred gear restricted area alternatives (0 percent change, -2 fish/year on average).

Table 4.15 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Dolphin.

				Area/Region % Change		Fishery-Wide % Change	
Alternative		Estimated Annual Change (# of Fish)	Estimated Annual Change (mt ww)	Numbers of Fish Kept	Numbers of Fish Discarded	Numbers of Fish Kept	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	-602 fish/year	-0.6 mt	-1%	0%	0%	0%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	+5 fish/year	+0.1 mt	0%	0%	0%	0%
B 1e	GOM EEZ GRA (March – May)	-782 fish/year	-4.2 mt	-13%	-21%	-5%	-7%
B 1f Preferred	Small GOM GRA (April – May)	+74 fish/year	+0.3 mt	+15%	+20%	0%	+1%
B 1g	GOM EEZ GRA (year round)	-5,817 fish/year	-46.2 mt	-100%	-100%	-13%	-23%
B 1c + B1f	Combined Preferred	+79 fish/year	+0.4 mt	--	--	0%	+1%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution .							
Estimated annual savings = net change # of DOL kept with redistribution + net change # of DOL discarded without redistribution (see data summary tables under each alternative in Section 4.1.2.1 in Chapter 4)							

NMFS estimates that, from a fishery-wide perspective, that Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the

percentage of dolphin discarded (-13 percent) and kept (-23 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance, would not be expected to result in any appreciable changes in the number of dolphin kept or discarded across the fishery. Preferred Alternative B 1f, Small Gulf of Mexico Gear Restricted Area (April-May), would increase dolphin discards by 1 percent but is not expected to affect the numbers of fish kept across the fishery.

Total fishery-wide impacts of the gear restricted area preferred alternatives on dolphin landings and dead discards are shown in the bottom row of Table 4.15. NMFS estimates that the preferred alternatives would collectively generate average annual increases in interactions by 79 dolphin per year (+0.4 mt) due to an increase in dolphin discarded by 1 percent (+3 fish fish/year on average) and a negligible increase in the number of dolphin discarded (0 percent change, +76 fish/year on average).

Table 4.16 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Wahoo.

				Area/Region % Change		Fishery-Wide % Change	
Alternative		Estimated Annual Change (# of Fish)	Estimated Annual Change (mt ww)	Numbers of Fish Kept	Numbers of Fish Discarded	Numbers of Fish Kept	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	-76 fish/year	-0.3 mt	-20%	0%	-3%	0%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	+3 fish/year	+0.05 mt	25%	0%	0%	0%
B 1e	GOM EEZ GRA (March – May)	-164 fish/year	-2.5 mt	-9%	-18%	-7%	-6%
B 1f Preferred	Small GOM GRA (April – May)	-6 fish/year	-0.3 mt	-1%	0%	0%	0%
B 1g	GOM EEZ GRA (year round)	-1,900 fish/year	-32.2 mt	-100%	-100%	-77%	-33%
B 1c + B1f	Combined Preferred	-3 fish/year	-0.25	--	--	0%	0%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution .							
Estimated annual savings = net change # of WHO kept with redistribution + net change # of WHO discarded without redistribution							

(see data summary tables under each alternative in Section 4.1.2.1 in Chapter 4)

NMFS estimates that, from a fishery-wide perspective, that Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the percentage of wahoo discarded (- 33 percent) and wahoo kept (-77 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access based on Performance, would not be expected to result in appreciable changes to the numbers of wahoo kept and discarded across the fishery. Preferred Alternative B 1f, Small Gulf of Mexico Gear Restricted Area (April-May), would also not be expected to result in appreciable changes to the numbers of wahoo kept and discarded across the fishery.

Total fishery-wide impacts of the gear restricted area preferred alternatives on wahoo landings and dead discards are shown in the bottom row of Table 4.16. NMFS estimates that the preferred alternatives will generate collective average annual reductions of 3 wahoo per year (-0.25 mt) due to a negligible reduction in wahoo kept (0 percent, -3 fish/year on average) and no change in wahoo discarded (0 percent, 0 fish/year on average).

Table 4.17 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Shortfin Mako.

				Area/Region % Change		Fishery-Wide % Change	
Alternative		Estimated Annual Change (# of Fish)	Estimated Annual Change (mt ww)	Numbers of Fish Kept	Numbers of Fish Discarded	Numbers of Fish Kept	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	-767 fish/year	-22.1 mt	-64%	63%	-25%	-4%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	-276 fish/year	-7.6 mt	-57%	-64%	-9%	-2%
B 1e	GOM EEZ GRA (March – May)	-87 fish/year	-2.3 mt	-56%	-35%	-2%	-2%
B 1f Preferred	Small GOM GRA (April – May)	+1 fish/year	+0.06 mt	-20%	0%	0%	0%
B 1g	GOM EEZ GRA (year round)	-176 fish/year	-5.2 mt	-100%	-100%	-4%	-6%
B 1c+ B1f	Combined Preferred	-275 fish/year	-7.54 mt	--	--	-9%	-2%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution.							

Estimated annual savings = net change # of SFM kept with redistribution + net change # of SFM discarded without redistribution (see data summary tables under each alternative in Section 4.1.2.1 in Chapter 4)

NMFS estimates that, from a fishery-wide perspective, that Alternative B 1b, the Cape Hatteras Gear Restricted Area without Performance-Based Access, would generate the greatest overall reduction in the percentage of shortfin mako kept (-25 percent), while Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (Year Round), would generate the greatest overall reduction in the numbers of shortfin mako discarded (-6 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access based on Performance, could result in a fishery-wide reduction of shortfin mako discards and numbers kept by 9 percent and 2 percent, respectively. Preferred Alternative B 1f, Small Gulf of Mexico Gear Restricted Area (April-May), would not be expected to result in appreciable changes to the numbers of shortfin mako kept and discarded across the fishery.

Total fishery-wide impacts of the gear restricted area preferred alternatives on shortfin mako landings and discards are shown in the bottom row of Table 4.17. NMFS estimates that the preferred alternatives will generate average annual reductions of 275 shortfin mako per year (7.54 mt) due to a reduction in shortfin mako kept by 9 percent (-251 fish/year on average) and discarded by 2 percent (-24 fish/year on average).

4.1.2.1.9 Alternative B 1h–Pelagic and Bottom Longline Transiting Closed Areas

No Action

Under the No Action alternative, those HMS permitted vessels that possess longline gear, inclusive of both pelagic longline and bottom longline, would not be allow to enter the existing longline closed areas or proposed gear restricted areas, even for purposes of transiting the area. Instead, the vessels must go around these closed/gear restricted areas to remain in compliance with the regulations. As the No Action alternative would not alter fishing practices, it would have neutral impacts on bluefin, other HMS, and restricted/protected species, and would not have any further impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 BiOp and in the 2006 Consolidated HMS FMP.

Pelagic and Bottom Longline Transiting Closed Areas (Preferred)

Under this alternative, NMFS would allow HMS permitted vessels that possess bottom or pelagic longline gear on board to transit closed areas and proposed gear restricted areas, if the longline gear is stowed in such a fashion that renders the gear unavailable for use. This alternative would require fishermen to remove and stow the gangions, hooks, and buoys from the mainline and drum. The hooks could not be baited. As this alternative would not alter fishing practices, it would have neutral impacts on bluefin, other HMS, and restricted/protected species, and would not have any further impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 BiOp and in the 2006 Consolidated HMS FMP.

4.1.2.2 Alternative B 2 - Gear Measures

4.1.2.2.1 Alternative B 2a – No Action (preferred)

This alternative would make no changes to the current gear or associated restrictions on possession of BAYS and bluefin applicable to those vessels with an Atlantic Tunas Longline category permit and either a Swordfish Directed or Swordfish Incidental permit. Currently, vessels with an Atlantic Tunas Longline category permit must also have both a Swordfish Directed or Incidental permit, and a Shark Directed or Incidental permit. Each of these permit types has gear and species restrictions associated with them, and the net result is that the different combinations of permits have different applicable rules and regulations, especially as they relate to gear and retention limits. For example, vessels with pelagic longline gear on board have many associated restrictions that are triggered by the possession of this gear type, including closed areas, hook type, gangion length, and bait restrictions; Protected Species Safe Handling, Release and Identification Workshops attendance, observer coverage, etc. Because the No Action alternative would not modify the regulations regarding the use of buoy gear, there would be no increase in flexibility for fishermen, above what already exists under current regulations, regarding the use of buoy gear.

Currently, buoy gear is used at night because swordfish are the targeted catch. Regulations require that buoy gear be retrieved by hand, which can discourage fishermen from deploying large amounts of line and, thus the depth at which the gear is fished. Because of this logistical limitation on the depth that the gear is fished, buoy gear is used in the upper water column (approximately 0-300 ft) at night when swordfish rise in the water column from deeper depths to follow food sources associated with the deep scattering layer.

Most buoy gear use currently occurs in and near the Florida Straits because of the close proximity of the Gulf Stream and productive swordfish habitat to ports along the east Florida coast. Because most buoy gear use occurs at night in and near the Florida Straits, there is limited buoy gear catch information from areas outside the Florida Straits and from sets made during the day.

Buoy gear fishing effort, catch, and landings data from logbooks from 2007-2011 are reported in the 2012 SAFE Report (NMFS 2012). In 2011, 50 vessels conducted 603 trips with an average of 12.2 buoy gears deployed per trip. The average number of hooks per gear was 1.2 and the total number of hooks set was 8,858. In 2011 logbook data, swordfish were 97% (by weight) of total buoy gear landings and comprised 85% (by number) of buoy gear catch. Of the swordfish caught by buoy gear in 2011, 51% (by number) were kept, 45% were released alive, and 4% were released dead. After undersized swordfish, the next most commonly caught bycatch species in 2011 were night shark, hammerhead shark (unspecified), blue shark, blacktip shark, and silky shark, which comprised a combined 5% of the total catch by number.

The Florida east coast buoy gear fishery for swordfish was characterized by Kerstetter and Bayse (2009) who found that the catch rate of swordfish with buoy gear in this area was higher than pelagic longline gear in the Atlantic. Kerstetter and Bayse also found that buoy gear used off the Florida east coast had a lower catch rate of bycatch species than pelagic longline gear.

Under the No Action alternative, Alternative B2a, and assuming no change in the amount of pelagic longline fishing effort over space and time, the catch rates of pelagic longline target and bycatch species are not anticipated to change. Therefore, the direct and short-term ecological impacts would be neutral.

4.1.2.2.2 Alternative B 2b – Authorization of Vessels with a Swordfish Incidental Permit to Use Buoy Gear to Catch Swordfish

This alternative would modify the restrictions applicable to the Swordfish incidental permit to provide additional flexibility for vessels to utilize buoy gear when fishing for swordfish. Vessels with a Swordfish Incidental permit would be allowed to fish with buoy gear, with the exception of vessels fishing in the Florida East Coast closed area (Figure 2.4). Swordfish Incidental vessels in all locations outside the Florida East Coast closed area would be required to follow all existing buoy gear regulations including being limited to 35 buoys onboard the vessel.

Impacts on Fishing Effort

In 2012, there were 73 Swordfish Incidental permits issued, the majority (52%) of which were issued to vessels home ported in Florida (NMFS 2012). Other states where Swordfish Incidental permits are issued include New Jersey, North Carolina, Louisiana, Texas, New York, Massachusetts, and South Carolina. The authorization of buoy gear by these 73 vessels under Alternative B 2b would increase the number of vessels allowed to use buoy gear by 40% from the existing 184 vessels with a Swordfish Directed permit.

It is difficult to estimate the impacts of providing additional opportunities to use buoy gear. Vessels with Swordfish Incidental permits may choose to fish buoy gear instead of or in addition to pelagic longline gear and may use buoy gear in areas where it is not currently used very frequently, if at all. The available buoy gear catch, bycatch, and effort information described under Alternative B 2a above is from gear used in and near the Florida Straits. There is little currently available data for buoy gear use outside of the Florida Straits. Some data are currently being collected from a small number of buoy gear boats participating in a demonstration fishery in the Northern Gulf of Mexico. This alternative may increase the amount of fishing effort with buoy gear.

Impacts on Bluefin and Other HMS

As mentioned under Alternative B 2a above, buoy gear used in and near the Florida Straits has been shown to be efficient at catching swordfish with a relatively low bycatch rate. However, due to a lack of data, it is unknown what the catch and bycatch of buoy gear would be in other areas of the Atlantic, Gulf of Mexico, U.S. Caribbean, and high seas. This lack of information makes assessing an expansion in the use of buoy gear for swordfish difficult, especially considering the potential to interact with adult bluefin tuna in the Gulf of Mexico or protected species in other areas such as off the Outer Banks of North Carolina (as examples).

At this time, NMFS does not prefer alternative B 2b because of the lack of available information needed to assess the ecological impacts of expanded buoy gear use when used to target

swordfish. NMFS will continue to assess additional information as it becomes available and may re-evaluate buoy gear fishery regulations in the future.

4.1.2.2.3 Alternative B 2c – Allow Vessels with a Swordfish Directed or Incidental Permit and an Atlantic Tunas Longline Permit to Retain BAYS and Bluefin when Fishing with Buoy Gear

This alternative would allow vessels with an Atlantic Tunas Longline category permit and either the Swordfish Directed or Incidental permits to retain BAYS and bluefin when fishing with buoy gear. This alternative would have no regulatory effect on vessels with a Swordfish Incidental permit, unless Alternative B 2b is adopted. Without Alternative B 2b, this alternative would provide additional flexibility for vessels with a Swordfish Directed permit and an Atlantic Tunas Longline permit.

Impacts on Fishing Effort

As described under Alternative B 2a above, buoy gear is currently used in and near the Florida Straits at night to fish for swordfish. Tuna fishing commonly occurs during the daytime, thus authorization of buoy gear for Atlantic tunas would provide incentive for fishermen to use buoy gear during the daytime. Thus, Alternative B 2c would represent an expansion of the time period (to daylight hours) that buoy gear would be used. In 2012, NMFS finalized Amendment 4 to the 2006 Consolidated HMS FMP that created the HMS Commercial Caribbean Small Boat (CCSB) permit, which is valid only in the U.S. Caribbean. Vessels must be $\leq$45 ft length overall to be eligible for the permit. Under this permit, buoy gear was authorized for the harvest of BAYS tunas with retention limit of 8 BAYS per vessel per trip. This permit was created with restrictive measures in place that, among other things, limited the use of buoy gear for BAYS tunas to the small scale fisheries of the U.S. Caribbean. Landings information from vessels with the CCSB permit are obtained by the territorial governments and provide to NMFS. There have been 16 CCSB permits issued since the CCSB permit became available in late 2012 and landings data are not yet available from those vessels. This alternative could increase fishing effort with buoy gear.

Impacts on Bluefin and Other HMS

Due to a lack of data, it is unknown what the catch and bycatch of buoy gear would be when used during the daytime. This lack of information makes assessing an expansion of the use of buoy gear for BAYS and bluefin difficult, especially considering the potential to interact with some unknown amount of additional bycatch of other species, including billfish, which feed near the surface during daylight hours or protected species in areas off the Outer Banks of North Carolina (as examples). Alternative B 2c would create possibilities for some unknown amount of BAYS and bluefin tuna harvest throughout the Atlantic, Gulf of Mexico, U.S. Caribbean, and high seas.

At this time, NMFS does not prefer Alternative B 2c because of the lack of available information needed to assess the ecological impacts of expanded buoy gear use when used to target BAYS or

bluefin in the Atlantic and Gulf of Mexico. NMFS will continue to assess additional information as it becomes available and may re-evaluate buoy gear fishery regulations in the future.

4.1.2.3 Alternative B 3 - Access to Pelagic Longline Closed Areas

These alternatives would annually allow a small number of vessels to fish commercially in the current DeSoto Canyon, Charleston Bump, and Northeastern pelagic longline closed areas; and the portion of the Florida East Coast closed area north of 28° 17' 10" North latitude, east of the 100 fathoms curve (near Cape Canaveral). The alternatives include various conditions including carrying an observer, reporting catch via VMS, and other vessel-specific criteria. Specifically, the alternatives in this section consider allowing some limited, conditional access to these areas to provide some limited additional fishing opportunities and to collect commercial fishery data that may inform future management decisions and stock assessments and help to evaluate the effects of the closures. The limits and conditions of the alternative (described below) would ensure the continuation of the protective effects of the closures.

4.1.2.3.1 No Action

This alternative would maintain the current regulations that prohibit pelagic longline vessels from fishing in a closed area with pelagic longline gear during the time of the closure. The biological impacts would be neutral because there would be no change to the closed area regulations and no additional fishing activity in the areas.

4.1.2.3.2 Conditional Access to Certain Pelagic Longline Closed Areas (Preferred)

Methods

A qualitative analysis was conducted for this alternative instead of a quantitative analysis for several reasons. Historical catch data from prior to the implementation of each closure would be of limited use in assessing the potential future impacts of this alternative because historical catch rates may not be indicative of current or future catch rates. Prior to the closures, J-hooks were utilized and currently circle hooks are required. Secondly, the stock status of target species such as swordfish and sharks has changed (turtles and billfish are roughly the same). Specifically, swordfish were overfished when the closures were implemented but have are now rebuilt whereas dusky shark stock status has worsened. Lastly, it is likely that fishing behavior and the pelagic longline fleet characteristics are different from the time prior to the implementation of the closed areas.

Florida East Coast, Charleston Bump, and DeSoto Canyon Closed Areas

The Florida East Coast, Charleston Bump, and DeSoto Canyon Closed Areas were implemented as part of a bycatch reduction strategy, based on three objectives: (1) To maximize the reduction in the incidental catch of billfish and of swordfish less than 33 lb dressed weight; (2) to minimize the reduction in the target catch of larger swordfish and other marketable species; and (3) to ensure that the incidental catch of other species (e.g., bluefin , marine mammals, and

turtles) either remains unchanged or is reduced. NMFS recognized that all three objectives might not be met to the maximum extent and that conflicting outcomes would require some balancing of the objectives. The implementation of these closed areas was the result of a comprehensive approach to time/area closures and NMFS considered a broad range of closure alternatives (NMFS 2001).

The Florida East Coast Closed Area was implemented in 2001 and extends along the full east coast of Florida between 31° 00’ N. lat., near Jekyll Island, Georgia, and Key West, FL. The area is defined as: the Atlantic Ocean seaward of the inner boundary of the U.S. EEZ from a point intersecting the inner boundary of the U.S. EEZ at 31°00' N. lat. near Jekyll Island, Georgia, and proceeding due east to connect by straight lines the following coordinates in the order stated: 31°00' N. lat., 78°00' W. long.; 28°17' 10" N. lat., 79°11' 24" W. long.; then proceeding along the outer boundary of the EEZ to the intersection of the EEZ with 24°00' N. lat.; then proceeding due west to the following coordinates: 24°00' N. lat., 81°47' W. long.; then proceeding due north to intersect the inner boundary of the U.S. EEZ at 81°47' W. long. near Key West, Florida. This area is closed year-round to pelagic longline vessels.

The Charleston Bump Closed Area was implemented on February 1, 2001, and is located off Georgia, South Carolina, and North Carolina, between 31° 00’ N. lat., near Jekyll Island, Georgia, and 34° 00’ N. lat., near Wilmington Beach, North Carolina, to 76° 00’ W. long. The area is defined as: the Atlantic Ocean seaward of the inner boundary of the U.S. EEZ from a point intersecting the inner boundary of the U.S. EEZ at 34°00' N. lat. near Wilmington Beach, North Carolina, and proceeding due east to connect by straight lines the following coordinates in the order stated: 34°00' N. lat., 76°00' W. long.; 31°00' N. lat., 76°00' W. long.; then proceeding due west to intersect the inner boundary of the U.S. EEZ at 31°00' N. lat. near Jekyll Island, Georgia This area is closed to pelagic longline vessels from February 1 through April 30 each year.

The DeSoto Canyon Closed Area was implemented on November 1,2000 based on the following rationale: (1) “ The first is to prohibit fishing in an area with an historically low ratio of swordfish kept to number of undersized swordfish discarded, which over the period of 1993 to 1998 has averaged less than one swordfish kept to one swordfish discarded”; (2) “The second is to prevent further increases in swordfish discards as a result of effort displacement into this area from the Florida East Coast year-round closure”. The area is bounded by straight lines connecting the following coordinates, in the order given: 30°00' N. lat., 88°00' W. long.; 30°00' N. lat., 86°00' W. long.; 28°00' N. lat., 86°00' W. long.; 28°00' N. lat., 84°00' W. long.; 26°00' N. lat., 84°00' W. long.; 26°00' N. lat., 86°00' W. long.; 28°00' N. lat., 86°00' W. long.; 28°00' N. lat., 88°00' W. long.; 30°00' N. lat., 88°00' W. long. The DeSoto Canyon Closed Area is closed to pelagic longline vessels year-round.

Northeastern Closed Area

The Northeastern Closed Area was implemented on July 1, 1999, in order to reduce incidental catch of bluefin by pelagic longline gear, while minimizing the negative impact to targeted fishing activities (64 FR 29090; May 28, 1999). The Northeastern Closed Area is bounded by straight lines connecting the following coordinates, in the order given: 40°00' N. lat., 74°00' W.

long.; 40°00' N. lat., 68°00' W. long.; 39°00' N. lat., 68°00' W. long.; 39°00' N. lat., 74°00' W. long. This area is closed to pelagic longline vessels during the month of June.

Impacts on Fishing Effort

It is unknown whether any fishing that occurs in the closed areas would represent an increase in fishing effort, or a shift, especially in consideration of the other Amendment 7 alternatives that this alternative may be combined with. For example, as a result of the preferred gear restricted areas, there may be a shift in the location of fishing effort, but such effort may not represent an increase in overall effort. Additionally, vessels that may be able to fish in the closed areas would otherwise fish in open areas so the only change in fishing effort is the location, not the amount.

Impacts on Bluefin and Other HMS

Given the improved stock status of swordfish, as well as the gear modifications required since the closed areas were implemented (circle hooks, bait restrictions, workshop requirements, weak hooks, etc.), limited conditional access to the Florida East Coast, DeSoto Canyon, Charleston Bump, and Northeastern pelagic longline closed areas is expected to have neutral impacts on swordfish. The impacts on bluefin and other HMS species are expected to be neutral and short term due to the limited number of potential trips. This option would allow access to certain pelagic longline closed areas on a limited basis. Eligibility for access to certain closed areas would be based on performance criteria as described in Alternative B 1c. Vessels that are determined by NMFS to have relatively low rate of interactions with bluefin based on past performance and that are compliant with reporting and monitoring requirements would be allowed to fish in these areas using pelagic longline gear if an observer is onboard. Vessels that have not demonstrated their ability to avoid bluefin would not be allowed to fish with pelagic longline gear in these areas; or if a vessel can avoid bluefin, but has poor compliance with reporting and monitoring requirements, it would not be allowed to fish with pelagic longline gear in these areas even if an observer is onboard. The specific numeric scoring criteria would be the same as for Alternative B 1c.

Qualified vessels (based on the performance criteria) that are also selected for observer coverage from the Pelagic Observer Program for a given statistical area would be able to access the Florida East Coast, DeSoto Canyon, Charleston Bump, and Northeastern pelagic longline closed areas in the statistical area for which the vessel was selected if the vessel has an observer onboard. For example, a qualified vessel selected for observer coverage during January-March (Quarter 1) and selected to fish within the Gulf of Mexico, would have the ability to fish in the DeSoto closed area for trips on which an observer is onboard the vessel. If the vessel does not have an observer onboard, it would not be allowed to fish in the closed area. It is unknown whether any fishing effort in the closed areas would be new effort or represent a shift in the location of current fishing effort.

Both the application of performance criteria and the requirement for an observer would limit the maximum possible number of trips into closed areas. The target rate of observer coverage is 8% of pelagic longline sets. The Pelagic Observer Program protocols are described in Alternative B 1c (Chapter 2). It is reasonable to assume that future deployment of observers will remain at or

near historical levels, based on both the amount of future fishing effort in the pelagic longline fishery, as well as the likely future limitations on observer funding. Therefore, the historical rates of observer coverage are useful for projecting the maximum number of trips that may be taken in the closed areas under this alternative. Table 4.11 below provides information on the number of observed trips per quarter in the relevant statistical areas.

Table 4.18 Range and Average Number of Observed Trips by Statistical Area, from 2006 through 2010. (Source: NMFS Pelagic Observer Program data)

Statistical Area	Range of Observed Trips per Quarter	Average Number of Observed Trips per Quarter
FEC	1 – 9	5
GOM*	4 – 80	20
MAB	1 – 14	5
NEC	1 – 4	2
SAB	1 – 9	2

For example, based on the average number of observed trips in the DeSoto Canyon Closed Area (a year-round closure in the Gulf of Mexico statistical area), the maximum number of trips into this closed area would be 80 (approximately 20 per quarter). In contrast, the maximum number of trips into the Northeast Closured Area (closed for the month on June, located in the Northeast Coastal statistical area) is likely to be about 2.The maximum number of trips in the Charleston Bump Closed Area (closed February through April, located in the Mid-Atlantic Bight) would be about 5. These estimates are high, given the variable number of observed trips and the low likelihood of all observed vessels fishing in these areas.

Vessels would be required to declare through VMS (prior to leaving port) that they would be fishing in one of the areas, and would be required to report catch daily via VMS. NMFS would have the ability to terminate access to each area inseason in order to address issues including: (1) Bycatch of marine mammals or protected species that is inconsistent with the Marine Mammal Protection Act, Pelagic Take Reduction Plan, or the Pelagic Longline BiOp (2004); (2) failure to achieve or effectively balance the objective of reducing dead discards with the objective of providing fishing opportunity; or (3) bycatch of bluefin or other HMS species that may be inconsistent with the objectives or regulations or the 2006 Consolidated HMS FMP, or ICCAT recommendations.

4.1.2.4 Summary of Impacts of Area Based Alternatives

Table 4.19 Summary of Biological Impacts of Area Based Alternatives

Alternative	Quality	Timeframe	Impacts
Gear Restricted Areas			
No Action	Direct	Long-term	O / Θ –
Cape Hatteras Gear Restricted Area	Direct	Long-term	Ø +
Cape Hatteras Gear Restricted Area with Limited Conditional Access	Direct	Long-term	Ø +
Allow Pelagic Longline Vessels to Fish under General Category Rules	Direct	n/a	o
Gulf of Mexico EEZ Gear Restricted Area (March –May)	Direct	Long-term	Ø +
Small Gulf of Mexico Gear Restricted Area (April – May)	Direct	Long-term	Ø +
Gulf of Mexico Gear Restricted Area (year-round)	Direct	Long-term	Ø +
Pelagic and Bottom Longline Transiting Closed Areas	Indirect	n/a	o
Gear Measures			
No Action	Direct	n/a	o
Authorization of Swordfish Incidental Permit to Use Buoy Gear	Direct	Short-term	O / Θ +
Allow BAYS and Bluefin to be Retained with Buoy Gear	Direct	Short-term	O / Θ
Access to Closed Areas Using Pelagic Longline Gear			
No Action	Direct	n/a	o
Limited Conditional Access to Closed Areas	Direct	n/a	o
Performance Criteria for Access to Closed Areas	Direct	n/a	o

4.1.3 Bluefin Tuna Quota Controls

4.1.3.1 Alternative C 1 - No Action

Under this alternative, there would be no change to the current regulations that restrict pelagic longline vessel *retention* of bluefin, but which do not restrict the amount of dead discards. Under current regulations, when the projected landings of bluefin by pelagic longline vessels reaches the quota, Longline category vessels are prohibited from retaining and landing bluefin, but may continue to fish for their target species and must discard bluefin. The amount of bluefin caught by vessels fishing with pelagic longline gear would not be capped. Although there are many factors that influence the amount of fishing effort in the pelagic longline fishery, and the amount of bluefin caught would be indirectly restrained by other regulations and factors, there would not be a specific limit on the amount of bluefin the fishery would be allowed to catch.

The net impact of the no action alternative on bluefin would be continued discarding of bluefin. Based on the catch in recent years, it is likely that the resultant total catch of bluefin by the Longline category would continue to exceed the Longline category quota of 8.1%. During 2009, 2010, and 2011, the amount of bluefin discarded by the Longline category was greater than the amount of bluefin landed (by pelagic longline vessels). Total catch of bluefin by the Longline category ranged between one and two times the adjusted quota(278.3 mt in 2009; 221 mt in 2010; 213.4 mt 2011). The discarded fish represent a source of fishing mortality, in addition to the landed fish. Although NMFS would account for the bluefin discards by the pelagic longline fishery such that United States would not likely exceed its total bluefin quota, the need to account for this catch would continue to make quota accounting challenging, and increase uncertainty in the fishery. If the need to account for large numbers of discarded bluefin makes it more likely that the overall quota would be exceeded, or if the mortality associated with discarded fish decreases spawning potential, discards may undermine the attainment of the biological objectives of the 2006 Consolidated HMS FMP. Although it is unknown what the survival rate of discarded bluefin is, it can be said with certainty that a portion of the discarded fish will be dead when they are discarded, or will subsequently die as a result of the direct or indirect effects of capture. In addition to the potential biological impacts of discards, there are economic and social impacts associated with wasted fish, and the need to account for discarded fish (described in Chapter 5).

4.1.3.2 Alternative C 2 - Individual Bluefin Quotas (IBQs)

This alternative would implement individual bluefin quotas (IBQs) for vessels in the Atlantic Tuna Longline category that would result in prohibiting the use of pelagic longline gear when the vessel's individual bluefin quota has been caught. The allocation of an IBQ share to individual vessels/permits as well as a provision for leasing of that quota share would reduce bluefin dead discards by capping the catch (landings and dead discards),and providing incentives to reduce discarding and flexibility for vessels to continue to operate. Compared to the No Action Alternative, IBQs would reduce dead discarding by capping catch of bluefin because the cap would limit the landings and dead discards of pelagic longline vessels. The IBQ program would have direct beneficial biological impacts on bluefin due to the restriction of total bluefin catch. Restriction of the Longline category bluefin catch through the use of IBQs would make it less likely that the overall bluefin quota would be exceeded because the Longline category would be subject to a specific, enforceable limit on the amount of bluefin that may be caught. The IBQ program would essentially limit fishing mortality by the Longline category, and therefore may indirectly enhance bluefin spawning potential and facilitate achievement of the biological objectives of the 2006 Consolidated HMS FMP. The amount of target species catch such as swordfish and yellowfin would depend primarily upon the amount of fishing effort and whether the IBQs become constraining. If the IBQs result in reductions in pelagic longline fishing effort, because bluefin quota constrains some vessels, there may be some minor beneficial biological impacts on non-bluefin target stocks. If the number of active vessels declines, the amount of total bluefin catch could be further reduced and the catch of target species may be reduced further.

Not all of the individual elements of the IBQ program are analyzed separately with respect to their biological impacts. Some of the elements of the IBQ program (e.g., reporting and monitoring)have economic and social impacts, but only indirect biological impacts.

4.1.3.2.1 Bluefin Allocations

The amount of overall fishing effort and the amount of bluefin catch would depend not only upon the total Longline bluefin quota (see Section 2.1, Allocation Alternatives, and Section 4.6.1), but also may be affected by the number and type of vessels eligible to receive bluefin allocations, the amounts of quota allocated to individual vessels, and the distribution of quota among the vessels. For most pelagic longline vessels, the amount of bluefin allocation is not likely to change the amount of fishing effort because most pelagic longline vessels do not interact with many bluefin, and other factors are likely to be more important. The historical data indicate that the majority of bluefin have been caught by relatively few vessels (Figure 3.19). Other factors that will limit fishing effort are regulations such as gear requirements and closed areas, fuel costs, market conditions, fish availability, oceanographic conditions (e.g., the Gulf Stream location), weather, and safety considerations. However, for some vessels, individual bluefin allocations would constrain fishing effort. The constraining effect of the IBQs on the pelagic longline fishery as a whole is discussed here, but the impacts of IBQ allocations on individual vessels are discussed in Chapter 5. The overall biological impact of IBQ allocations would be direct, short-term, beneficial and moderate because they would limit the landings and dead discards of bluefin by the Longline category and provide incentives to reduce interactions with bluefin.

As discussed in detail in Section 4.1.6.1.3, the number of vessels that would be constrained by their IBQ share (if they do not alter fishing behavior) depends upon the specific bluefin quota share formula. Under Alternative C 2b.1 (Equal Shares), between 14% and 35% of vessels would be constrained by their IBQ quota share, depending upon the amount of quota allocation. Under Alternative C 2b.2 (Based on Designated Species Landings), between 24% and 42% of vessels would be constrained by their IBQ share. Under Alternative C 2b.3 (Preferred Alternative; Based on Designated Species Landings and the Ratio of Bluefin Catch to Designated Species), between 21% and 36% of vessels would be constrained by their IBQ share. Based on this information, there would be incentives to avoid bluefin and there may be reductions in fishing effort, if constrained vessels neither avoid bluefin nor obtain additional bluefin quota. Additional quantitative information on the biological impacts of the IBQ allocations is provided in Section 4.1.6.1.3 (Combining the Quota Allocation Alternatives with the IBQ Allocation Alternatives). The impacts of IBQ allocations on individual vessels, which are considered as economic and social impacts, are analyzed in Chapter 5.

Under Alternative C 2a.1, any permitted vessel would be eligible to receive quota shares (253 vessels), and under Alternative C 2a.2, only active vessels would be eligible to receive quota shares (161 vessels). Allocation of quota shares to a smaller number of vessels may reduce the likelihood that a permitted vessel without quota shares will fish.

Whether or not a bluefin allocation is constraining to a particular vessel was quantified using the same data that was utilized to develop the individual bluefin quota allocations (based on the ratio of bluefin to designated species landings).

4.1.3.2.2 Leasing

With respect to the scope of the leasing, if leasing were allowed between the Longline and Purse Seine Categories, the net amount of bluefin interactions by the pelagic longline fishery under a system of IBQs would likely be more than under a system in which such leases were prohibited. Because the potential costs of obtaining new quota may be relatively high, the amount of available quota for leasing would likely exceed the amount of quota actually leased and used. The total amount of landings and dead discards would depend upon the combination of alternatives. A combined amount of landings and dead discards greater than about 216 mt would represent an increase over the historical average (2006 to 2011).Sections 4.1.6.1.2 and 4.1.6.1.4 provide data on the amount of quota available to the Longline category under various combinations of alternatives (reallocation alternatives and IBQ initial allocation formulas).Leasing would contribute toward an effective IBQ system, but would not have a biological impact distinct from the impact of the IBQ system as a whole.

4.1.3.2.3 Monitoring and Enforcement

The monitoring and enforcement alternatives of the IBQ system include VMS reporting, electronic monitoring, NMFS authority to close the pelagic longline fishery, NMFS authority to extrapolate dead discards, and increased observer coverage. All of these management measures would contribute toward an effective IBQ system. The IBQ alternative would require a method of accounting for both landings and dead discards in order to fully account for the catch contributing toward the quota, and monitoring the status of the quota. In the discussion of the impacts of this alternative, the separate elements of catch that contribute towards the quota (landings and dead discards) are not distinguished. The discussion of the biological impacts includes the assumption that inseason monitoring of dead discards and landings is occurring, or if only inseason monitoring of landings is occurring, that dead discards are accounted for by deducting quota ‘up front’ from the Longline or Reserve categories. The enforcement and monitoring alternatives would enhance the likelihood that the IBQ program will achieve its biological objective. Under an IBQ program, there may be increased incentives to misreport catch, or not comply with other aspects of the regulations due to the accountability at the level of individual vessels. Additional management uncertainty would result from the possibility that some vessels will misreport or illegally discard fish. Management uncertainty is a useful concept in evaluating management tools in a qualitative way, and for the purposes of this document, is defined as the ability to control catch and the adequacy of catch data. Low management uncertainty is a high likelihood that management measures will result in a level of catch that is less than or equal to the catch objective, and high management uncertainty is a lesser likelihood that management measures will result in the desired level of catch.

The monitoring and enforcement measures would mitigate this management uncertainty, and when compared with the No Action Alternative, the IBQ alternative would result in increased incentives to avoid bluefin and an increase in overall accountability. This increase in overall accountability for bluefin in the pelagic longline fishery would contribute toward an effective IBQ system, but would not have a biological impact distinct from the impact of the IBQ system as a whole.

NMFS' ability to take action inseason to close the fishery when it projects that the total quota will be caught would provide an enforceable means to stop the landings and dead discarding of bluefin in order to prevent exceeding the quota. Furthermore, NMFS would be able to close the fishery if there is high uncertainty regarding the amount of catch of bluefin relative to the quota. This 'backstop' would further ensure that the biological impacts would be beneficial. The amount of target species catch such as swordfish and yellowfin would depend primarily upon the amount of fishing effort and whether the IBQs become constraining. If the IBQs in reducing pelagic longline fishing effort, there may be some minor positive biological impacts on target stocks. Additional analysis of NMFS closure of the Longline category is found in Section 4.1.3.4 (Biological Impacts of NMFS Closure of Pelagic Longline Fishery)

VMS reporting of dead discards, electronic monitoring, and NMFS ability to extrapolate observer data and implement new observer requirements would provide enhanced data with which to manage bluefin catch by the pelagic longline fishery via inseason action.

4.1.3.2.4 Alternative C 2l.1 - Measures Associated with an IBQ - Elimination of Target Catch Requirement (Preferred)

In this alternative, the current target catch requirements for pelagic longline vessels would be eliminated. This measure would be implemented in conjunction with a pelagic longline IBQ catch cap. The target catch requirement acts at the level of an individual trip, limiting bluefin retention, but does not prevent discarding of bluefin. The target catch requirement therefore contributes to the discarding of bluefin if the amount of target catch species is insufficient to retain the numbers of bluefin caught. If an annual pelagic longline IBQ catch cap is implemented, elimination of the target catch requirement would reduce discarding, and enable vessels to fish for their target species in a more flexible manner. A vessel that has caught some bluefin but has insufficient target species to meet the target catch requirement would no longer have to choose between discarding bluefin or fishing for more target species, but would be able to stop fishing with any ratio of bluefin to target catch on board. To the extent that this alternative would eliminate the fishing scenario where a vessel fishes for additional target species in order to satisfy the ratio of target catch to bluefin, this alternative may reduce fishing effort. The annual IBQ catch cap would replace the target catch requirement as the means of limiting the amount of bluefin caught on an annual basis, instead of on a per trip basis. The net result would be a direct, beneficial minor, short-term biological impact.

Impacts on Bluefin

NMFS analyzed logbook data to explore patterns in bluefin retained and discarded in relation to the amount of target catch, and infer the reason for discarding on historical trips. This data illustrates discarding as a result of the target catch requirements, and supports the conclusion that elimination of the target catch requirement would reduce discarding.

Alternatives contains 2011 data on the number of trips landing bluefin (as well as the number of Bluefin kept), organized according to the amount of bluefin allowed to be retained (per the target catch requirements). The underlying data was analyzed according to the amount of target species on a trip (all fish species landed, not including bluefin).

Table 4.20 Number of Trips on Which Bluefin were Kept by Amount of Allowed Bluefin per Trip (based on target catch retained per trip). 2011 Logbook Data.

Allowed BFT	# BFT Kept						Total Trips
	0 (BFT kept)	1	2	3	4	10	
0	242 (trips)	21	1	1			265
1	459	88	10		1	1	559
2	322	54	66	6			448
3	3			1			4
Total Trips	1026	163	77	8	1	1	1276

For example, Table 4.15, for those trips on which the allowable amount of bluefin was zero (because those trips had less than 2,000 lb of target species retained), there were 242 trips with zero bluefin kept (which is compliant with the target catch requirement), but there were 23 trips that do not appear to be in compliance with the target catch requirements. NOAA's Office of Law Enforcement is aware of this information.

These data were used to derive a compliance rate for each year. This information was summarized for the years 2006 through 2011 and is shown in Table 4.20. Table 4.20 also includes the number of trips at each target catch level in order to show their relative frequency.

Table 4.21 Percentage of Trips Compliant with Target Catch Requirements and Number of Trips for Each Target Catch Level.(Logbook Data)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**
Compliant trips	98 %	97 %	97 %	97 %	96 %	97 %
Non-Compliant trips	2 %	3 %	3 %	3 %	4 %	3 %
< 2,000 lb (0 BFT allowed)	295 (trips)	300	362	308	364	265
2,000 to 5,999 lb (1 BFT allowed)	524	724	686	631	603	559
6,000 to 29,999 lb (2 BFT allowed)	467	472	344	471	310	448
30,000 lb and over (3 BFT allowed)	2	8	7	12	7	4

According to the logbook data, a high percentage of the trips were in compliance with the target catch requirements with respect to the number of bluefin that were retained. As mentioned above, these logbook data were also utilized to infer the reason for discarding. To infer the

reason for discarding, the analysis focused only on trips with discards. Two classifications of trips were created: 1) Discarding after the maximum allowable number of bluefin had been retained, and; 2) discarded for another reason (if the maximum amount of bluefin had not been retained). The data were organized according to the allowable amount of bluefin that could be retained per trip, as well as the amount of bluefin retained per trip. For example, if a trip is allowed retention of two bluefin, but there was zero or one bluefin retained on the trip, and bluefin were discarded, it was concluded that the reason for discarding was not the target catch requirement (because the number of bluefin on that trip did not appear to be at the maximum amount). Similarly, trips on which bluefin were discarded and for which the number of retained bluefin was at the maximum allowed number, the discard reason was concluded to be the target catch requirement. Table 4.21 shows data for 2011 as an example.

For example, based on Table 4.21, during 2011, on trips where 1 bluefin was allowed to be retained, there were 10 trips that discarded bluefin even though the trips had zero bluefin retained, and 13 trips that discarded bluefin that had retained 1 bluefin. Similarly, on trips where 2 bluefin were allowed to be retained, three were 10 trips that discarded bluefin even though the trips had zero bluefin retained, and there were 20 trips that discarded bluefin tuna where they had retained 2 bluefin. In Table 4.22, the data is summarized for trips with between 2,000 and 5,999 lb of target catch (Allowed bluefin = 1; and for trips between 6,000 and 29,999 lb (Allowed BFT = 2) to determine the reason for discarding bluefin. For trips with less than 2,000 lb of target catch (Allowed BFT = 0), the data were not summarized because the discard reason could not be inferred. There was very little data for trips with target catches of 30,000 lb or greater.

Table 4.22 Number of Trips on Which Bluefin Discarded, by Number of Bluefin Retained, for 2011 Trips on Which One and Two Bluefin Were allowed to be Retained. Source: Logbook Data

	BFT Retained	BFT Discards	
		0	>0
1 BFT allowed to be retained	0	449 trips	10 trips
	1	75	13
	2	9	1
	4	0	1
	10	1	0
	Total	534	25
2 BFT allowed to be retained	0	312 trips	10 trips
	1	46	8
	2	46	20
	3	1	5
	Total	405	43

Table 4.23 Percentage of Trips Discarding Due to Retaining the Maximum Allowable Number of Bluefin, or Other Reason for Discards. Source: Logbook Data

Discard Reason	Allowed BFT	Percentage of Trips					
		2006	2007	2008	2009	2010	2011
BFT maximum hit	1	80	67	77	79	61	60
Other Reason		20	33	23	21	39	40
BFT maximum hit	2	68	40	40	51	49	58
Other Reason		32	61	60	49	51	42

In other words, according to Table 4.22, the target catch requirement was the reason for discarding between 60 and 80 percent on trips where one bluefin was allowed to be retained (target catch was between 2,000 and 6,000 lb, and one bluefin was retained). Similarly, NMFS concluded that the target catch requirement was the reason for discarding for between 40 and 68 percent of trips on which two bluefin were allowed to be retained (target catch was between 6,000 and 30,000 lb, and two bluefin were retained).

Impacts on Fishing Effort and Other HMS

Elimination of the target catch requirement would facilitate fishing for the target species by removing the requirement that a certain amount of target species be landed in order to land a particular amount of bluefin. Although the quota control alternatives would constrain fishing effort based on bluefin quota, there would not be a regulatory link between the amount of bluefin and the amount of target catch.

4.1.3.2.5 Alternative C 2l.2 - Mandatory Retention of Legal-Sized Dead Fish (Preferred)

Under this alternative, pelagic longline vessels would be required to retain all legal-sized bluefin tuna that are dead. This alternative is intended to be implemented in conjunction with the IBQ alternative and elimination of the target catch requirements. Requiring the retention of all legal-sized dead bluefin is intended to reduce dead discards and would eliminate the situation where it is legal to discard a legal-sized dead bluefin. Because these fish would be required to be retained, legal discards and the waste of fish would be decreased, and it may be more likely that such fish are accurately accounted for, and result in a positive use (marketed, used for scientific information, etc.). The biological impacts are expected to be direct, short-term, beneficial and minor. Based on the data in Chapter 3 regarding size of dead discards, this alternative (if implemented with Alternative C 21.1, Elimination of the Target Catch Requirement) would result in retention of legal-sized bluefin that under current regulations would be discarded . There are legal sized fish that are currently discarded. Table 4.23 contains information on the number of live and dead bluefin tuna caught by the pelagic longline fishery.

Table 4.24 Reported Disposition of Bluefin Tuna Reported by Pelagic Longline Fishery Source: NMFS logbook data.

Year	Kept	Discarded Dead	Discarded Alive	Total Number of Interactions	Percent of Interactions Discarded Alive
1999	270	221	383	874	44 %
2000	236	354	384	974	39 %
2001	183	152	196	531	37 %
2002	178	284	309	771	40 %
2003	275	361	520	1156	45 %
2004	476	475	556	1507	37 %
2005	376	289	477	1142	42 %
2006	261	284	549	1094	50 %
2007	337	387	958	1682	57 %
2008	343	414	1003	1760	57 %
2009	629	404	886	1919	46 %
2010	392	401	1087	1880	58 %
2011	347	246	519	1112	47 %
Average	331	338	602	1262	46 %

Based upon information from 1999 through 2011, approximately 46% of the bluefin caught were released alive. Although this information does not indicate how many bluefin may be retained or discarded under this alternative (compared to the No Action Alternative), it is relevant to considering the biological impacts of dead discards. Of those fish discarded, approximately 46% were discarded alive.

4.1.3.3 Alternative C 3 - Regional and Group Quotas

4.1.3.3.1 Regional Quotas

Regional catch caps would close designated geographic regions to the use of pelagic longline gear when it is projected that the relevant bluefin tuna cap will be caught. Compared to the No Action Alternative, the regional catch cap alternative would reduce dead discarding by capping catch of Bluefin. The overall biological impact of regional quotas is expected to be direct, moderate beneficial and short-term as a result of capping the amount the bluefin tuna that the pelagic longline fishery may land or discard dead, and prohibiting the use of pelagic longline gear when this level is projected to be reached. Restriction of the Longline category bluefin catch may make it less likely that the overall quota would be exceeded, and may enhance spawning potential and facilitate achievement of the biological objectives of the 2006 Consolidated HMS FMP. The amount of overall fishing effort and the amount of bluefin catch would depend primarily upon the amount of total bluefin quota. The bluefin catch may also be further constrained by the regional quotas. Compared with the No Action Alternative, implementation of regional catch caps may result in different levels of catch on a regional basis. The relative percent of the quota allocated to each region would determine the maximum catch

of bluefin for each region. As discussed below, the method used to account for dead discards would affect the operation of the regional quota program.

Impact on Fishing Effort, Bluefin, and Other HMS

It is difficult to predict the total amount of fishing effort that would occur under Regional quotas, and the amount of bluefin quota that would be caught. The most important factor would be the size of the Longline quota, which would be determined by the U.S. quota, as well as if an Amendment 7 quota alternative is implemented that would result in increased availability of quota for the Longline category. There is likely to be less fishing effort under the Regional quota alternative (compared with the No Action alternative) because a few vessels could catch a large number of bluefin, and cause the closure of the entire area to the use of pelagic longline gear. The historical data indicate that the majority of bluefin have been caught by relatively few vessels. The amount of target species catch such as swordfish and yellowfin tuna would depend primarily upon the amount of fishing effort and whether the regional catch caps or IBQs become constraining. If the regional catch caps reduce pelagic longline fishing effort, there may be some minor positive biological impacts on target stocks.

The amount of target species catch such as swordfish and yellowfin tuna would depend primarily upon the amount of fishing effort and whether the regional catch caps become constraining. If the regional catch caps reduce pelagic longline fishing effort, there may be some minor beneficial indirect short-term biological impacts on target stocks.

To illustrate the effect of a regional catch cap, the Mid-Atlantic Bight is used as an example. Table 4.18 shows the number of interactions, the associated conversion to metric tons, and the cumulative amount to indicate how long the catch cap would last, based on past catch patterns. This example uses a Mid-Atlantic Bight annual catch cap of 16.7 mt, (out of a total quota of mt 61.1 mt) based on Table 4.2, using the number of interactions by month in 2009, 2010, and 2011, and a conversion weight of 419 lb per fish. If a future catch cap were 16.7 mt, and the catch is similar to that in 2009, 2010, or 2011, the Mid-Atlantic Bight would close to the use of pelagic longline gear in January (2009 and 2010), or April (2011). This analysis represents the greatest biological impacts likely associated with this alternative as a result of the assumptions used. This analysis may overestimate the impacts due to the weight of the fish used (419 lb) which is heavier than the average bluefin landed in the Atlantic, and overestimates the number of interactions because the number of historical interactions includes live discards, which would not count against the quota.

In contrast, if the average weight was smaller, and the number of interactions was reduced, the quota would last longer. Even though it is difficult to predict how long a regional quota would last, it is clear that it would constrain bluefin landings and dead discards to levels below recent levels. The most important factor would be the size of the Longline quota, which would be determined by the U.S. quota, as well as if an Amendment 7 quota alternative implemented that would result in increased availability of quota for the Longline category. If the overall Longline quota were larger than 61.1, (e.g., 216.7 mt; see Sections 2.1.2 and 2.1.3, Alternatives A 2 and A 3, respectively) the regional quota for MAB would be larger (e.g., 59.2 mt), and it would take longer for the quota to be attained.

Table 4.25 Regional Quota Control Exploration of Mid-Atlantic Bight Example. Number of Interactions and Weight by Month.

Month	2009			2010			2011		
	#	mt	mt (cumulative)	#	mt	mt (cumulative)	#	mt	mt (cumulative)
Jan	94	17.7	17.7	168	31.7	31.7	33	6.2	6.2
Feb	147	27.7	45.5	226	42.6	74.3	35	6.6	12.8
Mar	87	16.4	61.9	247	46.6	121.0	1	0.2	13.0
Apr	83	15.7	77.6	7	1.3	122.3	134	25.3	38.3
May	11	2.1	79.6	33	6.2	128.5	17	3.2	41.5
Jun	8	1.5	81.1	8	1.5	130.0	37	7.0	48.5
Jul	28	5.3	86.4	17	3.2	133.2	7	1.3	49.8
Aug	1	0.2	86.6	0	0	133.2	2	0.4	50.2
Sep	0	0	86.6	11	2.1	135.3	0	0.0	50.2
Oct	17	3.2	89.8	19	3.6	138.9	2	0.4	50.6
Nov	109	20.6	110.4	275	51.9	190.8	29	5.5	56.0
Dec	142	26.8	137.2	15	2.8	193.6	24	4.5	60.6
Total	727		137.2	1026		193.6	321		60.6

4.1.3.3.2 Group Quotas

This alternative would implement a quota system with three defined bluefin quota groups and assign vessels with a valid permit to one of the three groups. The use of pelagic longline gear would be prohibited for vessels assigned to a particular quota group when it is projected that the relevant bluefin group quota will be caught. Compared to the No Action Alternative, the group quota alternative would reduce dead discards. The overall biological impact of group quotas is expected to be direct, moderate, beneficial and short-term as a result of capping the amount the bluefin tuna that the pelagic longline fishery may land or discard dead, and prohibiting the use of pelagic longline gear when this level is projected to be reached. Restriction of the Longline category bluefin catch may make it less likely that the overall quota would be exceeded, and may enhance spawning potential and facilitate achievement of the biological objectives of the 2006 Consolidated HMS FMP. The amount of overall fishing effort and the amount of bluefin catch would depend primarily upon the amount of total bluefin quota. The bluefin catch may also be further constrained by the group quotas. Compared with the No Action Alternative, implementation of group quotas may result in different levels of catch among the different quota groups. The combined amount of bluefin landings and dead discards by each quota group would determine whether the quota is attained and the use of pelagic longline gear is restricted. As discussed below, the method used to account for dead discards would affect the operation of the group quota program.

The analysis below used the specific group quotas as discussed in Chapter 2 and historical information on the number of interactions with bluefin in order to address the question of whether the quota groups would have adequate bluefin quota to continue fishing for their target species, or whether the quota would be attained. To determine if a quota would be attained the number of interactions with bluefin was used to represent the rate of historical bluefin, which includes live discards (as well as dead discards and landings), and is a larger number than if only dead discards and landings were analyzed. The use of the number of interactions simplifies the analysis and takes into account the fact that the number of bluefin discarded live (versus dead) varies. However, for quota accounting under the quota control alternatives, only the dead discards and landings would count toward the quota. The number of interactions therefore overestimates the likelihood that the quota would be attained, and represents a 'worst case' scenario.

Under the current quota allocation (8.1%) and the 2012 quota (74.8 mt) to illustrate, the low avoider quota group (see Chapter 2 explanation of the alternative) would be allocated 24.1 mt and the medium and high avoider quota groups would be allocated 25.1 mt. Although the three quota groups have almost the identical number of vessels assigned to them (53, 54, 54, respectively), as well as similar quota, the average amount of bluefin that they caught historically varies from group to group. The number of bluefin tuna interactions from 2006 to 2011 for the low, medium, and high avoiders was 8,050, 1,348, and 95, respectively. Converted to averages, the average number of bluefin interactions would be 1,342, 225, and 16. Utilizing a rough conversion factor of a .125 mt per fish, 225 fish is equivalent to 28 mt. The high and medium avoider groups are likely to have adequate quota, whereas the low avoider group would have inadequate quota if the future interaction rate of the vessels is similar. The average number of interactions associated with the low avoider group equates to approximately 168 mt. This analysis overestimates the amount of metric tons that would be needed, because (as explained above) the number of interactions includes bluefin discarded live, which would not count towards the quota.

It is difficult to predict the total amount of fishing effort that would occur under the group quota, and the amount of quota that would be caught. The most important factor would be the size of the Longline quota, which would be determined by the U.S. quota, as well as if an Amendment 7 quota alternative implemented that would result in increased availability of quota for the Longline category. It is likely that the group quota associated with vessels with the highest historical rate of bluefin interactions would be attained first. Two of the three group quotas may not be attained. The historical data indicate that the majority of bluefin have been caught by relatively few vessels. The amount of quota allocated to each quota group would be based upon the number of vessels in each quota group, and result in almost identical amounts of quota. The rate at which each quota is attained would result from the fishing behavior of the relevant vessels. The amount of target species catch such as swordfish and yellowfin tuna would depend primarily upon the amount of fishing effort and whether the group quotas become constraining. If the group quotas reduce pelagic longline fishing effort, there may be some minor beneficial indirect short-term biological impacts on target stocks.

4.1.3.3.3 Accounting for Dead Discards under Regional or Group Quotas

Both the Regional and Group Quota alternatives would require a method of accounting for both landings and dead discards in order to fully account for the catch contributing toward the quota, and monitoring the status of the quota. In the discussion of the impacts of the alternatives above, the separate elements of catch that contribute towards the quota (landings and dead discards) are not distinguished. The discussion of the above biological impacts includes the assumption that inseason monitoring of dead discards and landings is occurring. An alternate way to implement either the regional or group quota alternative would be to proactively account for dead discards instead of monitoring dead discards inseason. To proactively account for dead discards, NMFS could utilize an historical estimate for pelagic longline dead discards as a proxy for anticipated dead discards, and subtract an estimate of dead discards "off the top" of the quota. This would result in a substantially lower quota, which would be a landings quota. The biological impacts of the quota systems may be similar regardless of which method utilized to account for dead discards, provided the quota system results in the appropriate level of catch with respect to the quota, that is, an amount that does not exceed the quota.

4.1.3.4 Alternative C 4 - Closure of the Pelagic Longline Fishery

4.1.3.4.1 Alternative C 4a – No Action

Under this alternative, the current regulatory situation would continue, in which NMFS does not prohibit the use of pelagic longline gear when the pelagic longline bluefin tuna subquota is attained. When the subquota is projected to be reached, pelagic longline vessels may no longer retain bluefin tuna, but may continue to fish for their target species, and must discard any bluefin tuna caught. The biological impacts of this alternative would be direct short-term adverse and moderate due to the absence of a direct limit on the amount of bluefin tuna caught by pelagic longline vessels. The bluefin quota for Longline category vessels would continue to limit bluefin landings, but not bluefin dead discards. If the overall U.S. quota for bluefin remains similar to the quota in recent years, the overall level of landings and dead discards may be similar to the range of levels shown in Table 3.17 in Chapter 3.

4.1.3.4.2 Alternative C 4b – NMFS Closure of the Pelagic Longline Fishery

Under this alternative, NMFS would close the pelagic longline fishery (i.e., prohibit the use of pelagic longline gear) when the total Longline category quota for bluefin is caught, projected to be caught, is exceeded, or, in order to prevent excessive dead discards of bluefin, when there is high uncertainty regarding the estimated or documented levels of bluefin catch. This alternative would provide an enforceable means to stop the landings and dead discarding of bluefin in order to prevent exceeding the quota.

Impacts on Bluefin

The biological impacts of this alternative would be direct short-term beneficial and substantial/moderate due to the direct limit on the amount of bluefin tuna caught by pelagic longline vessels. The bluefin quota for Longline category vessels (i.e., the IBQ, Regional, or

Group quota controls) would limit bluefin landings and dead discards, and reduce management uncertainty in the fishery compared with the No Action Alternative.

Impacts on Fishing Effort and Other HMS

Closure of the Longline category when the bluefin tuna quota is attained would prohibit the use of pelagic longline gear and therefore also impact the catch of swordfish, yellowfin and bigeye tuna, and other target species. Fishing effort with pelagic longline gear would cease for the remainder of the fishing year, but the use of other gear could continue. The precise scope of the biological impacts (i.e., substantial or moderate) would depend upon the size of the U.S. bluefin quota, and whether this alternative is combined with other alternatives that reduce dead discards, modify quota allocations, or provide incentives to avoid bluefin tuna. The amount of target species catch such as swordfish and yellowfin would depend primarily upon the amount of fishing effort and whether the quota controls (regional or group quotas, or IBQs) become constraining. If the quota controls reduce pelagic longline fishing effort, there may be some minor positive biological impacts on target stocks. The impacts of combined pelagic longline alternatives are discussed in Section 4.1.6.1. Table 4.25 provides some information on the percentage reductions in numbers of target HMS landed if the duration of the pelagic longline fishery were shortened.

Table 4.26 Duration of the Pelagic Longline Fishery, by Month and Percentage Reduction in Numbers of Swordfish (SWO) and bigeye, albacore, yellowfin, and skipjack tunas (BAYS) Landed. Based on average landings 2006 – 2011. Source: logbook data.

	Month Through Which Use of Pelagic Longline Gear Allowed											
Percent Reduction in Target HMS Landings	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Swordfish	92	86	80	73	65	58	51	41	30	18	9	0
BAYS	94	90	96	83	78	70	56	43	29	15	6	0

For example, in the use of pelagic longline gear were prohibited at the end of June, there would be a 58 percent reduction in the number of swordfish landed and a 70 percent reduction in the number of BAYS landed. The socio-economic impacts of NMFS closure of the pelagic longline fishery is discussed in Chapter 5.

4.1.3.5 Summary of Biological Impacts of Bluefin Tuna Quota Control Alternatives

Table 4.27 Summary of Biological Impact of Bluefin Tuna Quota Control Alternatives

Bluefin Quota Controls			
Alternative	Quality	Timeframe	Impacts
No Action	Direct	Short-term	Ø –
IBQ system	Direct	Short-term	Ø +
IBQ rules (bluefin allocations, trading, monitoring and Enforcement)	Direct	Short-term	O / O +
Elimination of Target Catch Requirement	Direct	Short-term	O +
Mandatory Retention of Legal-sized Bluefin	Direct	Short-term	O +
Regional and Group Quotas			
Regional Quotas	Direct	Short-term	Ø +
Group Quotas	Direct	Short-term	Ø +
NMFS Closure of Pelagic Longline Fishery			
No Action	Direct	Short-term	Ø –
NMFS Closure of Pelagic Longline Fishery	Direct	Short-term	● + / Ø +

Preferred Alternatives Shaded

4.1.4 Enhanced Reporting Alternatives

4.1.4.1 VMS Requirements

The preferred alternative would require Atlantic Tunas Purse Seine category vessels to install an E-MTU VMS unit and hail in and out of port. Purse seine and pelagic longline vessels fishing for Atlantic tunas would be required to report length of bluefin retained or discarded dead, and effort information. The preferred alternative would have indirect short-term Minor, beneficial impacts on bluefin tuna since it would provide previously unavailable estimates of dead discards for the purse seine fishery, which would improve estimates of fishing mortality, although discards of bluefin in this fishery are reportedly low. The pelagic longline VMS requirements in this alternative primarily address timely data collection for more precise inseason management of the bluefin tuna fishery, and would have a neutral or slightly beneficial impact on other HMS because additional data (effort information) would be collected on other HMS species. There would be no impact from the “No Action” alternative.

4.1.4.2 Electronic Monitoring of Longline Category

The preferred alternative would require the use of electronic monitoring (i.e., video cameras) by all Atlantic Tunas Longline permit holders. This alternative would be used to audit and verify reported data. An audit approach would have certain advantages over a census approach (Stanley et. al., 2011). This alternative would provide indirect short-term, minor beneficial impacts for bluefin and other HMS by contributing to the development of a robust reporting system. The "No Action" alternative would have no impact. As discussed above under the impacts of Regional or Group quotas, the biological impacts of the quota control alternatives includes the assumption that inseason monitoring of dead discards and landings is occurring. Because the electronic monitoring alternative would not be implemented immediately upon implementation of Amendment 7 in 2014, NMFS would not be able to audit vessel reported catch information using the electronic monitoring systems under that requirement is effective in January 2015. As a result, full inseason estimation of dead discards would not occur in conjunction with implementation of Amendment 7 in 2014.

After the implementation of Amendment 7 in 2014, NMFS would consider all relevant sources of data, including observer, logbook, VMS, and dealer data, in order to estimate Longline category dead discards inseason. However, given the delay in the implementation of the electronic monitoring system until January 2015 and the need to develop new estimation procedures, NMFS, upon implementation of Amendment 7 would proactively account for dead discards. To proactively account for dead discards, NMFS would utilize an historical estimate for pelagic longline dead discards as a proxy for anticipated dead discards, and subtract an estimate of dead discards "off the top" of the quota. This would result in a substantially lower quota, which would be a landings quota. The biological impacts of the quota system may be similar regardless of which method utilized to account for dead discards, provided that catch does not exceed the quota.

4.1.4.3 Automated Catch Reporting

The preferred alternative on automated catch reporting alternative would require Atlantic Tunas General, Harpoon and HMS Charter/Headboat permit holders to report their bluefin catch (i.e., landings and discards) using an expanded version of the NMFS recreational automated landings reporting system (ALRS). This alternative would provide data on the number of bluefin tuna released dead and alive by these permit groups, and increase the accuracy of fishing mortality estimates. The additional data would likely have indirect, short-term, minor beneficial impacts on bluefin tuna, and, to the degree that it might provide information on discards of other HMS, may have minor beneficial impacts on other HMS as well. The "No Action" alternative would have no impacts.

4.1.4.4 Deployment of Observers

The preferred alternative is the "No Action" alternative, which would have no impact on bluefin tuna or other HMS. Under the no action alternative, there would be no changes to the current observer coverage in the Atlantic Tunas Longline, General, Purse Seine, Harpoon, or HMS Charter/Headboat categories. In the Longline category, the average percentage coverage in the

pelagic longline fishery is approximately 8 percent (including a higher level of coverage in the Gulf of Mexico, particularly during the bluefin spawning period). None of the other quota categories (i.e., the directed bluefin fisheries) currently are selected to carry observers; however, NMFS has the authority to deploy observers in these categories. As described in Chapter 3 in detail, the Pelagic Observer Program information, which includes fish species, length, weight, sex, location, and environmental information, is used in conjunction with the logbook information to monitor retained bluefin and estimate discarded bluefin. The United States applies the SCRS-approved methodology to calculate and report dead discards for both stock assessment purposes and quota compliance purposes. Under the No Action alternative, NMFS would still be able to estimate bluefin dead discards. The precise impacts of the No Action Alternative, (continuation of the current level of observer coverage) would depend in part upon the other Amendment 7 alternatives implemented (such as quota controls), and whether other data sources, or enhanced methods of reporting and/or monitoring are implemented. Additional data sources and methods of reporting or monitoring would augment observer data, and provide additional information with which to estimate dead discards. Analysis of the preferred reporting and monitoring alternatives are described in Sections 4.1.4.1 and 4.1.4.2. Analysis of the combined impacts of the preferred alternatives applicable to the Longline category are described in Section 4.1.6.1.

Alternative D 4b would increase the number NMFS funded observers to provide increased observer coverage in the pelagic longline fishery and expansion of the observer program to cover other permit categories. This could increase the accuracy of pelagic longline catch data, and add a source of catch data for the directed commercial bluefin tuna permit categories, respectively. This information would likely have indirect, short-term, minor, beneficial impacts on bluefin tuna because of improved accuracy of fishing mortality and effort estimates for pelagic longline vessels and new catch and effort data for the other directed commercial categories, for use in bluefin tuna stock assessments.

4.1.4.5 Logbook Requirement

The preferred alternative is No Action for logbook reporting, which would have no impacts on bluefin tuna or other HMS. The non-preferred alternative would require the reporting of catch by Atlantic Tunas General, Harpoon, and HMS Charter/Headboat category vessels targeting bluefin through submission of an HMS logbook to NMFS. This alternative would provide data on the number of bluefin tuna released dead and alive and fishing effort by these permit groups, and improve the accuracy of fishing mortality and effort estimates for use in stock assessments. The improvement in data would likely have indirect, short-term, minor beneficial impacts on bluefin tuna, and to the degree that the expanded data collection would provide discard data for other HMS, may have minor beneficial impacts for other HMS as well. Table 4.27 is a summary of the biological impacts of the enhanced reporting alternatives.

Table 4.28 Summary of Biological Impacts of Enhanced Reporting Alternatives

Enhanced Reporting Alternatives			
Alternative	Quality	Timeframe	Impacts
No Action	Indirect	n/a	o
VMS Requirement for Purse Seine and Longline Categories	Indirect	Short-term	Θ +
Electronic Monitoring of Longline Category	Indirect	Short-term	Θ +
Automated Catch Reporting (General and Harpoon Categories)	Indirect	Short-term	Θ +
Deployment of Observers – NMFS Funded Observers	Indirect	Short-term	Θ +
Logbook Requirement	Indirect	Short-term	Θ +
Expand the Scope of the Large Pelagics Survey	Indirect	Short-term	Θ +

Preferred Alternatives Shaded

Summary Narrative

The No Action alternatives would make no changes to the current reporting requirements and therefore make no changes to the means, scope, or timeliness of data collected. The No Action alternatives would have a neutral biological impact. Under the No Action alternatives, the reporting of important data would continue, and would support management of bluefin and other HMS, but would not enable improvement of management. As such, the No Action alternatives support bluefin stock rebuilding but do not increase the effectiveness of the 2006 Consolidated HMS FMP in attaining rebuilding.

In contrast, the enhanced reporting alternatives would increase the scope and timeliness of data collected. The enhanced reporting alternatives represent a range of alternatives that would improve reporting, some of which represent different means of enhancing reporting for the same vessels (e.g., logbook and automated catch reporting for General, Harpoon, and Charter Headboat categories).These alternatives would have indirect, short–term, minor, beneficial impacts on bluefin tuna as they would result in more accurate or precise data on bluefin tuna catch or increased biological information on bluefin tuna. VMS reporting would result in more real-time information and enhance NMFS' ability to more precisely manage the bluefin quota. Increased precision of quota management would reduce the risk of exceeding the quota and may provide more fishing opportunity for all vessels. Similarly, these alternatives would have indirect, short- term, minor, beneficial impacts on other HMS caught if they result in more accurate or precise data on HMS catch or increased biological information.

4.1.5 Other Alternatives

4.1.5.1 Alternative E 1 - Modify General Category Sub-Period Allocations

4.1.5.1.1 Alternative E 1a – No Action

If no action is taken to modify the General category sub-period allocations, biological impacts would be neutral. Because the January subperiod remains open until the January subquota is used or until March 31, whichever comes first, there would be no General category activity during the months of April and May on an annual basis. Depending on how quickly the available January subquota is used, it is likely based on the closure date in the last few years (e.g., January 22, 2012 and February 15, 2013) that there may not be General category fishing activity in part or all of February or March as well. During the months of January through May, bluefin tend to be located off the mid- and south Atlantic states of North Carolina, South Carolina, Georgia, and the Florida East Coast. However, the pelagic longline fishery and the HMS Angling category (handgear) fishery would be open during these months so fishing activity would potentially occur in these areas regardless of the subquota management of the General category.

4.1.5.1.2 Alternative E 1b – Establish 12 Equal Monthly Sub-Quotas

This alternative was considered in the 2011 Environmental Assessment for a Rule to Adjust the Atlantic Bluefin Tuna General and Harpoon Category Regulations. It would revise the subquotas so that they are evenly distributed throughout the year (i.e., the base quota of 435.1 mt would be divided into monthly subquotas of 8.3 percent of the General category base quota, or 36.1 mt). NMFS would continue to carry forward unharvested General category quota from one time period to the next time period and may need to close the fishery each month if the available subquota is harvested. This alternative could result in a shift in bluefin tuna landings, both temporally (to later in the season) and geographically to the South (i.e., off the mid- and south Atlantic states of North Carolina, South Carolina, Georgia, and the Florida East Coast). For instance, the time-period subquota percentage for January would be increased (from 5.3 percent (23.1 mt) being available for the first three months as a whole to 36.1 mt per month, for a total of 108.3 mt of bluefin being available for January through March. The amount available for the current June-August subperiod would decrease from 47.1 percent (217.6 mt) to 24.9 percent (108.3 mt). The amount available for the current September subperiod would decrease from 115.3 mt to 36.1 mt. The amount available for the current October-November period would increase from 56.6 mt to 72.2 mt. Lastly, the amount available for December would increase from 22.6 mt to 36.1 mt. These changes are summarized in Table 4.23.Although this alternative would create more of a “year-round” fishery, note that for each period, it is possible that NMFS would close the fishery within a period when it is projected that the available subquota has been reached. This could mean multiple closures and automatic re-openings on the first of the month throughout the year.

Table 4.29 Comparison of General category quota amounts mt available by Time Period, under the No Action and the Preferred Alternatives.

	Time Periods and Allocations											
Alternative	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Under No Action(Alternative E 1a)	23.1			0	0	217.6			115.3	56.6		22.6

12 equal monthly subquotas (Alternative E 1b)	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1	36.1
For comparison purposes, Alternative E 1b under current time periods	36.1*3 = 108.3			36.1	36.1	36.1*3 = 108.3			36.1	36.1*2=72.2		36.1

Alternative E 1b could result in increased harvest in the earlier portions of the General category bluefin tuna season, with a corresponding decrease in harvest in the later portions of the season. However, the number of bluefin harvested from the large medium and giant size classes would remain consistent with the levels of bluefin mortality used in the stock assessment and overall the ecological impacts are expected to be neutral. Alternative B3 would be expected to broaden the range of data available for scientific research, although the scope by which data would broaden for Alternative B3 is relatively small. Because there would be a dedicated quota for each month of the year, Alternative B3 could provide commercial fisheries data for times (i.e., February through May) when the fishery has traditionally been closed.

4.1.5.1.3 Alternative E 1c – Provide Additional Flexibility for General Category Quota-Adjustment (Preferred)

Under this alternative, NMFS could transfer subquota from one time period to another time period, earlier in the calendar year. This alternative, similar to Alternative E 1b, could result in a shift in the distribution of fishing effort and landings from the mid and later portions of the calendar to the earlier portion(s) of the calendar year. There would be more flexibility within the quota system to allocate among time periods to optimize fishing opportunity among times and geographic areas. As with Alternative E 1b, biological impacts would be expected to be neutral.

4.1.5.2 Alternative E 2 - NMFS Authority to Adjust Harpoon Category Retention Limits Inseason

4.1.5.2.1 Alternative E 2a – No Action

If no action is taken to provide NMFS the flexibility to set the Harpoon category daily retention limit of large medium bluefin over a range of two to four fish, Harpoon category participants would continue to have the ability to retain and land up to four large medium fish per vessel per day, as well as unlimited giants.

There were 13 vessels permitted in the Harpoon category in 2012, down from 24 in 2011 and 29 in 2010. Of the 128 bluefin taken by Harpoon vessels in 2010, 51 were large mediums and 77 were giants. Of the 63 successful trips taken by Harpoon category vessels in 2012 (i.e., trips on which at least one bluefin was landed), there were 31 trips on which no large medium bluefin were landed, 19 trips on which one large medium was landed, nine trips on which two large mediums were landed, two trips on which three large mediums were landed, and two trips on which four large mediums were landed. In 2012, the Harpoon category landings were 17.2 mt

out of 36 mt of available quota, resulting in an underharvest of 18.8 mt. As described above, underharvest carried forward (from one year to the next) to each quota category is limited by the ICCAT recommendation and other domestic management considerations.

In the analyses that NMFS prepared for the 2011 General and Harpoon category regulatory amendment (NMFS 2011), NMFS estimated that the discard of large medium bluefin in the Harpoon category was greater in 2010 than in 2008, given that 12 of 87 trips (14 percent) landed the incidental limit in 2008 and 32 of 104 trips (31 percent) landed the incidental limit in 2010. This was consistent with information from NMFS' Large Pelagics Survey that showed that a large proportion of the bluefin available off the U.S. coast in 2010 had entered the large medium size class. That cohort of fish is now estimated to be in the giant size class. Harpoon category participants have commented over the years that it is common for schools to be comprised of bluefin of different size classes, so fishing on schools of giant bluefin exclusively is difficult. Under Alternative E 2a, NMFS anticipates neutral to minor, direct, short-term adverse biological impact as there were only two trips in 2012 on which four large medium were landed, which indicates it was not necessary for a vessel to have released a bluefin of that size to stay within the daily retention limit of large mediums.

4.1.5.2.2 Alternative E 2b - NMFS Ability to Adjust Harpoon Category Retention Limits Inseason

If NMFS changes the regulations to implement the daily retention limit of large medium bluefin tuna over a range of two to four bluefin, the default large medium limit would be set at two fish. The impact of this alternative would be neutral overall, and would depend on availability of large mediums to Harpoon category vessels on a per trip basis and the actual retention limit that NMFS sets inseason (or that is in place by default). NMFS can estimate potential impacts of this change by determining the number of trips on which three or four large mediums were landed in 2012 and assuming that any large mediums, in excess of the established retention limit, that are inadvertently harpooned while targeting giants would have to be discarded dead each year. For instance, if a new default level of two large mediums is maintained, and there were two trips on which three large mediums were landed and two trips on which four large mediums were landed in 2012, that would represent six bluefin that would be converted from landings to dead discards, if inadvertently killed while targeting giants. This would be a short-term, direct, minor, adverse impact. This impact may be mitigated by the fishermen's decision to not throw the harpoon based on the size of the fish. To the extent that the implementation of a lower retention limit (set over the range of two to four fish) might decrease effort on large medium bluefin, there could be minor, short- and long-term, direct, beneficial impacts from decreased bycatch and bycatch mortality of small medium bluefin (measuring 59 to less than 73 inches).

A reduction of the daily retention limit from the current four-fish level may reduce the incentive to target large medium bluefin. Generally, the ability to set the retention limit for this size class over a range may be considered a management tool that could help limit the amount of large medium bluefin taken in a particular year, e.g., a year in which the cohort of this size fish is thought to be low. However, looking specifically at 2012, only 3 percent and 3 percent of Harpoon category trips landed three and four large mediums, respectively, and NMFS does not expect changes in fishing behavior as a result of these Harpoon category alternatives.

The alternative may result in the removal of a lower number of large medium bluefin than the status quota increase in the number of large mediums, relative to the size of the bluefin stock as a whole (spawning stock biomass of approximately 18,000 mt), would not affect the overall size composition of the stock. Although few data are available, it is believed that the selective nature of harpoon gear has minimal impact on discards or interactions with non-target species.

4.1.5.3 Alternative E 3 - Angling Category Subquota Distribution

4.1.5.3.1 Alternative E 3a – No Action

Under the No Action alternative, there would be no change to the current Angling category trophy subcategory quota allocation system (i.e., 66.7% of the large medium and giant bluefin subquota for the area south of 39°18' N. lat., with 33.3% north of 39°18' N. latitude; currently these amounts are 2.8 mt and 1.4 mt, respectively). Bluefin landed in the Gulf of Mexico and the Atlantic south of 39°18' N. lat. would continue to count toward the same recreational subquota (the southern quota).

From year to year, the proportion of southern trophy landings varies between the Gulf of Mexico and the Atlantic southern area. Table 4.24 show the number of trophy bluefin landed per year in the northern area, the southern area *outside* the Gulf of Mexico, and the Gulf of Mexico. In 2012 and 2013, NMFS closed the southern area trophy fishery on April 7 and April 4, respectively, because the subquota was projected to be taken. Trophy-sized bluefin were more available than they had been in prior years at the beginning of the calendar year off Virginia and North Carolina. None of the southern trophy bluefin landings in 2012 and 2013 were from the Gulf of Mexico.

Table 4.30 Trophy bluefin landings (in numbers) by area. Source: NMFS Automated Landings Reporting System and North Carolina Catch Card data.

Year	North	South (outside Gulf of Mexico)	Gulf of Mexico
2006	3	2	4
2007	7	9	0
2008	8	6	3
2009	5	0	0
2010	16	26	0
2011	12	30	0

The biological impacts of the no action alternative would be neutral, as there would be no expected change in fishing behavior and maintaining or dividing the southern trophy area ultimately results in conversion of dead discards to landings, or vice versa, all thing remaining equal, and depending on availability of trophy-sized bluefin at different times of year. The average weight of a large medium or giant bluefin in 2012 was approximately 370 lb, although there is substantial variability of weight of this size fish depending on age and location and factors involving feeding and reproduction. The current southern trophy subquota therefore represents approximately 17 average-weight large medium/giants. The number of fish it would take to fill the southern area subquota would be higher if the average weight is lower. Although

the Gulf of Mexico is the known spawning ground and directed fishing on bluefin is prohibited for that reason, the removal of this number of potentially spawning adults is unlikely to have significant adverse impact on the stock.

4.1.5.3.2 Alternative E 3b – Allocate a Portion of the Trophy South Sub-Quota to the Gulf of Mexico (Preferred)

Under this alternative, a portion of the trophy south subquota would be allocated specifically for the Gulf of Mexico. Specifically, the trophy subquota would be divided as 33% to each to the northern area, the southern area outside the Gulf of Mexico, and the Gulf of Mexico. At the current average trophy fish weight, this would allow annually up to 8 trophy bluefin to be landed in each of the three areas. NMFS would not expect fishing behavior to change as a result of this alternative, in part because there should not currently be targeted effort on bluefin in the Gulf of Mexico regardless of the incidental trophy fish allowance. Biological impacts on bluefin would be expected to be neutral, as the effect of this measure would be to convert a small number of potential dead discards in the Gulf of Mexico to potential landings.

4.1.5.4 Alternative E 4 - Change Start Date of Purse Seine Category to June 1

4.1.5.4.1 No Action

Under the No Action alternative, there would be no change to the start date of the Purse Seine category fishery, which is currently set at July 15. Biological impacts would be neutral.

4.1.5.4.2 Change Start Date of Purse Seine Category to June 1 (Preferred)

This alternative would change the start date of the Purse Seine category fishery from July 15 to June 1, and provide NMFS the ability to delay the season start date from June 1 to no later than August 15, by publishing a notice in the Federal Register. Biological impacts would be neutral as other commercial and recreational bluefin fisheries are typically open and active from June 1 through July 14, including in the areas and for the sizes that purse seine vessels would be targeting. Although a later start date may have minor, short-term, indirect, beneficial social and economic impacts for other quota categories due to reduced gear conflict and market competition, there is no biological reason to specifically preclude Purse Seine category landings during months when other fisheries in the same area and for the same size fish are open and active. Regardless of start date, a purse seine vessel operator may choose not to make a set if bluefin schools are composed of a high proportion of fish smaller than giants, much of which would need to be released from the net alive or discarded dead.

4.1.5.5 Alternative E 5 - Rules Regarding Permit Category Changes

4.1.5.5.1 Alternative E 5a – No Action

Under the No Action alternative, there would be no changes made to current regulations regarding the ability of an applicant to make a correction to their permit category. The current regulations prohibit a vessel issued an open-access Atlantic Tunas or an HMS permit from changing the category of the permit after 10 calendar days from the date of issuance. As this No

Action alternative is administrative in nature, the biological impacts associated with bluefin would be neutral.

4.1.5.5.2 Alternative E 5b – Modify Rules Regarding Permit Category Changes

This measure would allow a vessel owner to modify the category of an open-access HMS permit issued for a time period greater than 10 calendar days (e.g., 30, 45, or 60 days), provided the vessel has not fished as verified via landings data. This alternative would have neutral biological impacts because it is administrative in nature and there are very low numbers of fishing vessels affected by this alternative. Approximately 20 permit applicants per year contact NMFS to request a change in permit category after the 10 days from permit issuance.

4.1.5.6 Alternative E 6 - Northern Albacore Tuna Quota (Preferred)

4.1.5.6.1 Alternative E 6 a– No Action

Under the No Action alternative, there would be no new regulations regarding Atlantic albacore tuna. There are currently no regulations regarding the quota management of Atlantic albacore tuna. If no action is taken to implement the U.S.-recommended northern albacore quota, biological impacts would be neutral. However, to the extent that potential excesses of the U.S. quota might contribute to excesses of the TAC, minor adverse biological impacts could result. The impacts would be considered slight because the U.S. quota represents less than 2% of the ICCAT-recommended TAC. Given the relatively small size of the U.S. quota in relation to the total quota, even exceeding the ICCAT-recommended quota is likely to only have minor impacts on the overall fishing mortality in the short term.

4.1.5.6.2 Alternative E 6b – Implement U.S. Northern Atlantic Albacore Tuna Quota

Domestic implementation of a quota for northern albacore would contribute to the successful international management of the stock, particularly to the extent that active management of the quota would help limit annual landings to the U.S. quota, which is a small portion of the scientifically-recommended northern albacore TAC. NMFS would be able to use its existing framework procedures as established in § 635.34 (b) to actively manage the northern albacore fishery inseason, if appropriate/needed, to constrain landings to the available quota. (e.g., through fishing seasons, recreational and commercial retention limits). If necessary, inseason management measures would be implemented through proposed and final rulemaking. Based on recent landings (Chapter 3, Table 3.39), there is no evidence to suggest that implementation of quota would constrain fishing effort for northern albacore in the future (under similar levels of quota).

There would be moderate, short- and long-term, direct beneficial biological impacts. To the extent there may be a reduction in fishing effort if NMFS exercises framework authority to more tightly control catches, there may be minor, short- and long-term, direct, beneficial impacts to other species.

4.1.5.7 Summary of Impacts of Other Measures

Table 4.24 contains a summary of the biological impacts of the other measures.

Table 4.31 Summary of Impacts of Other Measures (preferred alternatives shaded)

Alternative	Quality	Timeframe	Impacts
Modify General Category Time-Period Subquotas			
No Action	Indirect	n/a	o
Establish 12 Equal Monthly Subquotas	Indirect	n/a	o
Provide Additional Flexibility for General Category Quota Adjustment	Indirect	n/a	o
NMFS Authority to Adjust Harpoon Category Retention Limits Inseason			
No Action	Indirect	Short-term	O/ Θ –
NMFS Authority to Adjust Harpoon Category Retention Limits Inseason	Indirect	n/a	o
Angling Category Trophy Subquota Distribution			
No Action	Indirect	n/a	o
Allocate a Portion of the Subquota to the Gulf of Mexico	Indirect	n/a	o
Change Start Date of Purse Seine Category to June 1			
No Action	Indirect	n/a	o
Change Start Date of Purse Seine Category to June 1	Indirect	n/a	o
Rules Regarding Permit Category Changes			
No Action			
Modify Rules Regarding Permit Category Changes	Indirect	n/a	o
Northern Atlantic Albacore Tuna Quota			
No Action	Indirect	Short-term	O/ Θ –
Implement U.S. Northern Albacore Tuna Quota	Indirect	Long-term	Ø +
			Θ +

4.1.6 Combining and Comparing Alternatives

4.1.6.1 Pelagic Longline Alternatives

As previously described, the biological impacts of the alternatives were analyzed individually and then combined into groups of alternatives. Some alternatives are analyzed as a group if the biological impacts of the individual alternatives are very similar (i.e., reporting requirements). The principal management tools applicable to each quota category were combined together. Several analyses were conducted in order to analyze different combinations of alternatives that would encompass the full range of impacts. For example, for the Longline category, the area based alternatives (gear restricted areas, access to closed areas, and fishing as a General category

vessel) were combined, and the quota related alternatives (IBQ and reallocation alternatives) were combined. These suites of alternatives are also useful for analyzing the economic and social impacts. The organizational structure for analysis of the alternatives that apply to the Longline category is depicted in Figure 4.3.

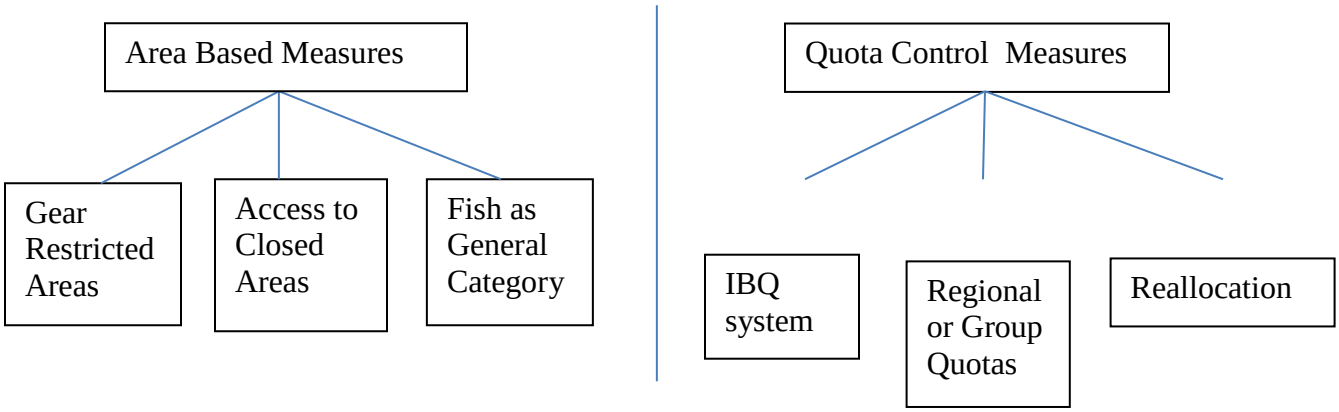

Figure 4.3 Organizational Structure of Biological Analysis

4.1.6.1.1 Area Based Alternatives

The area based alternatives would act in conjunction with the quota allocation alternatives and quota control alternatives. The area based alternatives implemented would either have a neutral effect or minor beneficial effect on bluefin discards. See Table 4.11 for a summary of those impacts. The effects of the area based alternatives are essentially additive to the other alternatives.

4.1.6.1.2 Combining the Quota Allocation Alternatives with IBQ Trading

The IBQ system would cap catch, but also may allow the leasing of quota between the Longline and Purse Seine categories. Through trading quota, the Longline category would have access to more quota than available from its base allocation. As described in Section 4.1.1, an increase to the allocation of the Longline category would not necessarily result in an increase in bluefin catch over historical levels. The level of catch would depend upon the net effects of all the relevant regulations (and other non-regulatory factors). Historical average total catch (landings and dead discards) of bluefin by the Longline category (2006 to 2011) has been 216.3 mt, which exceeds the Longline category allocation of 8.1%. Therefore, if the future bluefin catch is greater than 216.3 mt, it would represent an increase, and if future catch less than 216.3 mt, it would represent a decrease (compared with the historical average).If regional or group quotas or IBQs were combined with an increase in quota allocation, the total amount of potential catch (landings and dead discards) of bluefin by pelagic longline vessels would be greater than the current Longline category quota allocation of 8.1%. The annual quota reallocation (Alternative A3), which would enable NMFS to utilize anticipated unused Purse Seine quota could result in increases over the baseline annual quota for all quota categories, including the Longline

category. The biological impacts of the combined reallocation and IBQ alternatives on bluefin tuna and other HMS can be represented by the amount of Bluefin tuna and other HMS that would be caught.

The concept of how the baseline quota would be augmented by transfers of quota under the IBQ alternative, and further augmented by annual reallocation from the Purse Seine category (anticipated unused quota) are illustrated below in Figure 4.4. Note that when annual reallocation occurs from the Purse Seine category, the remaining quota that is allocated to the Purse Seine category (e.g., 50% of baseline quota) may be fished by purse seine vessels or transferred via IBQs to the Longline category. Therefore, there is a linkage between the amount of quota that is annually reallocated from the Purse Seine category, and the amount of quota available to be transferred via IBQ. For example, if 25% of the Purse Seine category quota were transferred to other categories under the annual reallocation alternative, the amount of Purse Seine quota available for IBQ transfers would be 75% of their baseline quota.

The management measures that would determine the amount of bluefin quota available to the Longline category were combined into suites of measures to analyze their combined biological impacts (and to serve as the basis for estimating the economic impacts). For each of the four codified reallocation options (including No Action), the amount of total quota available to the Longline category was calculated under each of three annual reallocation scenarios, in the context of both a regional catch cap and an IBQ (for a total of 24 combinations). The three annual reallocation scenarios were: (1) No annual reallocation; (2) reallocation of 50% of the Purse Seine quota to the Longline category; and (3) reallocation of 4% of the Purse Seine quota to the Longline category. An annual quota reallocation scenario in which fifty percent of the Purse Seine quota is reallocated to the Longline category was selected (see combinations “B” and “E”) because it represents the largest amount of quota that would be reallocated under that alternative (i.e., 50% of the Purse Seine quota is reallocated, and all of the reallocated quota goes to the Longline category). A reallocation of four percent was also explored (see combinations “C” and “F”) because it is representative of a scenario in which 50% of the unused Purse Seine quota is reallocated, but it is reallocated to all the other quota categories according to their current percentages. Only a fraction of that quota (8%) is reallocated to the Longline category and the rest of the unused Purse Seine quota is reallocated to the other quota categories (8% of the unused 50% is equivalent to 4% of the total Purse Seine quota). The Annual Reallocation alternative (A 3b), was not included as a distinct scenario in this analysis due to its similarity to the Permanent Reallocation Alternative (A 2c) that would reallocate from the Purse Seine category to the Longline category.

The total bluefin quota for the 2012 quota specifications (923.7 mt) provides the context for the examples. There is uncertainty regarding the availability of quota under the IBQ system, because a successful market for quota, although likely, is not guaranteed. Figure 4.4 below shows the combinations of alternatives that were analyzed.

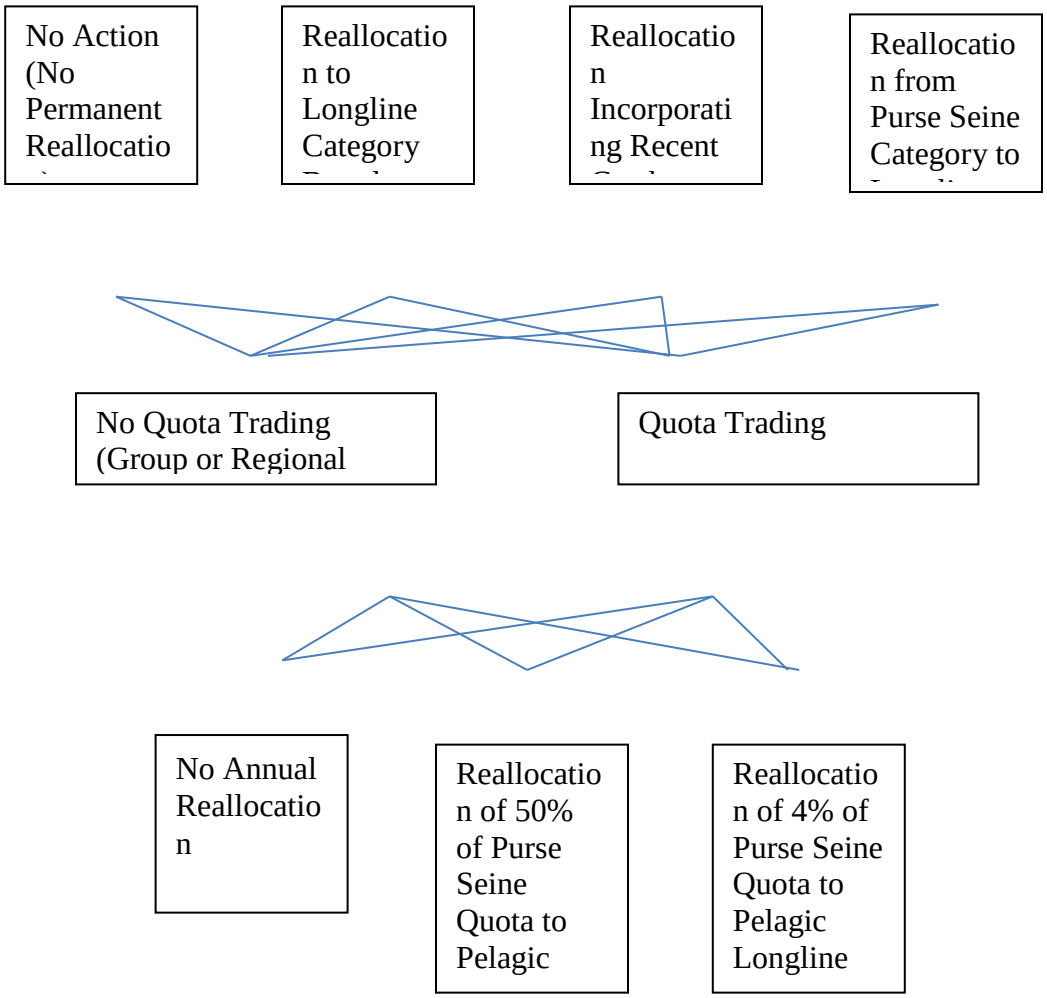

Figure 4.4 Combination of Alternatives Analyzed to Determine Range of Quota Available

The tables that show the full details of how the quota components are combined to result in a single quota value are in the Appendices along with additional discussion. Table 4.31 below compares the net amount of quota available for use by the Longline category under the combinations of alternatives. The two principal scenarios are no IBQ leases (i.e. Regional or Group quotas; columns A, B, C), or IBQ allocation leases (columns D, E, F).

Table 4.32 Summary Comparison of Net Quota Available for Use by Longline Category (mt). Based on a total bluefin quota for 923.7 mt (2012 quota specifications) and Appendices.

	IBQ and Annual Reallocation Combinations					
	Regional Quota Control			IBQ, assuming Purse Seine quota leased to Longline		
Codified Quota Reallocation Alternative	A No Annual Reallocation of Purse Seine quota	B Annual reallocation of 50% (of Purse Seine quota) to Longline category	C Annual reallocation of 4% of Purse Seine quota) to Longline category	D No Annual Reallocation of Purse Seine quota	E Annual reallocation of 50% (of Purse Seine quota) to Longline category	F Annual reallocation of 4% of Purse Seine quota) to Longline category
No Action	74.8	160.7	81.7	246.6	246.6	167.6
Alternative A 2a (Based on 68 mt)	137	216.7	143.7	296	296	222.9
Alternative A 2b (Recent Catch and Current Allocation)	137	180.5	140.5	224	224	184
Alternative A 2c (From Purse Seine Category)	143.5	195	147.6	246.5	246.5	199.1

Note, Columns D and E also represent the net quota available for use by the Longline category under Alternative 2.1.3. Option B (Annual Purse Seine Reallocation Commensurate with the Number of Purse Seine Vessels), if all reallocated quota were allocated to the Longline category and all Purse Seine ITQ quota were leased to the Longline category.

No Quota Allocation Leasing (Columns A, B, and C):

For example, under the preferred codified quota reallocation alternative (A 2a; based on 68 mt), the base quota for the Longline category would be increased each year, in this case increased to 137 mt (based on the total bluefin quota of 923.7 mt + 62.5 mt). If, in addition, the annual reallocation of Purse Seine quota were implemented, and 50% of the quota were available (based on Purse Seine catch) and it was all allocated to the Longline category, there would be 216.7 mt available. If 50% of the quota was available from the Purse Seine category, but only 4% were provided to the Longline category, the net amount of available quota would be 143.7 mt.

With Quota Allocation Leasing (Columns D, E, and F)

Under these examples, the amounts of available quota are larger (than columns A, B, and C), because they include the maximum amount of additional quota that would be available for the Longline category if vessels obtained more IBQ allocation by leasing from the Purse Seine category. These amounts take into consideration how much quota the Purse Seine category would have available to lease to the Longline category, as a result of the effect of the reallocation alternatives that affect the Purse Seine category. Tables in the Appendices show the details of the calculations. Therefore, for the example given above (137 mt), if this combination of reallocation alternatives were combined with an IBQ with trading, there would be 296 mt available to the Longline category.

Discussion

It is important to note that the maximum amount of available quota is not a predictor for the amount of bluefin catch that would be anticipated. As discussed below, total bluefin catch is expected to be below the total amount of bluefin quota available to the Longline category, as a result of the measures that reduce dead discards (e.g., gear restricted areas) and provide incentives for vessels fishing with pelagic longline to avoid interactions with bluefin (e.g., IBQs), or other reasons. Another reason why total bluefin catch would be below the theoretical maximum quota amounts is that not all available quota from the Purse Seine category would be leased to the Longline category. Not all combinations of measures were analyzed because of the similarity among alternatives. For example, the alternative “Annual Purse Seine Reallocation Commensurate with the Number of Purse Seine Vessels” (Alternative A 3b), is not included in the table above. However, based on the range of quotas allocated to the Purse Seine category in that alternative (and the associated amounts of quota available for reallocation), the maximum amount of quota that would be available for use by the Longline category would be 246.6 mt in the above example (246.6 is equivalent to the sum of the Longline category quota and the base Purse Seine quota (74.8 and 171.8, respectively)).

Combining the quota reallocation alternatives with other alternatives would provide a method of quota allocation and accounting that is flexible enough to account for highly variable levels of catch in the directed and incidental fisheries. A quota alternative that results in potential bluefin catch greater than the historical range of bluefin catch may not be consistent with the objective of reducing dead discards, because the amount of dead discards may increase. Similarly, a bluefin quota allocation that substantially reduces the potential catch of target species (e.g., swordfish or yellowfin tuna) may not be consistent with the object of optimizing fishing opportunity and maintaining fairness among users.

It is important to remember that these highest available numbers reflect particular scenarios. That is, if there is annually reallocated quota, and 50% of the Purse Seine quota is allocated only to the Longline category, and all quota that may be available for leasing under an ITQ program is leased to the Longline category, then Longline category quota would be the largest of all possible scenarios.

Under the annual reallocation alternative (Section 2.1.3; Alternative A 3a), up to 75% of the Purse Seine quota could be available for reallocation. This analysis only considers the scenario in which 50% of the Purse Seine quota is reallocated to the Longline category, and not a greater amount, because the resultant amount of net quota available would be larger than 296 mt, which is at the high end of the historical range of bluefin catch by the Longline category. The analysis of the Purse Seine alternatives analyzes the impacts of reallocation of the full 75% (but with not all of the quota being reallocated to the Longline category). The different methods of arriving at the result however have different economic and social impacts, as explained in Chapter 5.

The maximum amount of quota that would be available to the Longline category (296 mt) is slightly greater than the total catch (landings and dead discards) of bluefin by the Longline category in 2009 (278.3 mt; Table 3.20), the highest in the recent time series, and 37% higher than the 2006 to 2011 average (216.3 mt). As stated above, the biological impacts of the combined reallocation and IBQ alternatives on bluefin tuna and other HMS can be represented by the amount of bluefin tuna and other HMS that would be caught. However, as explained further below, total bluefin catch is expected to be below the total amount of bluefin quota available to the Longline category, as a result of the measures that reduce dead discards (e.g., gear restricted areas) and provide incentives for vessels fishing with pelagic longline to avoid interactions with bluefin (e.g., IBQs). An IBQ system may affect the total amount of bluefin quota available to be fished but may also limit fishing effort for target species if bluefin quota is constraining to some vessels.

A shift in quota from the Purse Seine or Angling categories to other quota categories, as would occur with the Permanent Reallocation Option B, may affect the size distribution of bluefin caught However, potential changes in the catch of different sized bluefin would not affect the overall size composition of the stock, due to the small amount of the potential quota shift (from one category to another) relative to the size of the bluefin stock as a whole (spawning stock biomass of approximately 18,000 mt).

4.1.6.1.3 Combining Regional Quota Alternative and Quota Allocation Alternatives

The analysis summarized in Table 4.31 above shows the amount of quota that would be available to the Longline category as a whole, combining the regional quota control alternative with the codified and annual reallocation alternatives. In contrast, the data below in Table 4.32 illustrate the amount that would be available to a particular region (the Mid-Atlantic bight) under a regional quota control system and quota reallocation alternatives. A regional catch cap system combined with codified or temporary reallocation of quota would have the effect of increasing the amount of quota for all regions and lengthening the period during which vessels are allowed to fish with pelagic longline gear. It is difficult to predict how long a particular regional quota

would last based on the historical pattern of bluefin interactions in the Mid-Atlantic Bight (see Table 4.24, exploration of regional quota) due to the variability of the catch patterns.

Notwithstanding the variable patterns of interactions, it is clear that additional allocations of quota through codified or temporary reallocations would substantially lengthen the time until the regional catch cap is caught. The duration of the pelagic longline fishery in the Mid-Atlantic Bight would depend upon the amount of quota reallocated to the Longline category, and based on historical catches, would be highly variable. The bluefin quota allocated to the Mid-Atlantic Bight region may be caught in as little time as a month, or last most of the year (Table 4.24; Regional Catch Cap Exploration of Mid-Atlantic Bight Example). Table 4.32 calculates the amount of bluefin quota available to the Mid-Atlantic Bight region based on Alternative C 3a, combined with the different codified and annual reallocation alternatives. As described in Chapter 2, Alternative C 3a(Regional Quota Control) is based upon the Mid-Atlantic Bight receiving 67.5% of the Northern sub-quota (which is 40% of the Longline quota).

Table 4.33 Regional Catch Cap Quota Available for Mid-Atlantic Bight Under Various Scenarios (mt).

Codified Reallocation Alternative	No Annual reallocation of Purse Seine quota to Longline category	Annual reallocation of 50% of Purse Seine quota to Longline category	Annual reallocation of 4% of Purse Seine quota to Longline category
No Action	20.2	43.4	22.1
Based on 68 mt	37.0	58.5	38.9
Recent Landings and Current Allocation	37.0	48.7	37.9
From Purse Seine	38.7	52.7	39.9

Compared to the No Action Alternative, either of the catch cap measures (Regional or IBQ) would reduce dead discarding by capping catch of bluefin. Either the Regional or IBQ measures would have short-term, direct, moderate beneficial biological impacts on bluefin due to the restriction of total catch. Restriction of the Longline category catch would make it less likely that the overall quota would be exceeded, and may enhance spawning potential and facilitate achievement of the biological objectives of the 2006 Consolidated HMS FMP. It is difficult to predict the total amount of fishing effort that would occur under the different scenarios of either Regional Catch Caps or IBQs. There is likely to be less fishing effort under the Regional catch cap alternative because a few vessels could catch a large number of bluefin, and cause the closure of the entire area to the use of pelagic longline gear. The historical data indicate that the majority of bluefin have been caught by relatively few vessels. In contrast, under an IBQ system, a vessel would not be prohibited from fishing with pelagic longline gear unless it had caught its annual harvest privilege, and vessels would be able to obtain additional quota from other vessels.

The amount of target species catch such as swordfish and yellowfin tuna would depend primarily upon the amount of fishing effort and whether the regional catch caps or IBQs become

constraining. If the regional catch caps result in reducing pelagic longline fishing effort, there may be some minor positive biological impacts on target stocks.

4.1.6.1.4 Combining the Quota Allocation Alternatives with the IBQ Initial Quota Share Formula Alternatives

An analysis was done to combine the impacts of the codified and annual quota allocation alternatives and the IBQ initial quota share alternatives. The following analysis characterizes and quantifies the amount of each vessel's allocation relative to the vessel's historical amount of bluefin landed and discarded dead. Because bluefin discarded alive would not count against their individual quota, only bluefin dead discards and landings were included in the analysis. In contrast, the allocation was based upon bluefin interactions.

The analysis answers the following two-part question: 1) If the vessel fishes under an IBQ system and continues to catch its historical rate of bluefin, is the amount of bluefin allocation sufficient to catch the historical amount of HMS landings? 2) Does the vessel have less than enough bluefin allocation or more than enough bluefin? Specifically, the analysis compared each vessel allocation to the amount of allocation that would be needed to catch the vessel's average amount of HMS landings, using the vessel's average HMS landings and the ratio of bluefin interactions to HMS landings. This analysis represents the scenario in which vessels do not modify their behavior to avoid or reduce the rate of bluefin interactions, and do not obtain additional bluefin tuna via transfers of IBQ allocation.

Whether a particular vessel may be constrained, and the total number of vessels constrained depends upon the specific allocation method used as well as the total amount of quota available. "Quota Scenario" represents the amount of available quota for the Longline category as a whole. The quota amounts associated with combinations of alternatives shown below (i.e., 74.8, 137, and 216.7 mt) were derived as explained above and shown in Table 4.31, (based on not trading of IBQ). Table 4.33, Table 4.34, and

Table 4.35 below show data on the number of vessels that would need no additional bluefin tuna quota in order to land their average HMS landings, the number of vessels that would need additional bluefin tuna quota, the amounts of bluefin quota (surplus or needed), and the reductions in HMS landings if bluefin quota were constraining. This information is shown for several of the quota scenarios (i.e., amounts of quota), and for each of the IBQ allocation alternatives.

Table 4.34 Analysis of Initial Allocation of Individual Bluefin Quotas by Quota Scenario (see Table 4.25), and Area. Allocations Based on Equal Shares (Alternative C 2b.1)

Equal Shares Quota Allocation Formula, Quota Scenario (mt) and Area Designation		# vessels that need no additional bluefin to land historical average HMS landings	Total Amount of surplus bluefin (mt)	# vessels that need additional bluefin to land historical average HMS landing (%)	Total Amount of additional bluefin needed (in addition to initial allocation) to land historical average HMS landings (mt)	Reduction in landings if No bluefin obtained via trading (lb)
74.8	GOM	32	10	25 (44%)	28	947,805
	Atlantic	71	18	33 (32%)	47	2,435,333
	Total	103	28	58 (36%)	75	3,383,139
137	GOM	36	21	21 (37%)	19	326,214
	Atlantic	81	44	23 (22%)	36	1,480,274
	Total	117	65	44 (27%)	54	2,006,488
216.7	GOM	50	34	7 (12%)	11	248,546
	Atlantic	89	75	15 (14%)	27	917,558
	Total	139	109	22 (14%)	38	1,166,104

Table 4.35 Analysis of Initial Allocation of Individual Bluefin Quotas by Quota Scenario (see Table 4.34), and Area. Allocations Based on Designated Species Landings (Alternative C 2b.2)

Quota Allocation Formula Based on Designated Species Landings, Quota Scenario (mt) and Area Designation		# vessels that need no additional bluefin to land historical average HMS landings	Total Amount of surplus bluefin (mt)	# vessels that need additional bluefin to land historical average HMS landings	Total Amount of additional bluefin needed (in addition to initial allocation) to land historical average HMS landings (mt)	Reduction in landings if No bluefin obtained via trading (lb)
74.8	GOM	28	6	29 (51%)	41	1,016,795
	Atlantic	65	16	39 (38%)	134	2,545,064
	Total	93	22	68 (42%)	175	3,561,859
137	GOM	35	15	22 (39%)	30	617,110
	Atlantic	75	41	29 (28%)	117	1,780,591
	Total	110	56	51 (32%)	147	2,397,701
216.7	GOM	40	32	17 (30%)	20	363,916
	Atlantic	83	79	21 (20%)	101	1,190,249
	Total	123	111	38 (24%)	121	1,554,165

Table 4.36 Analysis of Initial Allocation of Individual Bluefin Quotas by Quota Scenario (see Table 4.34), and Area. Allocations Based on Designated Species Landings and Bluefin to Designated Species Landings Ratio (Alternative C 2b.3) (Preferred)

Quota Allocation Formula Based on Designated Species Landings & Bluefin to Designated Species Landings, Quota Scenario (mt) and Area Designation		# vessels that need no additional bluefin to land historical average HMS landings	Total Amount of surplus bluefin (mt)	# vessels that need additional bluefin to land historical average HMS landings	Total Amount of additional bluefin needed (in addition to initial allocation) to land historical average HMS landings (mt)	Reduction in landings if No bluefin obtained via trading (lb)
74.8	GOM	31	12	26 (46%)	29	929,330
	Atlantic	72	24	32 (31%)	47	2,169,378
	Total	103	36	58 (36%)	76	3,098,708
137	GOM	39	27	18 (32%)	23	640,741
	Atlantic	83	57	21 (20%)	39	1,547,003
	Total	122	84	39 (24%)	62	2,187,744
216.7	GOM	40	49	17 (30%)	17	440,427
	Atlantic	87	101	17 (16%)	31	1,020,410
	Total	127	150	34 (21%)	48	1,460,837

Trends in Numbers of Vessels for which Fishing Effort May be Constrained by the IBQ

Trends with Respect to Pelagic Longline Quota Amount and Bluefin Quota Share Formula

The number of vessels that need additional quota ranges from 14 to 42%, depending upon the size of the quota (74.8, 137, or 216.7 mt) and the method of quota allocation (Alternative C 2b.1, C b2.2, or C 2b.3).The larger the pelagic longline quota, the fewer number of vessels 'need' additional quota. The largest number of vessels would need additional quota under the bluefin quota share Alternative C 2b.2, Based on Designated Species Landings. The other two bluefin quota share formula alternatives were similar to one another, and were the same with respect to the number of vessels (36%) that "need" additional quota under the quota scenario of 74.8 mt. Under the 137 mt quota scenario, under Alternative C 2b.1, Equal Shares, and 27% of vessels would need additional quota, and under the Alternative C 2b.3, Bluefin to Designated Species Ratio, 24% of vessels would need additional quota. Under the 216.7 mt quota scenario, under Alternative C 2b.1, Equal Shares, and 14% of vessels would need additional quota, and under Alternative C 2b.3, Bluefin to Designated Species Ratio, 21% of vessels would need additional quota.

Regional Trends (Gulf of Mexico versus Atlantic IBQ):

The percentage of vessels that would need additional quota in general, would be greater for Gulf of Mexico IBQ than for Atlantic IBQ (i.e., between 12 and 51% of Gulf of Mexico IBQ vessels would need additional quota; between 14 and 38% of Atlantic IBQ vessels would need additional quota).

Trends in the Amount of Additional Quota Needed:

With respect to the total amount of quota needed (in addition to the allocation resulting from the IBQ share), the trend is similar to the trend in the number of vessels that need quota. The total amount of quota needed in order to land the average amount of designated species would be larger for the bluefin quota shares based on Designated Species Landings (Alternative C 2b.2), and the least for quota shares based upon equal shares (Alternative C 2b.1). The amount of quota needed for vessels with Atlantic IBQ with bluefin shares based upon Designated Species landings (Alternative C 2b.2) would be notably larger than under the other region/quota share formula combinations.

Trends in Potential Reductions in HMS Landings:

If the IBQ shares provided to vessels constrain their fishing, the total reductions in HMS landings would be largest under the Designated Species Landings alternative, and least under the equal shares alternative (

Table 4.36, below). The potential reductions in numbers of designated species landed (assuming the historical amount of bluefin relative to landings, and no change in fishing behavior to avoid bluefin) range from 1,166,104 (216.7 mt quota, equal shares quota share formula) to 3,561,859 fish (74.8 mt quota, HMS Landings quota share formula). For all three of the quota share formula alternatives, the total reductions in HMS landings (number of fish) would be greater for the vessels allocated Atlantic IBQ than the reductions associated with Gulf of Mexico IBQ vessels.

Figure 4.5 through Figure 4.14 provide comparisons of the proportion of vessels that need additional bluefin tuna (to land their historical averages of HMS); the total amount of additional bluefin needed; the total reductions in HMS Landings (# fish) if no bluefin quota is obtained via quota allocation transfers. Quota A = 74.8 mt; Quota B = 137 mt; Quota C = 216.7 mt

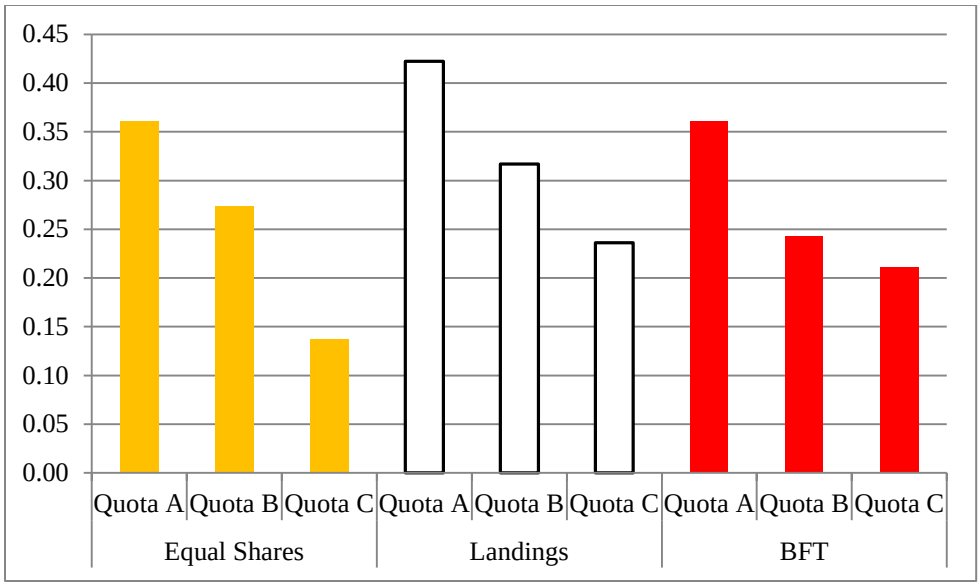

Figure 4.5 Proportion of Vessels that Need Additional Bluefin Tuna to Land Historical Average HMS Landings, by Quota Allocation Formula and Quota Scenario (see Tables 4.33, 4.34, 4.35).

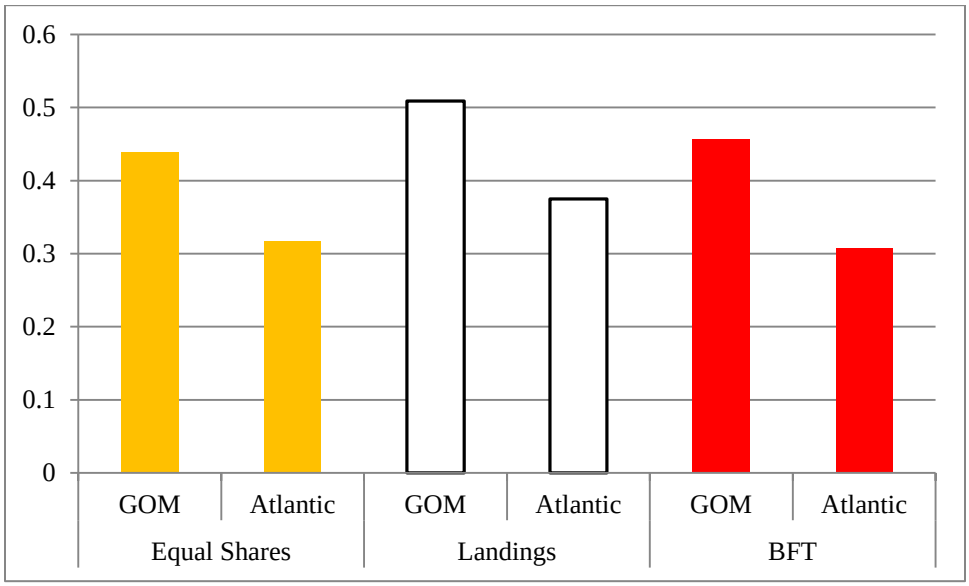

Figure 4.6 Proportion of Vessels that Need Additional Bluefin Tuna to Land Historical Average Landings, by Quota Allocation Formula and Area (GOM vs. Atlantic), for 74.8 mt Quota Scenario (see Tables 4.33, 4.34, 4.35).

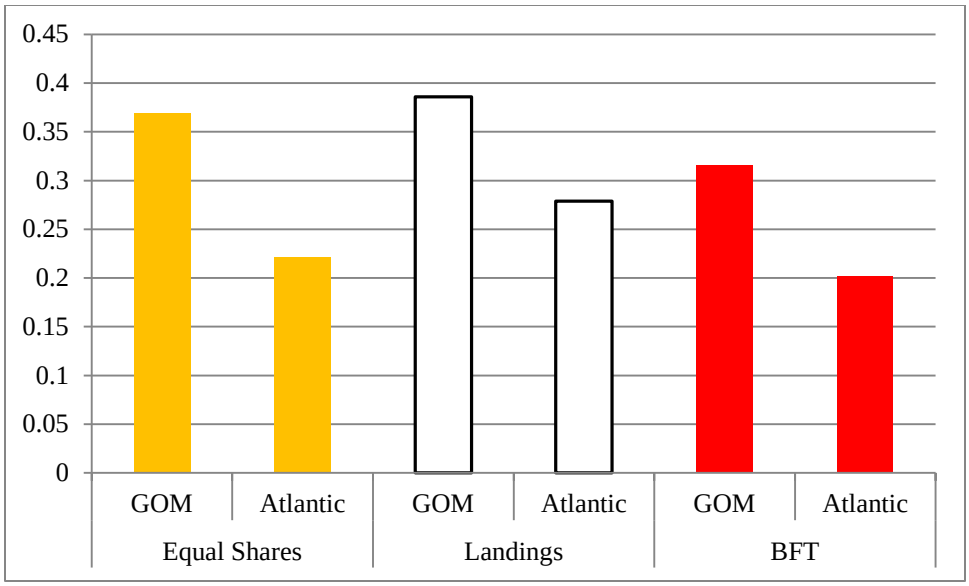

Figure 4.7 Proportion of Vessels that Need Additional Bluefin Tuna to Land Historical Average Landings, by Quota Allocation Formula and Area (GOM vs. Atlantic), for 137 mt Quota Scenario (see Tables 4.33, 4.34, 4.35).

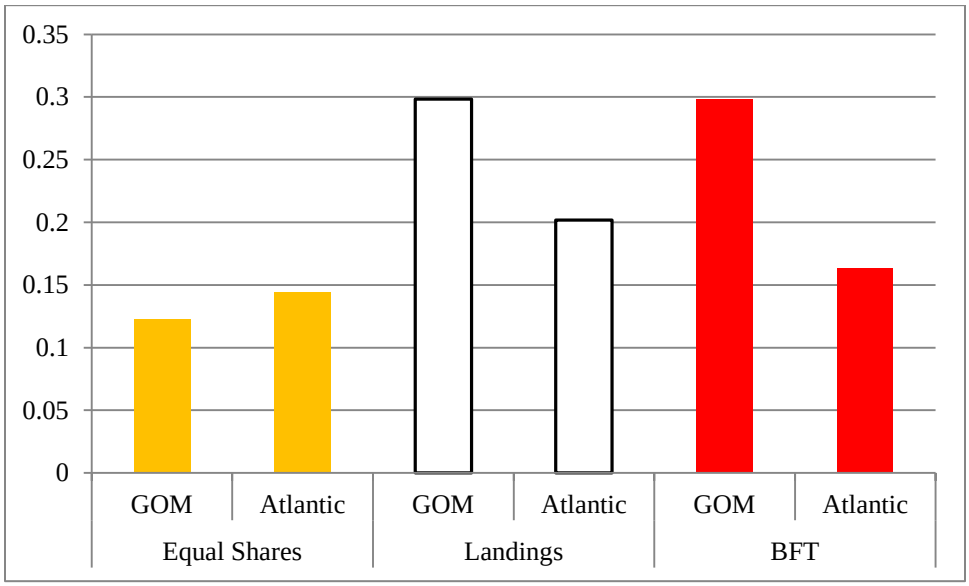

Figure 4.8 Proportion of Vessels that Need Additional Bluefin Tuna to Land Historical Average Landings, by Quota Allocation Formula and Area (GOM vs. Atlantic), for 216.7 mt Quota Scenario, (see Tables 4.33, 4.34, 4.35).

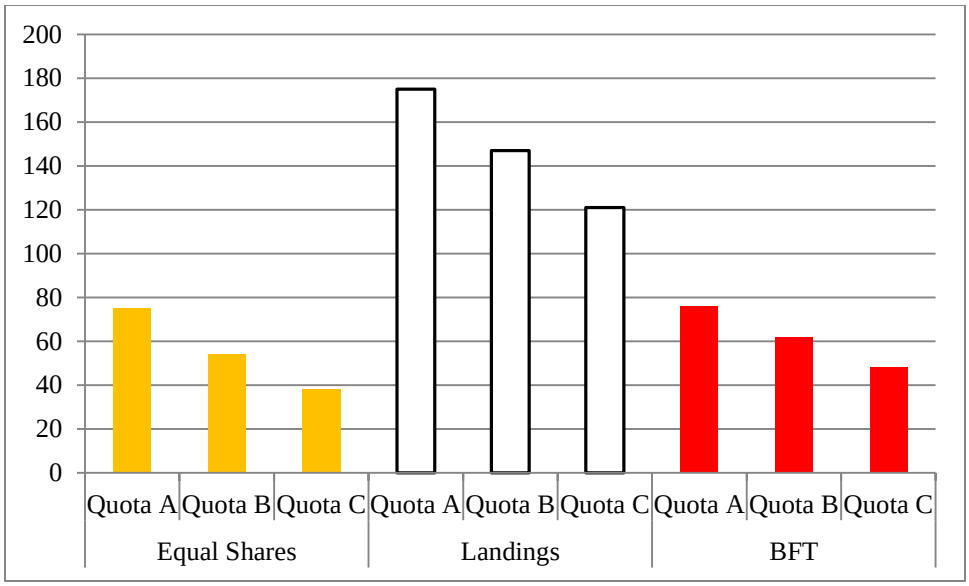

Figure 4.9 Total Amount of Additional Bluefin Needed (in addition to initial allocation) to land historical average landings (mt) by Quota Allocation Formula, (see Tables 4.33, 4.34, 4.35).

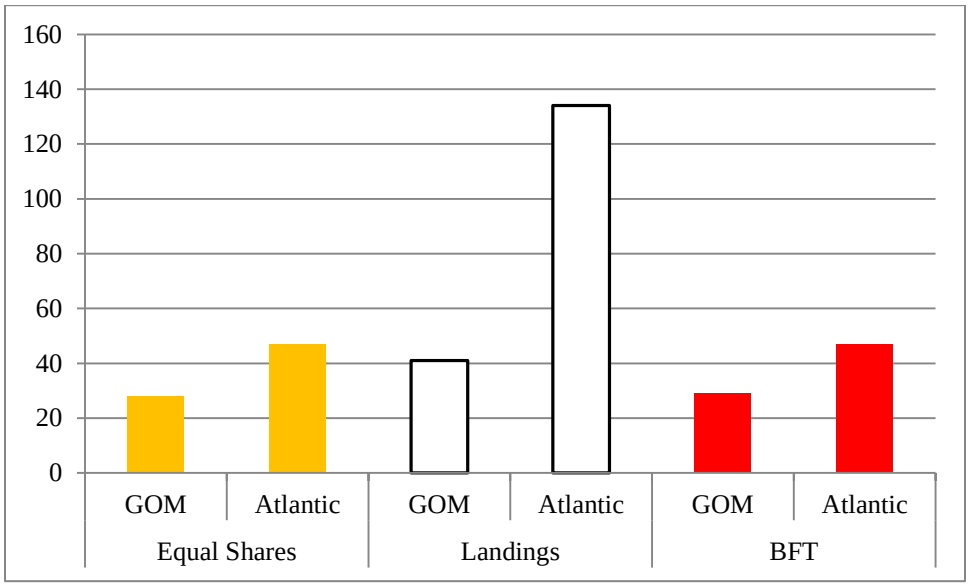

Figure 4.10 Total Amount of Additional Bluefin Needed (in addition to initial allocation) to land historical average landings (mt) by Quota Allocation Formula and Area for 74.8 mt Quota Scenario, (see Tables 4.33, 4.34, 4.35).

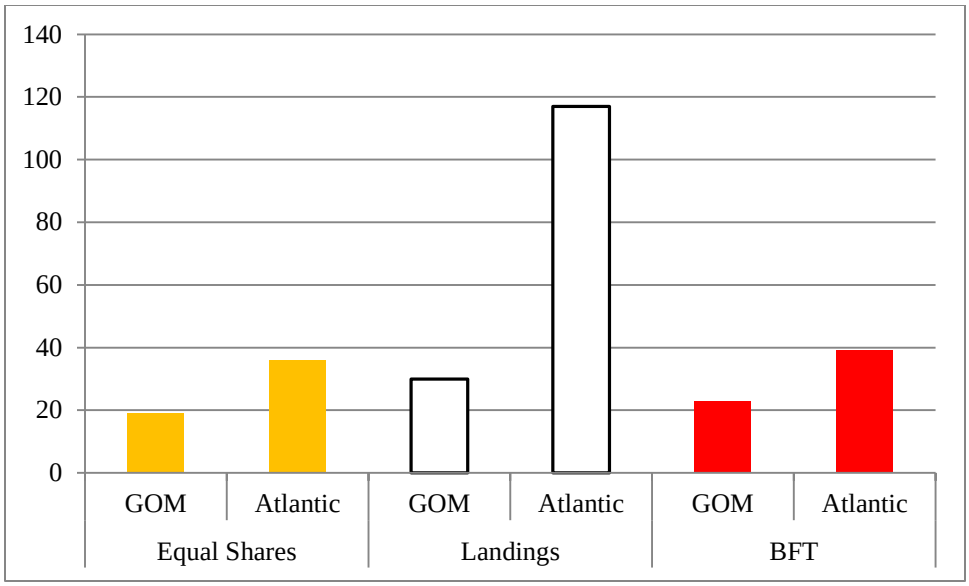

Figure 4.11 Total Amount of Additional Bluefin Needed (in addition to initial allocation) to land historical average landings (mt) by Quota Allocation Formula and Area for 137 mt Quota Scenario, (see Tables 4.33, 4.34, 4.35).

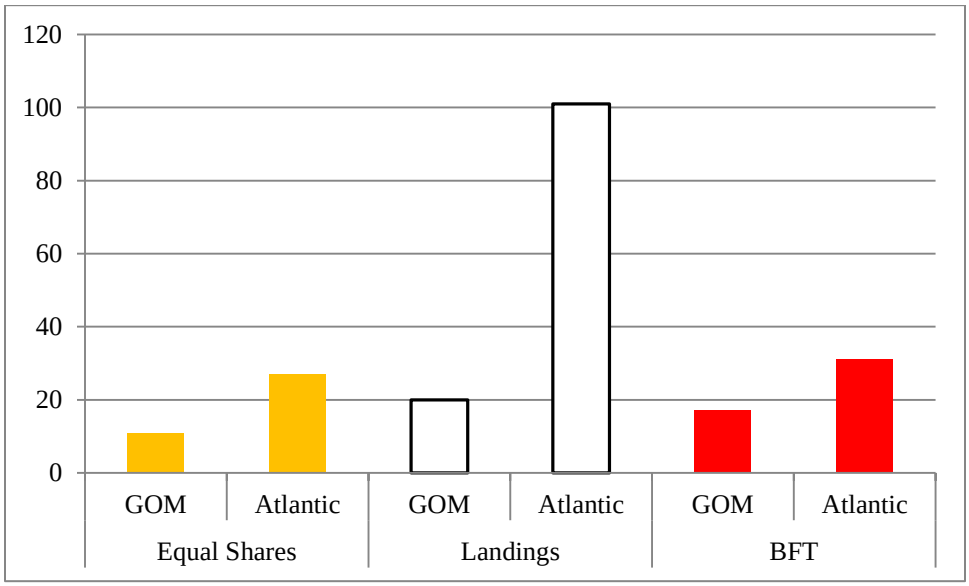

Figure 4.12 Total Amount of Additional Bluefin Needed (in addition to initial allocation) to land historical average landings (mt) by Quota Allocation Formula and Area for 216.7 mt Quota Scenario, (see Tables 4.33, 4.34, 4.35).

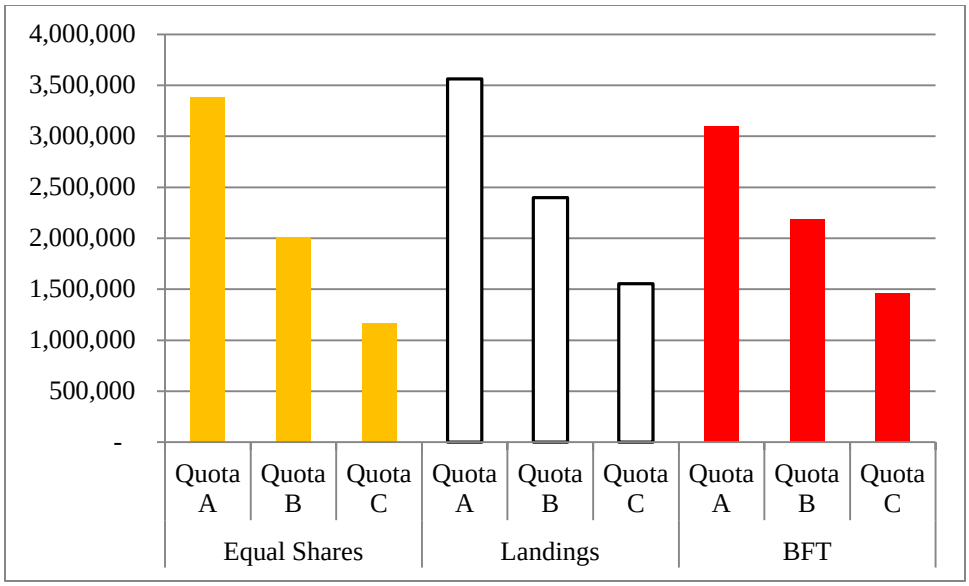

Figure 4.13 Total Reductions in HMS Landings (# fish) if No Bluefin Quota Obtained via Trading, by Quota Allocation Formula and Quota Scenario, (see Tables 4.33, 4.34, 4.35).

Table 4.37 summarizes the amount of reduction in HMS landings (expressed as pounds of fish) for each of the IBQ allocation alternatives and three of the quota scenarios ranks the IBQ allocation alternatives by

Table 4.37 Total Reductions in HMS Landings (lb) if No Bluefin Quota Obtained via Trading, Indicating Allocation Alternative and Quota Availability Scenario.

Rank Order According to Reduction in HMS Landings	IBQ Allocation Alternative	Quota Scenario (mt)	Reduction in HMS Landings (lb)
1	Equal Shares	216.7	1,166,104
2	Bluefin Ratio	216.7	1,460,837
3	Landings	216.7	1,554,165
4	Equal Shares	137	2,006,488
5 (preferred)	Bluefin Ratio	137	2,187,744
6	Landings	137	2,397,701
7	Bluefin Ratio	74.8	3,098,708
8	Equal Shares	74.8	3,383,139
9	Landings	74.8	3,561,859

Figure 4.15 and Figure 4.16 show the total reductions in HMS landings, if no additional bluefin tuna are obtained via transfers of quota allocation, for each of the quota scenarios.

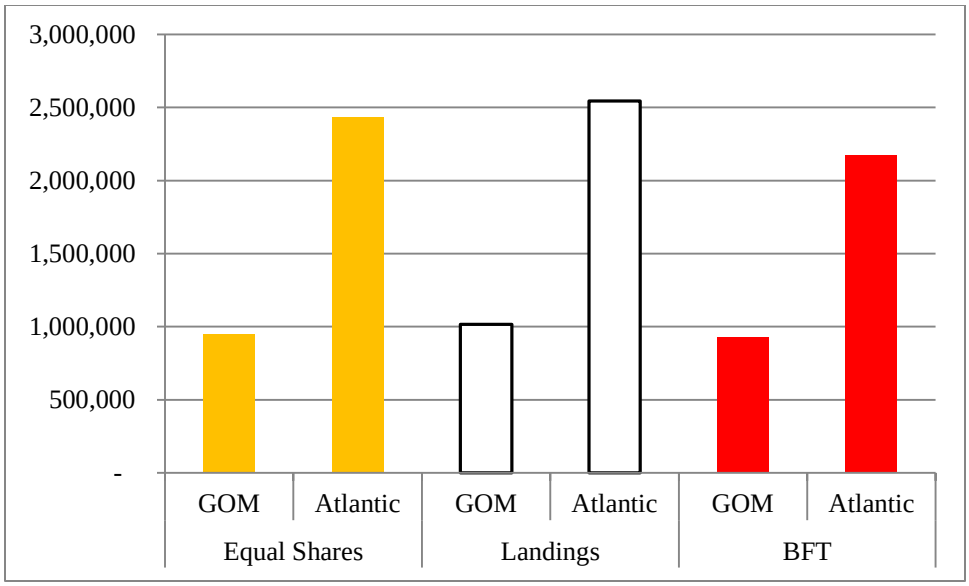

Figure 4.14 Total Reductions in HMS Landings (lb) if No Bluefin Quota Obtained via Trading, by Quota Allocation Formula and Area (GOM vs. Atlantic), for 74.8 mt Quota Scenario, (see Table 30).

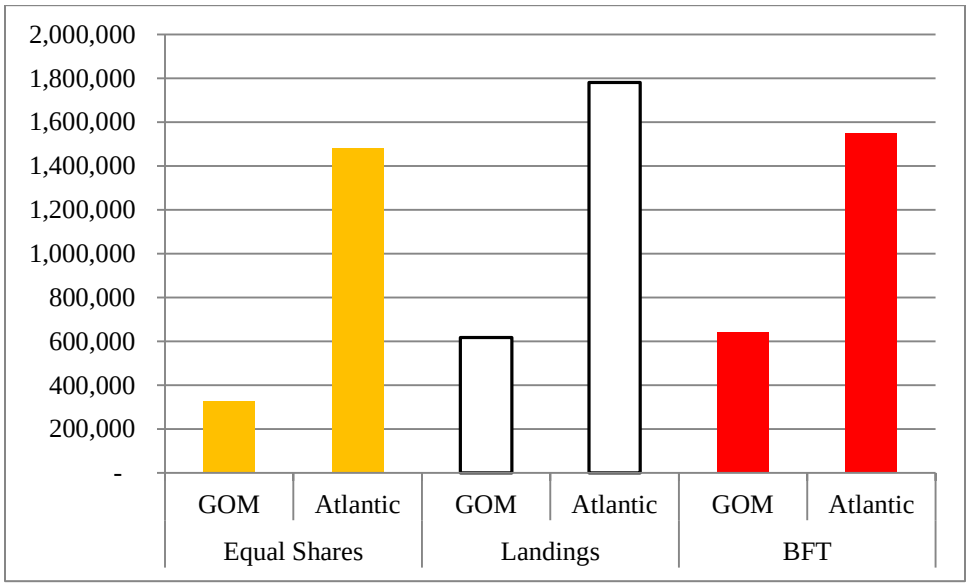

Figure 4.15 Total Reductions in HMS Landings (lb) if No Bluefin Quota Obtained via Trading, by Quota Allocation Formula and Area (GOM vs. Atlantic), for 137 mt Quota Scenario, (see Table 4.30).

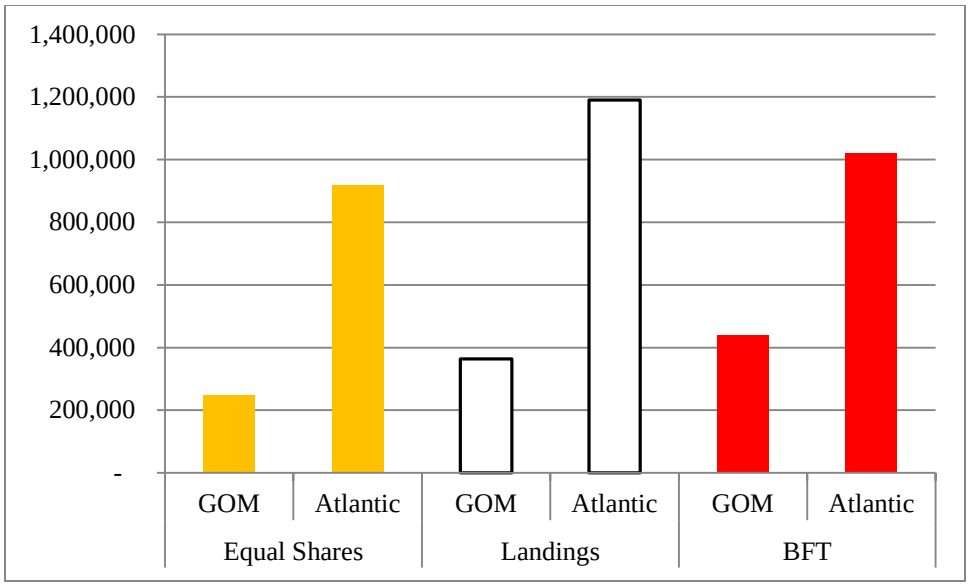

Figure 4.16 Total Reductions in HMS Landings (lb) if No Bluefin Quota Obtained via Trading, by Quota Allocation Formula and Area (GOM vs. Atlantic), for 216.7 mt Quota Scenario, (see Table 4.30).

4.1.6.1.5 Pelagic Longline Preferred Alternatives

Figure 4.8 below summarizes the biological impacts of the preferred alternatives discussed in Section 4.0.

Table 4.38 Biological Impacts of the Pelagic Longline Preferred Alternatives

Preferred Alternative	Quality	Timeframe	Impacts
Permanent and Annual Reallocation	Indirect	Short-term	O/ Θ +
Modifications to Reserve Category	Indirect	Short-term	O/ Θ +
Cape Hatteras Gear Restricted Area with Access	Direct	Long-term	Ø +
Allow Pelagic Longline Vessels to fish under General Category Rules	n/a	n/a	o
Small Gulf of Mexico Gear Restricted Area	Direct	Long-term	Ø +
Pelagic and Bottom Longline Transiting Closed Areas	n/a	n/a	o
Increased Flexibility to use Buoy Gear	n/a	n/a	o
Access to Closed Areas based on Performance Criteria	Direct	Short-term	O / Θ –
IBQs	Direct	Short-term	Ø +
NMFS Closure of the Pelagic Longline Fishery (when quota reached)	Direct	Short-term	● +/ Ø +
Elimination of Target Catch Requirement	Direct	Short-term	Ø +
Mandatory Retention of Legal-sized bluefin	Direct	Short-term	Θ +
VMS Reporting	Indirect	Long-term	o
Electronic Monitoring	Indirect	Long-term	Θ +

4.1.6.1.6 Accounting for Dead Discards Under Amendment 7

These following illustrations are intended to show the flexibility in the system to account for various levels of dead discards.

How Would NMFS Account for Dead Discards Under Amendment 7?

The method of accounting for dead discards is closely linked to the type of quota system (Section 4.1.3, Bluefin Tuna Quota Controls), as well as the timing and amount of data used to monitor the fishery (Section 4.1.4, Enhance Reporting Alternatives).In the context of IBQs (Alternative C 2, Sections 2.3.2 and 4.1.3.2) dead discards would be accounted for on an individual vessel basis, provided robust data regarding the dead discards are available. If NMFS determines that robust dead discard data from individual vessels are not available, or would not be available, NMFS may account for dead discards by subtracting all or a portion of the estimated bluefin dead discards from the Longline quota in a single sum, "up front" (resulting in a landings quota). In this case only landings would count toward a vessel's IBQ. NMFS would have the ability to set a landings quota for the Longline category based on its current authority to allocate quota and account for dead discards.

If NMFS ability to close the pelagic longline fishery were implemented (Section 4.1.3.4), NMFS may estimate dead discards and rely upon NMFS ability to close the pelagic longline fishery when it projects that the bluefin quota will be caught (Sub-Alternative C2g.4).

What are the Range of Potential Quotas and Dead Discards that would be Accounted For?

Based on the 2011 Longline category bluefin quota, under the Amendment 7 alternatives the range of bluefin quota available to the pelagic longline fishery would be between 74.8 mt and 296 mt depending upon the combination of alternatives (and relevant assumptions, such as complete trading of IBQ allocation). The amount of dead discards that must be accounted for in the future is estimated at 150 mt based on the 2009 to 2011 historical average, 93 mt given the anticipated impacts of the two preferred gear restricted areas, and less than 93 mt if fishing behavior is modified so that more bluefin are avoided, or fishing effort decreases.

Examples of Quota Allocations and Dead Discard Accounting Under Amendment 7

The tables below illustrate the flexibility NMFS would have under the preferred alternatives to conduct quota allocation and accounting in a manner that accounts for dead discards at or below the historical level and that addresses multiple Amendment 7 objectives. The tables show five specific possible quota allocation and accounting examples under the preferred alternatives, that include a landings quota (i.e., taking dead discards off the top), and no trading with Purse Seine vessels. Note, there are many other potential examples, but these illustrate a reasonable range based the Amendment 7 analyses, and historical information on the pelagic longline fishery landings and discards of bluefin.

It is important to note that not all of the examples assume reductions in dead discards as a result of the IBQ alternative or a Gear Restricted Areas**.** The IBQ alternative would reduce dead

discards by an unknown amount due to the increased incentive to avoid bluefin and the preferred Gear Restricted Area alternatives would decrease dead discards by approximately 57 mt. If the reduction in dead discards as a result of the gear restricted areas is factored into these tables, the use of underharvest or the Reserve category quota to account for dead discards would be reduced or eliminated (depending upon the amount of quota, etc.). Similarly, with reductions in the amount of dead discards from Gear Restricted Areas included, the need for additional quota (in excess of the base allocation) to account for Longline category dead discards would be reduced, and therefore there would be more flexibility to use reallocated Purse Seine category quota to distribute to all quota categories, instead of more narrowly to the Longline category. It is possible that an increase in stock size may result in an increase amount of total dead discards by the pelagic longline fishery even if the fishing effort does not increase. As demonstrated in these examples, the flexibility of the quota accounting system would enable successful quota accounting and management to continue.

All five examples set a landings quota of 65 mt based on the historical range of pelagic longline landings, and reflect the Codified Reallocation Alternative (A 2a).A landings quota of 65 mt used in these examples was selected because the average landings of bluefin by the Longline category, from 2006 through 2011 was 66.7 mt. The examples include Longline category quotas of 137.3 mt, 176.8 mt, and 216.8 mt; Annual Reallocation from the Purse Seine Category (Alternative A 3a) of zero, 50% and 25%; the use of underharvest to account for Longline category dead discards (zero mt, 20 mt, 45 mt, and 78 mt); and the use of Reserve category quota to account for Longline category dead discards (zero mt, 20 mt, 20.7 mt, 45 mt, and 78 mt). The amount of bluefin tuna dead discards accounted for under these examples are 117.3 mt, 131.8 mt, 150.3 mt, and 151.8 mt, and the combined amounts of landings and dead discards are 215.3 mt, 182.3 mt, 216.8 mt, and 196.8 mt.

Table 4.39 and Table 4.40 illustrate Example A, which is the combined effect of Alternative A 2a (Codified Reallocation), the use of 80 mt from the previous year's underharvest to augment the Reserve category, the use of 78 mt from the Reserve category to account for Longline category dead discards, the deduction of 72.3 mt from the Longline category to account for dead discards, and a 65 mt landings quota for the Longline category. In this example, 150.3 mt of dead discards are accounted for, an amount slightly greater than the historical average of 149.6 mt (from 2006 to 2011, Table 3.19). Example A does not consider the anticipated reductions in dead discards that would result from the implementation of the preferred gear restricted areas.

Table 4.39 Illustration of Bluefin Quota Allocation and Quota Accounting Possible under Preferred Alternatives (mt). Example A

Quota Element	Longline	Reserve	Purse Seine	General Category	Angling	Harpoon
Base Allocation	74.8	23.1	171.8	435.1	182	36
Codified Reallocation (Alternative A 2a)	+ 62.5	- 1.7	- 12.6	- 32	- 13.4	- 2.7
Subtotals	137.3	21.4	159.2	403.1	168.6	33.3
Underharvest from Previous Year		+ 80				
Subtotal		101.4				
Use of Reserve to Account for Dead Discards		- 78				
Subtotal		23.4				

Table 4.40 is based on Example A from Table 4.39, and focuses on accounting within the Longline category, and illustrates in more detail the accounting for dead discards

Table 4.40 Illustration of Longline Category Quota Accounting Possible under Preferred Alternatives (mt). Example A.

Quota Element	In	Out	Longline Category Balance	Dead Discards Accounted for
Initial Allocation	137.3		137.3	
Deduction for Dead Discards		-72.3	65	72.3
Landings Allocation		-65	0	
Quota from Reserve used to Account for Dead Discards			0	78
Final			0	150.3
Landings and Dead Discards Total: 65 + 150.3 = 215.3				

Therefore, in Example A, the Longline category has a quota allocation of 137.3 mt, but 72.3 mt is deducted ‘up front’ to account for dead discards, leaving the Longline category a landings quota of 65 mt. An additional 78 mt to dead discards are accounted for from the Reserve category, which results in a total of 150.3 mt of dead discards accounted for.

In contrast, Example B in Table 4.40 shows how a lesser amount of total dead discards (93 mt) could be accounted for reflecting the beneficial impacts of the preferred gear restricted areas.

Table 4.41 Illustration of Bluefin Quota Allocation and Quota Accounting Possible under Preferred Alternatives (mt). Example B.

Quota Element	Longline	Reserve	Purse Seine	General Category	Angling	Harpoon
Base Allocation	74.8	23.1	171.8	435.1	182	36
Codified Reallocation (Alternative A 2a)	+ 62.5	- 1.7	- 12.6	- 32	- 13.4	- 2.7
Subtotals	137.3	21.4	159.2	403.1	168.6	33.3
Underharvest from Previous Year		0				
Subtotal		21.4				
Use of Reserve to Account for Dead Discards		- 20.7				
Subtotal		0.7				

The following Table 4.41 is based on Example B from Table 4.40, and focuses on accounting within the Longline category, and illustrates in more detail the accounting for dead discards.

Table 4.42 Illustration of Longline Category Quota Accounting Possible under Preferred Alternatives (mt). Example B.

Quota Element	In	Out	Longline Category Balance	Dead Discards Accounted for
Initial Allocation	137.3		137.3	
Deduction for Dead Discards		-72.3	65	72.3
Landings Allocation		-65	0	
Quota from Reserve used to Account for Dead Discards			0	20.7
Final			0	93.0
Landings and Dead Discards Total: 65 + 93 = 158				

Therefore, in Example B, the Longline category has a quota allocation of 137.3 mt, but 72.3 mt is deducted ‘up front’ to account for dead discards, leaving the Longline category a landings quota of 65 mt. An additional 20.7 mt of dead discards are accounted for from the Reserve category, which results in a total of 93 mt of dead discards accounted for, which would be sufficient to account for the anticipated dead discards, considering the combined effects of the preferred gear restricted area alternatives.

Table 4.42 and Table 4.43 illustrate Example C, which is the combined effect of Alternative A 2a (Codified Reallocation), Alternative A 3a (Annual Reallocation of quota from the Purse Seine Category); the use of 90 mt from the previous year's underharvest to augment the Reserve category, the use of 45 mt from the Reserve category to account for dead discards, the deduction of 72.3 mt from the Pelagic longline category to account for dead discards, and a 65 mt landings quota for the Pelagic longline category. This example illustrates how quota from the Purse Seine category (50%) is used to 'give back' to the categories from which the 68 mt was deducted. In this example, 117 mt of dead discards are accounted for (less than the historical average dead discards of 149.6), but there is still 85.2 mt of quota in the Reserve category which could be used either to provide additional fishing opportunity or account for dead discards if necessary. Example C does not consider the anticipated reductions in dead discards that would result from the implementation of the preferred gear restricted areas

Table 4.44 and Table 4.45 illustrate Example D, which is the combined effect of Alternative A 2a (Codified Reallocation), Alternative A 3a (Annual Reallocation of quota from the Purse Seine Category); no use of quota from the previous year's underharvest to augment the Reserve category, no use of quota from the Reserve category to account for dead discards, the deduction of 151.8 mt from the Longline category to account for dead discards, and a 65 mt landings quota for the Longline category. This example illustrates how the quota from the Purse Seine category (50%) is provided only to the Longline category. In this example, 151.8 mt of dead discards are accounted for (equivalent to the historical average dead discards of 149.6).

Table 4.46 and Table 4.47 illustrate Example E, which is the combined effect of Alternative A 2a (Permanent Reallocation), Alternative A 3a (Annual Reallocation of quota from the Purse Seine Category); the use of 20 mt from the previous year's underharvest to augment the Reserve category, the use of 20 mt from the Reserve category to account for dead discards, the deduction of 111.8 mt from the Longline category to account for dead discards, and a 65 mt landings quota for the Longline category. This example illustrates how the quota from the Purse Seine category (25%) is provided only to the Longline category. In this example, 131.8 mt of dead discards are accounted for (less than the historical average dead discards of 149.6).

Table 4.43 Illustration of Bluefin Quota Allocation and Quota Accounting Possible under Preferred Alternatives (mt). Example C (Annual Reallocation from Purse Seine used to 'Give back'68 mt).

Quota Element	Longline	Reserve	Purse Seine	General Category	Angling	Harpoon
Base Allocation	74.8	23.1	171.8	435.1	182	36
Codified Reallocation (Alternative A 2a)	+ 62.5	- 1.7	- 12.6	- 32	- 13.4	- 2.7
Subtotals	137.3	21.4	159.2	403.1	168.6	33.3
Annual Reallocation (**50%**) (Alternative A 3a) & Modify Reserve (Alternative A 4b)	na	+ 79.5	- 79.5	na	na	na
Subtotals	137.3	100.9	79.5	403.1	168.6	33.3
Modify Reserve (Alternative A 4b)	0	-60.7	+ 12.6	+ 32	+ 13.4	+ 2.7
Subtotals	137.3	40.2	92.1	435.1	182	36
Underharvest from Previous Year		+ 90				
Subtotal		130.2				
Use of Reserve to Account for Dead Discards		- 45				
Subtotal		85.2				

Table 4.44 Illustration of Longline Category Quota Accounting Possible under Preferred Alternatives (mt). Example C.

Quota Element	In	Out	Longline Category Balance	Dead Discards Accounted for
Initial Allocation	137.3		137.3	
Deduction for Dead Discards		-72.3	65	72.3
Landings Allocation		-65	0	
Quota from Reserve used to Account for Dead Discards			45	45
Final			0	117.3
Landings and Dead Discards Total: 65 + 117.3 = 182.3				

Table 4.45 Illustration of Possible Bluefin Quota Allocation and Quota Accounting Possible under Preferred Alternatives (mt). Example D.

Quota Element	Longline	Reserve	Purse Seine	General Category	Angling	Harpoon
Base Allocation	74.8	23.1	171.8	435.1	182	36
Codified Reallocation (Alternative A 2a)	+ 62.5	- 1.7	- 12.6	- 32	- 13.4	- 2.7
Subtotals	137.3	21.4	159.2	403.1	168.6	33.3
Annual Reallocation (**50%**) (Alternative A 3a) & Modify Reserve (Alternative A 4b)	0	+79.5	-79.5			
Subtotals	137.3	100.9	79.5			
Modify Reserve (Alternative A 4b)	+79.5	-79.5				
Subtotals	216.8	21.4				
Underharvest from Previous Year		0				
Subtotal		21.4				
Use of Reserve to Account for Dead Discards		0				
Subtotal		21.4				

Table 4.46 Illustration of Longline Category Quota Accounting Possible under Preferred Alternatives (mt). Example D.

Quota Element	In	Out	Longline Category Balance	Dead Discards Accounted for
Initial Allocation	216.8		216.8	
Deduction for Dead Discards		151.8	65	151.8
Landings Allocation		-65	0	
Quota from Reserve used to Account for Dead Discards			0	0
Final			0	151.8
Landings and Dead Discards Total: 65 + 151.8 = 216.8				

Table 4.47 Illustration of Possible Bluefin Quota Allocation and Quota Accounting Possible under Preferred Alternatives (mt). Example E.

Quota Element	Longline	Reserve	Purse Seine	General Category	Angling	Harpoon
Base Allocation	74.8	23.1	171.8	435.1	182	36
Codified Reallocation (Alternative A 2a)	+ 62.5	- 1.7	- 12.6	- 32	- 13.4	- 2.7
Subtotals	137.3	21.4	159.2	403.1	168.6	33.3
Annual Reallocation **(25%)** (Alternative A 3a) & Modify Reserve (Alternative A 4b)	0	+39.75	-39.75			
Subtotals	137.3	61.15	119.45			
Modify Reserve (Alternative A 4b)	+39.75	-79.5				
Subtotals	176.8	21.4				
Underharvest from Previous Year		+ 20				
Subtotal		41.4				
Use of Reserve to Account for Dead Discards		- 20				
Subtotal		21.4				

Table 4.48 Illustration of Longline Category Quota Accounting Possible under Preferred Alternatives (mt). Example E.

Quota Element	In	Out	Longline Category Balance	Dead Discards Accounted for
Initial Allocation	176.8		176.8	
Deduction for Dead Discards		111.8	65	111.8
Landings Allocation		-65	0	
Quota from Reserve used to Account for Dead Discards			0	20
Final			0	131.8
Landings and Dead Discards Total: 65 + 131.8 = 196.8				

Additional Discussion

The preferred alternatives can be characterized in two ways, depending upon whether or not a robust reporting and monitoring system is in place for dead discards. Under a situation where there is not robust inseason reporting and monitoring, a landings quota would be implemented under existing authority and there would not be implementation of an IBQ system (Table 4.48). Dead discards would be estimated based upon historical information, and deducted from the Longline quota allocation. NMFS would utilize its ability to prohibit the use of pelagic longline gear when the total Longline category quota is caught, projected to be caught, is exceeded; or, in order to prevent excessive dead discards of bluefin, when there is high uncertainty regarding the estimated or documented levels of bluefin catch.

Table 4.49 Preferred Alternatives without Robust Inseason Reporting and Monitoring with No IBQ Implemented.

Quota Source	Net Amount of Longline Category Quota (mt)
Base Allocation of 8.1%	74.8
Alternative A 2a (68 mt)	137
Alternative A 3a (Annual Reallocation of Purse Seine Quota) *range of 0% to 50% of Purse Seine Quota to Longline category	137 to 216.7*
Longline category Landings Quota	65 mt

If robust inseason reporting and monitoring is in place, and the IBQ is in effect, landings and dead discards would count toward the IBQ, and trading of IBQ allocation could occur (Table 4.49).

Table 4.50 Preferred Alternatives with Robust Inseason Reporting and Monitoring and IBQ Implemented

Quota Source	Net Amount of Longline Category Quota (mt)
Base Allocation of 8.1%	74.8
Alternative A 2a (68 mt)	137
Alternative A 3a (Annual Reallocation of Purse Seine Quota) *range of 0% to 50% of Purse Seine Quota to Pelagic Longline category	137* to 216.7*
▲Trading of IBQ with Purse Seine Category; *The Longline category and other categories share the 50% of Purse Seine quota, according to their percentages	296, or 222.9*

▲Amount of quota shown assumes that all available Purse Seine quota is leased to vessels in the Longline category.

Under the IBQ system as preferred, it is not likely that the net amount of quota indicated in Table 4.49 would be caught due to the increased incentives to avoid bluefin tuna associated with an IBQ and the cost associated with leasing IBQ from another vessel. NMFS ability to prohibit the use of pelagic longline gear when there is high uncertainty regarding the estimated or documented levels of bluefin catch would provide a means to limit landings or discarding of bluefin by pelagic longline vessels if there are implementation, compliance, or data accuracy problems.

The implementation of gear restricted areas (Alternative B 1) would reduce bluefin dead discards as indicated by the analysis in Section 4.1.2.1, and result in an overall reduction in bluefin tuna dead discards from the recent historical levels.

4.1.6.2 Purse Seine Category Measures

The combined biological impacts of the measures applicable to the Purse Seine category would result principally from impacts of the reallocation alternatives and the VMS reporting requirements and would be indirect impacts. Under any of the combinations of codified and annual reallocation alternatives, the Purse Seine quota would be reduced compared to the No Action alternative. These quota reductions may impact the likelihood of successful quota accounting, but not the size of the total U.S. quota. It is difficult to compare the effect of quota

shifts among categories on bluefin because there is no information on the historical level of discards of categories other than the Longline category. Because the different quota categories have different minimum size restrictions (as described in Section 3.2.3), a shift in quota from the Purse Seine to other quota categories may affect the size distribution of bluefin caught. The reduction in the number of large medium, or giant bluefin that are caught by the Purse Seine category may affect the total numbers of large medium or giant bluefin caught by the fishery as a whole. Due to the small amount of shift in quota relative to the size of the bluefin stock as a whole (spawning stock biomass of approximately 18,000 mt), potential changes in the catch of different sized bluefin would not affect the overall size composition of the stock. If reductions to bluefin quota allocations reduce the amount of fishing effort by the Purse Seine category, the amount catch of other HMS caught incidentally by Purse Seine vessels may be reduced. The reporting requirements would have a minor, beneficial impact because they would provide previously unavailable estimates of dead discards for the purse seine fishery, which would improve estimates of fishing mortality, although discards of bluefin in this fishery are reportedly low. The VMS requirements in this alternative primarily address timely data collection for more precise inseason management of the bluefin tuna fishery. In summary, the biological impacts of the Purse Seine category measures are likely to be indirect, long-term neutral, or minor beneficial.

Table 4.51 Purse Seine Quota Allocation (mt) under Combinations of Reallocation Measures, based on a total bluefin quota for 923.7 mt (2012 quota specifications)

Codified Quota Reallocation Alternative	No Annual Reallocation	Annual reallocation of 50% of Purse Seine quota to Longline category
No Action	171.8	85.9
Based on 68 mt (preferred)	159	79.5
Recent Catch and Current Allocation	87	43.5
From Purse Seine Category	103	51.5

4.1.6.3 General Category

The combined impacts of the measures applicable to the General category are the combined impacts of the reallocation and reporting alternatives, the ability to reallocate quota from a later time period to an earlier one, as well as the rules that would modify the timing of changes to permit categories. The combined biological impacts of the measures applicable to the General category are expected to be neutral (indirect), and would result principally from impacts of the reallocation alternatives. Compared to the No Action alternative, under the two reallocation alternatives in Table 4.51, the General category would be allocated 7.4% less; under the 68 mt alternative), and 10.8 % less (under the recent allocation and current catch alternative). These quota reductions would not alter the size of the total U.S. quota, and the size range of fish harvested by the General category is the same as the other commercial categories. Therefore, the alternatives are likely to have neutral biological impacts. As described in the analysis of the reporting alternatives, the enhanced reporting alternative applicable to the General category

would have minor beneficial effects. In summary, the biological impacts of the General category alternatives are likely to be indirect, long- term neutral, or minor beneficial.

Table 4.52 General Category Allocations (mt) under Codified Reallocation Measures, based on a total bluefin quota for 923.7 mt (2012 quota specifications)

Codified Quota Reallocation Alternative	Revised Allocations
No Action	47.1% (435.1 mt)
Based on 68 mt	47.1% - 32 mt = 403 mt
Recent Catch and Current Allocation	42% (388 mt)

4.1.6.4 Harpoon Category

The combined impacts of the measures applicable to the Harpoon category are the combined impacts of the reallocation and reporting alternatives, the ability to adjust retention limits inseason, as well as the rules that would modify the timing of changes to permit categories. The combined biological impacts of the measures applicable to the Harpoon category are expected to be neutral to minor, beneficial (indirect), and would result principally from impacts of the reallocation alternatives. Compared to the No Action alternative, under the two reallocation alternatives in Table 4.52, the Harpoon category would be allocated 8% less (under the 68 mt alternative), and 17% less (under the recent allocation and current catch alternative). These quota reductions would not alter the size of the total U.S. quota, and the size range of fish harvested by the Harpoon category is the same as the other commercial categories. Therefore, the alternatives are likely to have neutral biological impacts. As described in the analysis of the reporting alternatives, the enhanced reporting alternative applicable to the Harpoon category would have minor beneficial effects. . In summary, the biological impacts of the Harpoon category alternatives are likely to be indirect, long-term neutral, or minor beneficial.

Table 4.53 Harpoon Category Allocations (mt) under Codified Reallocation Measures, based on a total bluefin quota for 923.7 mt (2012 quota specifications)

Codified Quota Reallocation Alternative	Revised Allocations
No Action	3.9% (36 mt)
Based on 68 mt	3.9% - 2.7 mt = 33.3 mt
Recent Catch and Current Allocation	3.3% (30 mt)

4.1.6.5 Angling Category

The combined impacts of the measures applicable to the Angling category are the combined impacts of the reallocation and reporting alternatives, as well as the rules that would allocate a portion of the trophy south sub-quota to the Gulf of Mexico, and modify the timing of changes to permit categories. The combined biological impacts of the measures applicable to the Angling category are expected to be neutral (indirect) and would result principally from impacts of the reallocation alternatives. Compared to the No Action alternative, under the two reallocation alternatives in Table 4.53, the Angling category would be allocated 7% less (under the 68 mt alternative), and 47 % more (under the recent allocation and current catch alternative). These

quota modifications would not alter the size of the total U.S. quota, and are likely to have neutral biological impacts.

Under the reallocation alternative based on recent catch and current allocation, because the Angling category allocation would increase, and the Angling category targets a lower size range of bluefin as a result of the lower minimum size restrictions (as described in Section 3.2.3), this alternative may affect the number of fish caught in each size class by the fishery as a whole. Due to the small amount of quota shift relative to the size of the bluefin stock as a whole (spawning stock biomass of approximately 18,000 mt), potential changes in the catch of different sized bluefin would not affect the overall size composition of the stock. In summary, the biological impacts of the Angling category alternatives are likely to be indirect, long-term neutral, or minor beneficial.

Table 4.54 Angling Category Allocations (mt) under Codified Reallocation Measures, based on a total bluefin quota for 923.7 mt (2012 quota specifications)

Codified Quota Reallocation Alternative	Revised Allocations
No Action	19.7% (182 mt)
Based on 68 mt	19.7% - 13.4 mt = 169 mt
Recent Catch and Current Allocation	29.1% (268 mt)

4.1.6.6 All Alternatives

This section provides summary information regarding the biological impacts, which are shown in Table 4.55.

Table 4.55 Biological Impacts of the Preferred Alternatives and Affected Quota Category

Alternative	Description	Affected Quota Category	Quality	Timeframe	Impacts
A 2a	Reallocation to Longline Category Based on Historical 68 mt Dead Discard Allowance	All	Indirect	Short-term	o /o +
A 3a	Annual Reallocation of Bluefin Quota from Purse Seine Category	Purse Seine, Longline	Indirect	Short-term	o /o +
B 1c	Cape Hatteras Gear Restricted Area	Longline	Direct	Long-term	Ø +
B 1d	Allow Pelagic Longline Vessels to Fish Under General Category Rules (in Cape Hatteras Gear	Longline, General	Direct	n/a	o

Alternative	Description	Affected Quota Category	Quality	Timeframe	Impacts
	Restricted Area)				
B 1f	Small Gulf of Mexico Gear Restricted Area	Longline	Direct	Long-term	Ø +
B 3b	Access to Closed Areas with Performance Criteria	Longline	Direct	n/a	o
C 2	Individual Bluefin Quotas (IBQs)	Longline Purse Seine	Direct	Short-term	Ø +
D 1b	Vessel Monitoring System (VMS) Requirements	Longline Purse Seine	Indirect	Short-term	O +
D 2b	NMFS Authority to Require Electronic Monitoring of Longline Category	Longline	Indirect	Short-term	O +
D 3b	Automated Catch Reporting	General Harpoon Charter/Headboat	Indirect	Short-term	O +
D 4b	Deployment of Observers	Longline, Purse Seine, General, Harpoon, Angling, Charter/Headboat	Indirect	Short-term	O +
E 1c	Provide Additional Flexibility for General Category Quota Adjustment	General	Direct	Short-term	o
E 2b	NMFS Authority to Adjust Harpoon Category Retention Limits Inseason	Harpoon	Direct	Short-term	o
E 3b	Allocate a Portion of the Trophy South Sub-Quota to the Gulf of Mexico	Angling	Direct	Short-term	o
E 4b	Change Start Date of Purse Seine Category to June 1	Purse Seine	Direct	n/a	o
E 5b	Modify Rules Regarding Permit	General,	Direct	n/a	o

Alternative	Description	Affected Quota Category	Quality	Timeframe	Impacts
	Category Changes	Harpoon, Angling, Charter/Headboat			
E 6b	Implement U.S. Northern Atlantic Albacore Tuna Quota	All	Direct	Long-term	Θ +

4.2 Impacts on Protected Species and Essential Fish Habitat

Impacts on Essential Fish Habitat

Pursuant to 16 U.S.C. 1855(b)(1), and as implemented by 50 C.F.R. §800. 815, the Magnuson-Stevens Act requires NMFS to identify and describe essential fish habitat (EFH) for each life stage of managed species and to evaluate the potential adverse effects of fishing activities on EFH including the cumulative effects of multiple fisheries activities. If NMFS determines that fishing gears are having an adverse effect on HMS EFH, or other species' EFH, then NMFS must include management measures that minimize adverse effects to the extent practicable. The analysis in the 2006 Consolidated HMS FMP indicated that most HMS gears are fished in the water column and the impacts on EFH are generally considered negligible. HMS gears do not normally affect the physical characteristics that define HMS EFH such as salinity, temperature, dissolved oxygen, and depth. Similarly, most HMS gears are not expected to impact other fisheries' EFH, with the possible exception of shark bottom longline gear, depending on the area where it is fished. In the 2006 Consolidated HMS FMP, a determination was made that HMS gears, other than shark bottom longline, were not having a negative impact on EFH. Similarly, other state and federally managed gears were also determined not to have an impact on HMS EFH, with the possible exception of some bottom-tending gears in shark nursery areas in coastal bays and estuaries (for which NMFS anticipates any resulting impacts would be minimal and only temporary in nature).Ecological impacts to EFH due to actions in this draft amendment would likely be neutral and have no adverse effects as the preferred alternatives would not affect the range of gears used in the fishery or the nature of the use of gear. The preferred alternatives may change the amount of particular gear type used, but such changes would not affect EFH. Because the actions in this amendment also would not significantly alter fishing gears or practices, it is anticipated that it would not have any adverse impacts to EFH, and the conclusion for the 2006 Consolidated HMS FMP is still applicable, so further consultation is not necessary.

Overview of Impacts on Protected Species

NMFS reinitiated formal consultation for all HMS commercial fisheries under Section 7 of the ESA. On June 14, 2001, NMFS released a Biological Opinion (BiOp), which stated that the continued operation of recreational and commercial handgear fisheries (i.e., handgear, including rod and reel) may adversely affect, but is not likely to jeopardize, the continued existence of any endangered or threatened species under NMFS jurisdiction. NMFS has implemented the Reasonable and Prudent Measures and Terms and Conditions of the 2001 BiOp.

In June 2004, NMFS released a BiOp that concluded that the Atlantic pelagic longline fishery was not likely to jeopardize the continued existence of loggerhead, green, hawksbill, Kemp's ridley or olive ridley sea turtles but was likely to jeopardize the continued existence of leatherback sea turtles. NMFS has implemented the Reasonable and Prudent Alternative and Terms and Conditions specified in the BiOp (e.g., hook type, bait type, mandatory workshops). According to an August 9, 2007, memorandum regarding reinitiation of the Endangered Species Act Section 7 consultation process for the U.S. Atlantic pelagic longline fishery, NMFS determined that the basis and assumptions of the 2004 BiOp, including the expected effects on the species remain the same and that the Terms and Conditions, and the Incidental Take Statement (ITS) are still appropriate and do not need to be revised. ESA-listed species taken with pelagic longline gear would be considered against the ITS established in the 2004 BiOp.

NMFS has established additional management measures to reduce serious injury and mortality of long-finned and short-finned pilot whales, and Risso's dolphins in the U.S. East Coast Atlantic pelagic longline fishery (74 FR 23349, May 19, 2009). These measures include a requirement to post a marine mammal handling placard, restrict pelagic longline mainline length to 20 nm in the Mid-Atlantic Bight area, and develop observer and research participation requirements to operate in the Cape Hatteras Special Research Area.

Section 3.5.5 of this document and Chapter 7 of the 2012 SAFE Report list the 22 marine mammal species that are or could be of concern with respect to potential interactions with HMS fisheries. Those sections discuss interactions and the Endangered Species Act, including six endangered whale species. A summary of marine mammal interactions in the pelagic longline fishery from 1992 through 2005 is provided in Section 3.4.1.2 of the 2006 Consolidated HMS FMP and is updated for 2002 through 2011 in the 2012 SAFE Report.

4.2.1 Reallocation Alternatives

The impacts of the alternatives affecting quota allocation on protected species and essential fish habitat would result principally from potential changes in fishing effort in the Longline category, and the amount of pelagic longline gear deployed. The pelagic longline fishery is defined as a Category I fishery, with "frequent serious injury or incidental mortality to marine mammals." In contrast, based on gear types, the fisheries associated with of the other quota categories are classified as Category III, with "remote likelihood of serious injury or known incidental mortality to marine mammals."

The impacts of the reallocation alternatives depend upon whether other alternatives are implemented in conjunction with the reallocation alternative(s). As explained in Section 4.1.6.1 (combined impacts of pelagic longline measures), reallocation alternatives combined with other alternatives would not result in an increase in fishing effort and therefore would have a neutral or minor beneficial effect on protected species and habitat. If fishing effort is constrained by alternatives designed to limit bluefin catch, impacts on protected species would also be constrained, resulting in direct minor beneficial impacts. If the reallocation alternatives were implemented without other alternatives, there would be no indirect constraint on fishing effort, and the amount of fishing effort could increase (for reasons unrelated to Amendment 7), so the

impacts on protected species would be neutral (if fishing effort did not increase) or minor adverse (if fishing effort increased).

4.2.1.1 No Action

The no action alternative would result in a neutral impact on protected species and essential fish habitat because it would not effect the amount of fishing effort in the pelagic longline fishery.

4.2.1.2 Codified Reallocation

The codified reallocation alternatives would result in increased bluefin quota for the Longline category. As explained in the introductory paragraph above, the impacts would depend upon the other alternatives implemented. If fishing effort is constrained by alternatives designed to limit bluefin catch, impacts on protected species would also be constrained, resulting in the minor beneficial impacts.

4.2.1.3 Annual Reallocation

The annual reallocation alternatives would result in a decreased quota allocation for the Purse Seine category and an increased bluefin quota allocation for the all quota categories, or only some or one of the categories. Potential impacts to protected species would depend upon any changes to the Longline category quota, and as explained in the introductory paragraph above, the impacts would depend upon the other alternatives implemented. If fishing effort is constrained by alternatives designed to limit bluefin catch, impacts on protected species would also be constrained, resulting in the minor beneficial impacts.

4.2.1.4 Modification to Reserve Category

A modification to the Reserve category regarding the sources of quota that go into the Reserve category, and the range of objectives the Reserve category supports, would have a neutral impact on protected species, because no change in the amount of fishing effort or methods of gear use is expected.

4.2.2 Area Based Alternatives

4.2.2.1 Gear Restricted Areas

4.2.2.1.1 Alternative B 1b - Cape Hatteras Gear Restricted Area

The alternative is expected to have a neutral impact on sailfish and leatherback turtles (i.e., no effect on sailfish or leatherback turtle discards in the area or fishery-wide). The alternative is expect to decrease loggerhead turtle interactions by 50 percent in the area (-1 turtle/year, on average) and by 1 percent fishery-wide. The percent reduction with redistribution of average annual discards of white and blue marlin in the Cape Hatteras Gear Restricted Area and across the fishery are 6 percent (-5 fish/year, on average) and 0 percent, and 26 percent (- 7 fish/year, on average) and 1 percent, respectively. Indirect impacts on HMS bycatch and protected resources under this alternative are expected to be neutral due to minimal change in the number of

interactions with HMS-permitted pelagic longline vessels. Impacts on essential fish habitat and HAPCs would likely be neutral, since pelagic longline gear typically does not come into contact with sensitive bottom habitats. Given expected minor impacts on other species, impacts of this alternative on ecosystem function and predator/prey relationships are expected to be neutral.

Table 4.56 Summary of logbook data (2006 – 2011) and calculation of anticipated ecological effects of Alternative B 1b, Cape Hatteras Gear Restricted Area, on prohibited species and protected resources. Values are rounded to the nearest whole number. Source: HMS logbook data.

	2006 – 2011 Average Annual Interactions	Hooks	White Marlin Discards	Blue Marlin Discards	Sailfish Discards	Leatherback Sea Turtles	Loggerhead Sea Turtles
(A)	January	42,058	0	1	0	0	0
(B)	February	34,052	0	0	0	0	0
(C)	March	44,418	2	2	1	0	1
(D)	April	74,169	3	4	0	0	1
(E)	May	87,502	6	4	1	0	1
(F)	June	82,153	10	2	3	0	0
(G)	July	60,501	9	4	1	0	1
(H)	August	37,010	5	1	1	0	0
(I)	September	47,686	3	0	0	0	0
(J)	October	59,193	2	1	5	0	0
(K)	November	50,249	0	1	0	0	0
(L)	December	49,275	0	0	0	0	0
(M)	Dec-Apr Reduction of Catch/Hooks with no redistribution	-243,973	-5	-7	-1	0	-2
(N)	Dec-Apr change in catch during closure with redistribution	84,822	3	2	1	0	0
(O)	Net Change with redistribution (M+N)	-159,151	-2	-5	0	0	-1
(P)	Average Annual # Interactions in Proposed Gear Restricted Area	668,266	41	19	11	1	2
(Q)	Percent change in Area with redistribution((C/D)*100)	-24%	-5.7	-25.9	0.0	0.0	-50.0

(R)	Average # Interactions in entire fishery (Σ(All PLL Interactions 2006 - 2011)/6)	6,195,209	764	633	462	66	132
(S)	Percent change in fishery ((C/F)*100)	-4%	-0.31%	-0.76%	0.00%	0.00%	-0.88%

4.2.2.1.2 Alternative B 1c - Cape Hatteras Gear Restricted Area with Access Based on Performance (Preferred)

Expected indirect ecological effects on prohibited species and protected resources as a result of this alternative are presented in Table 4.56.**Error! Reference source not found.** The five-month gear restriction, with redistribution and access for vessels that only meet certain predefined criteria, would result in localized average annual area reduction of: white marlin discards by 13 percent (-3 fish/year, on average); blue marlin discards by 16 percent (-1 fish/year, on average); sailfish discards by 0 percent (0 fish/year, on average); and leatherback and loggerhead turtles by 0 percent (0 fish/year, on average). Indirect impacts on all HMS bycatch and protected resources under this alternative are expected to have a neutral localized ecological benefit due to the low number of interactions, and localized percent reductions less than 10 percent. Indirect impacts on all HMS bycatch and protected resources under this alternative are expected to have a neutral fishery-wide ecological benefit since fishery-wide reductions are less than 10 percent for all species.

Impacts on essential fish habitat and HAPCs would likely be neutral, since pelagic longline gear typically does not come into contact with sensitive bottom habitats. Given expected minor impacts on other species, impacts of this alternative on ecosystem function and predator/prey relationships are expected to be neutral.

Table 4.57 Summary of logbook data (2006 – 2011) and calculation of anticipated ecological effects of Alternative B 1c (Cape Hatteras Gear Restricted Area with Access Based on Performance) on protected resources and prohibited species. Values are rounded to the nearest whole number. Source: HMS Logbook Data.

	2006 – 2011 Average Annual Interactions	Hooks	White Marlin Discards	Blue Marlin Discards	Sailfish Discards	Leatherback Sea Turtles	Loggerhead Sea Turtles
	January	42,058	0	0	0	0	0
	February	34,052	0	0	0	0	0
	March	44,418	1	1	0	0	0
	April	74,169	2	1	0	0	0
	May	87,502	4	2	0	0	0
	June	82,153	3	1	1	0	0
	July	60,501	4	1	1	0	0
	August	37,010	4	1	1	0	0
	September	47,686	1	0	0	0	0
	October	59,193	1	0	0	0	0
	November	50,249	0	0	0	0	0
	December	49,275	0	0	0	0	0
(A)	Dec-Apr Reduction of Catch/Hooks with no redistribution	-243,973	-4	-2	0	0	-1
(B)	Dec-April change in catch during closure with redistribution	28,588	1	1	0	0	0
(C)	Net Change with redistribution	-215385	-3	-1	0	0	-1
(D)	Average Annual # Interactions in Proposed Gear	668,266	21	7	3	1	2

	Restricted Area						
(E)	Percent change in Area with redistribution((C/D)*100)	-32%	-13%	-16%	0%	0%	-50%
(F)	Average # Interactions in entire fishery (Σ(All PLL Interactions 2006 - 2011)/6)	6,195,209	764	633	462	66	132
(G)	Percent change in fishery ((C/F)*100)	-4%	0%	0%	0%	0%	-1%

4.2.2.1.3 Alternative B 1d - Allow Pelagic Longline Vessels to Fish under General Category Rules (Preferred)

Allowing Longline category vessels to fish under the General category rules during the time of restriction in the Cape Hatteras Gear Restricted Area means that any activity by pelagic longline vessels in that area would be converted from Category I fishing to Category III fishing for the duration of the December and January General category time periods. This alternative would have a short-term, direct, minor beneficial impacts on HMS bycatch species and protected resources due to an expected reduction in the number of interactions with handgear use relative to pelagic longline use. Impacts on essential fish habitat and HAPCs would likely be neutral, since pelagic longline gear and handgear typically do not come into contact with sensitive bottom habitats. Given expected minor impacts on other species, impacts of this alternative on ecosystem function and predator/prey relationships are expected to be neutral.

4.2.2.1.4 Alternative B 1e - Gulf of Mexico Exclusive Economic Zone (EEZ) Gear Restricted Area (March – May)

Expected indirect ecological effects on prohibited species and protected resources as a result of this alternative are presented in Table 4.57. The three-month gear restriction would result in a localized average annual reduction of Gulf of Mexico discards of white marlin by 13 percent (-32 fish/year, on average) and blue marlin by 22 percent (-52 fish/year, on average); however, when considered fishery-wide, the average annual reductions in interactions with these species is less than 10 percent For leatherback turtle populations, this alternative would reduce interactions by nearly 60 percent (-13 turtles) in the Gulf of Mexico. Fishery-wide reductions in leatherback interactions as a result of this alternative would decrease by 19 percent. Loggerhead turtle interactions would be reduced by 58 percent; however, this reflects an average annual reduction of approximately 2 loggerhead turtles per year and a fishery-wide reduction of 2 percent. This difference is due to the relatively low abundance of loggerhead turtles in the Gulf of Mexico compared to leatherback turtles. Therefore, NMFS expects that indirect impacts on HMS bycatch and protected resources under this alternative would be longterm minor and beneficial due to an expected reduction in the number of interactions with HMS-permitted pelagic longline vessels.

Impacts on essential fish habitat and HAPCs would likely be neutral, since pelagic longline gear typically does not come into contact with sensitive bottom habitats. Given expected minor impacts on other species, impacts of this alternative on ecosystem function and predator/prey relationships are expected to be neutral.

Table 4.58 Summary of logbook data (2006 – 2011) and calculation of anticipated ecological effects of Alternative B 1e, Gulf of Mexico EEZ Gear Restricted Area (March – May) on prohibited species and protected resources. Values are rounded to the nearest whole number. Source: HMS logbook data.

	2006 – 2011 Average Annual Interactions	Hooks	White Marlin Discards	Blue Marlin Discards	Sailfish Discards	Spearfish Discards	All Leatherback	All Loggerhead
(A)	January	175,963	5	6	6	2	0	0
(B)	February	155,759	2	3	5	1	0	0
(C)	March	172,811	2	3	7	0	1	0
(D)	April	143,877	3	7	8	1	4	0
(E)	May	185,842	28	43	33	4	8	2
(F)	June	195,361	44	42	33	7	3	0
(G)	July	223,595	46	31	33	14	0	1
(H)	August	219,095	32	34	30	10	1	0
(I)	September	193,510	33	30	26	12	0	0
(J)	October	159,666	21	18	21	7	0	0
(K)	November	178,902	19	17	17	8	2	0
(L)	December	168,324	11	7	11	4	2	0
(M)	Average Annual Reduction of Catch (-(C+D+E))	---	-32.2	-52.3	-47.5	-5.2	-12.7	-2.0

(N)	Average Annual Reduction of Hooks During Closure (-(C+D+E))	-502,530	-502,530	-502,530	-502,530	-502,530	-502,530	-502,530
(O)	Average Annual # Interactions (or Hooks) in Proposed Gear Restricted Area	2,172,704	244	238	228	69	21	4
(P)	Average Annual Percent change in Area ((M/O)*100)	-23.13	-13.18	-21.96	-20.80	-7.49	-59.38	-57.14
(Q)	Average Annual # Interactions (Σ(All PLL Interactions 2006 - 2011))	6,195,209	764	633	462	219	66	132
(R)	Average Annual Percent change in fishery ((M/Q)*100)	-8.11	-4.21	-8.27	-10.29	-2.36	-19.34	-1.51

4.2.2.1.5 Alternative B 1f - Small Gulf of Mexico Gear Restricted Area (April – May) (Preferred)

Expected indirect ecological effects on prohibited species and protected resources as a result of this alternative are presented in Table 4.58. The percent changes with redistribution of average annual discards of white marlin in the area considered under this alternative and across the fishery are 6 percent and 0 percent, respectively. Total fishery impacts of this gear restriction for blue and white marlin were negligible (0 percent). With redistribution, this alternative would reduce the number of localized sailfish by 4 percent (-3 fish/year, on average), the number of localized leatherback sea turtles by 11 percent (-1 turtle/year, on average), and the number of localized loggerhead sea turtle interactions, by 40 percent (-1 turtle/year, on average). Fishery-wide, the total percent change in the number of interactions of sailfish and leatherback and loggerhead turtles was expected to change with redistribution of effort by 1 percent for each species. Therefore, NMFS determined that the indirect ecological effects of this alternative on prohibited species and protected resources were long term minor and beneficial due to localized reductions in fishing effort and corresponding reductions in bycatch.

Impacts on essential fish habitat and HAPCs would likely be neutral, since pelagic longline gear typically does not come into contact with sensitive bottom habitats. Given expected minor impacts on other species, impacts of this alternative on ecosystem function and predator/prey relationships are expected to be neutral.

Table 4.59 Summary of logbook data (2006 – 2011) and calculation of anticipated ecological effects of Alternative B 1f, Small Gulf of Mexico Gear Restricted Area (April – May) on prohibited species and protected resources. Values are rounded to the nearest whole number. Source: HMS logbook data

	2006 – 2011 Average Annual Interactions	Hooks	White Marlin Discards	Blue Marlin Discards	Sailfish Discards	Leatherback Sea Turtles	Loggerhead Sea Turtles
(A)	January	54,924	0	0	4	0	0
(B)	February	42,465	0	0	0	0	0
(C)	March	34,721	0	0	0	0	0
(D)	April	51,698	1	2	1	1	0
(E)	May	67,966	4	8	9	3	1
(F)	June	34,324	8	5	7	1	0
(G)	July	53,883	9	4	14	0	0
(H)	August	73,198	11	7	14	1	0
(I)	September	61,395	8	7	8	0	0
(J)	October	46,914	5	4	9	0	0
(K)	November	61,816	4	2	5	0	0
(L)	December	63,071	3	1	6	1	0
(A)	Apr-May Reduction of Catch with no redistribution (-(D+E))	-119,665	-5	-10	-10	-4	-1
(B)	Apr-May change in catch during closure with redistribution	74153	8	12	7	3	0
(C)	Net Change with redistribution	-45,511	3	3	-3	-1	-1
(D)	Total # Interactions in	646,374	52	39	76	7	2

	Proposed Gear Restricted Area (SUM of A to L)						
(E)	Percent change with redistribution ((A/B)*100)	-62%	-174%	-127%	0%	0%	-36%
(F)	Percent change in Area with redistribution((A/D)*100)	-7%	6%	7%	-4%	-11%	-40%
(G)	Total # Interactions (Σ(All PLL Interactions 2006 - 2011))	6,195,209	764	633	462	66	132
(H)	Percent change in fishery ((C/G)*100)	-1%	0%	0%	-1%	-1%	-1%

4.2.2.1.6 Alternative B 1g – Gulf of Mexico Gear Restricted Area (year-round)

A year-round gear restriction would result in a reduction of fishery-wide discards of white and blue marlin by 32 percent (-244 fish) and 38 percent (-238 fish), respectively. Sailfish and spearfish discards are expected to be reduced by 50 percent (-228 fish) and 32 percent (-69 fish). This alternative would reduce fishery-wide interactions of leatherback turtles by nearly 33 percent (-21 turtles). Loggerhead turtle interactions would also be reduced fishery-wide by a little over 2 percent; however, this reflects an average annual reduction of approximately 3 loggerhead turtles per year. This alternative would reduce fishing effort by HMS-permitted vessels in the region. Since there is a direct relationship between the amount of fishing effort and the amount of bycatch, NMFS expects that indirect long term impacts under this alternative are expected to be moderate and beneficial for white and blue marlin, and indirect long term minor and beneficial for sailfish, loggerhead, and leatherback turtles.

Impacts on essential fish habitat and HAPCs would likely be neutral, since pelagic longline gear typically does not come into contact with sensitive bottom habitats. Given expected minor impacts on other species, impacts of this alternative on ecosystem function and predator/prey relationships are expected to be neutral.

Table 4.60 Summary of logbook data (2006 – 2011) and calculation of anticipated ecological effects of Alternative B 1f, Gulf of Mexico Gear Restricted Area (year-round) on prohibited species and protected resources. Values are rounded to the nearest whole number. Source: HMS logbook data.

	2006 – 2011 Average Annual Interactions	Hooks	White Marlin Disc	Blue Marlin Disc	Sailfish Disc	Spearfish Disc	All Leatherback	All Loggerhead
(A)	January	175,963	5	6	6	2	0	0
(B)	February	155,759	2	3	5	1	0	0
(C)	March	172,811	2	3	7	0	1	0
(D)	April	143,877	3	7	8	1	4	0
(E)	May	185,842	28	43	33	4	8	2
(F)	June	195,361	44	42	33	7	3	0
(G)	July	223,595	46	31	33	14	0	1
(H)	August	219,095	32	34	30	10	1	0
(I)	September	193,510	33	30	26	12	0	0
(J)	October	159,666	21	18	21	7	0	0
(K)	November	178,902	19	17	17	8	2	0
(L)	December	168,324	11	7	11	4	2	0
(M)	Average Annual Reduction of Catch (-(SUM A to L))	---	-244	-238	-228	-69	-21	-3
(N)	Average Annual Reduction of Hooks During Closure (-(C+D+E))	-2,172,704	-2,172,704	-2,172,704	-2,172,704	-2,172,704	-2,172,704	-2,172,704
(O)	Average Annual # Interactions (or Hooks) in Proposed Gear Restricted Area (SUM A to L)	2,172,704	244	238	228	69	21	3
(P)	Average Annual Percent change in Area	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00	-100.00

	((M/O)*100)							
(Q)	Average Annual # Interactions (Σ(All PLL Interactions 2006 - 2011))	6,195,209	764	633	462	219	66	132
(R)	Average Annual Percent change in fishery ((M/Q)*100)	-35.07	-31.96	-37.67	-49.46	-31.53	-32.57	-2.27

Summary Table of Impacts of Gear Restricted Area Alternatives on Protected Species

Table 4.12-4.65 contains a summary of the impacts of the gear restricted area alternatives on selected species. The two Cape Hatteras Gear Restricted Area alternatives and the Small Gulf of Mexico Gear Restricted Area analyses took into consideration the fact that fishing effort will likely be redistributed to other locations outside of the gear restricted area. The second and third columns from the left show estimated annual change in numbers of animals and in metric tons whole weight (mt ww). These estimates are derived from the data summary tables presented under each alternative, and include both the numbers of fish kept and discarded. The last row in each table shows the total overall estimated annual savings (both raw numbers of fish and the corresponding mt ww), and the total overall fishery-wide percent change in numbers of selected species kept and discarded. These overall estimates were derived from summing the numbers of fish/year, the corresponding mt ww, and the fishery-wide percent reduction in selected species of the preferred alternatives. The fishery-wide percent change for each alternative is calculated based on the total number of a particular species kept or discarded across the entire fishery. Therefore, these numbers can be added to derive an estimated impact of the preferred alternatives combined. Percent change within an area or region is relative to the total number of animals kept or discarded within that region; therefore, these estimates are not comparable and cannot be added together.

Table 4.61 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on White Marlin

			Area/Region % Change	Fishery-Wide % Change
Alternative		Estimated Annual Change (# of Fish)	Numbers of Fish Discarded	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	-2 fish/year	-6%	0%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	-3 fish/year	-13%	0%
B 1e	GOM EEZ GRA (March – May)	-32 fish/year	-13%	-22%
B 1f Preferred	Small GOM GRA (April – May)	+3 fish/year	+6%	0%
B 1g	GOM EEZ GRA (year round)	-244 fish/year	-100%	-32%
B 1c + B1f	Combined Preferred	0 fish/year	--	0%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution.				
Estimated annual savings = net change # of WHM kept with redistribution + net change # of WHM discarded without redistribution (see Tables in Chapter 4)				

NMFS estimates that, from a fishery-wide perspective, Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the percentage of white marlin discarded (- 32 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance, would not be expected to change fishery-wide interactions with white marlin (0 percent). Preferred Alternative B 1f, the Small Gulf of Mexico Gear Restricted Area (April-May), would increase white marlin discards (+3 fish), but result in negligible effects across the fishery.

Total fishery-wide impacts of the preferred gear restricted area alternatives on white marlin discards are shown in the bottom row of Table 4.12. NMFS estimates that the preferred alternatives would collectively generate no net change in the number of interactions of white marlin across the fishery.

Table 4.62 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Blue Marlin

			Area/Region % Change	Fishery-Wide % Change
Alternative		Estimated Annual Change (# of Fish)	Numbers of Fish Discarded	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	-5 fish/year	-26%	0%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	-1 fish/year	-16%	0%
B 1e	GOM EEZ GRA (March – May)	-52 fish/year	-22%	-8%
B 1f Preferred	Small GOM GRA (April – May)	+3 fish/year	+7%	0%
B 1g	GOM EEZ GRA (year round)	-238 fish/year	-100%	-38%
B 1c + B1f	Combined Preferred	+2 fish/year	--	0%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution.				
Estimated annual savings = net change # of BUM kept with redistribution + net change # of BUM discarded without redistribution (see Tables in Chapter 4)				

Table 4.12 summarizes the ecological impacts of all alternatives on blue marlin. NMFS estimates that, from a fishery-wide perspective, Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the percentage of blue marlin discarded (- 38 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance, would not be expected to change fishery-wide interactions with blue marlin (0 percent). Preferred Alternative B 1f, the Small Gulf of Mexico Gear Restricted Area (April-May), would not be expected to change fishery-wide interactions with blue marlin (0 percent).

Total fishery-wide impacts of the preferred gear restricted area alternatives on blue marlin discards are shown in the bottom row of Table 4.12. NMFS estimates that the preferred

alternatives would collectively generate no net change in the number of interactions of white marlin across the fishery.

Table 4.63 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Sailfish

			Area/Region % Change	Fishery-Wide % Change
Alternative		Estimated Annual Change (# of Fish)	Numbers of Fish Discarded	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	0 fish/year	0%	0%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	0 fish/year	0%	0%
B 1e	GOM EEZ GRA (March – May)	-48 fish/year	-21%	-10%
B 1f Preferred	Small GOM GRA (April – May)	-3 fish/year	-4%	-1%
B 1g	GOM EEZ GRA (year round)	-228 fish/year	-100%	-49%
B 1c + B1f	Combined Preferred	-3 fish/year	--	-1%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution.				
Estimated annual savings = net change # of SAL kept with redistribution + net change # of SAL discarded without redistribution (see Tables in Chapter 4)				

Table 4.12 summarizes the ecological impacts of all alternatives on sailfish. NMFS estimates that, from a fishery-wide perspective, Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the percentage of sailfish discarded (- 49 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance, would not be expected to change fishery-wide interactions with sailfish (0 percent). Preferred Alternative B 1f, the Small Gulf of Mexico Gear Restricted Area (April-May), would result in a reduction of sailfish discards by 1 percent.

Total fishery-wide impacts of the preferred gear restricted area alternatives on sailfish discards are shown in the bottom row of Table 4.12. NMFS estimates that the preferred alternatives would collectively reduce the numbers of sailfish discarded across the fishery by 1 percent.

Table 4.64 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Leatherback Sea Turtles

			Area/Region % Change	Fishery-Wide % Change
Alternative		Estimated Annual Change (# of Turtles)	Numbers of Fish Discarded	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	0 turtles/year	0%	0%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	0 turtles/year	0%	0%
B 1e	GOM EEZ GRA (March – May)	-13 turtles/year	-59%	-19%
B 1f Preferred	Small GOM GRA (April – May)	-1 turtle/year	-11%	-1%
B 1g	GOM EEZ GRA (year round)	-21 turtles /year	-100%	-33%
B 1c + B1f	Combined Preferred	-1 turtle/year	--	-1%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution.				
Estimated annual savings = net change # of SAL kept with redistribution + net change # of SAL discarded without redistribution (see Tables in Chapter 4)				

Table 4.12 summarizes the ecological impacts of all alternatives on leatherback sea turtles. NMFS estimates that, from a fishery-wide perspective, Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the percentage of leatherback sea turtles discarded (- 33 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance, would not be expected to change fishery-wide interactions with leatherback sea turtles (0 percent). Preferred Alternative B 1f, the Small Gulf of Mexico Gear Restricted Area (April-May), would result in a reduction of leatherback sea turtle discards by 1 percent.

Total fishery-wide impacts of the preferred gear restricted area alternatives on leatherback sea turtle discards are shown in the bottom row of Table 4.12. NMFS estimates that the preferred alternatives would collectively reduce the numbers of leatherback sea turtles discarded across the fishery by 1 percent.

Table 4.65 Summary of Impacts of Gear Restricted Area (GRA) Alternatives on Loggerhead Sea Turtles

			Area/Region % Change	Fishery-Wide % Change
Alternative		Estimated Annual Savings (# of Turtles)	Numbers of Fish Discarded	Numbers of Fish Discarded
B 1b	Cape Hatteras GRA; all vessels	1 turtle/year	-50%	-1%
B 1c Preferred	Cape Hatteras GRA; Performance-Based Access	1 turtle/year	-50%	-1%
B 1e	GOM EEZ GRA (March – May)	2 turtles/year	-40%	-1%
B 1f Preferred	Small GOM GRA (April – May)	2 turtles/year	-40%	-1%
B 1g	GOM EEZ GRA (year round)	3 turtles /year	-100%	-2%
B 1c + B1f	Combined Preferred	3 turtles/year	--	-2%
Percent change calculated with redistribution of effort is italicized; otherwise, the alternative did not include redistribution.				
Estimated annual savings = net change # of SAL kept with redistribution + net change # of SAL discarded without redistribution (see Tables in Chapter 4)				

Table 4.12 summarizes the ecological impacts of all alternatives on loggerhead sea turtles. NMFS estimates that, from a fishery-wide perspective, Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (year round), would generate the greatest overall reduction in the percentage of loggerhead sea turtles discarded (- 2 percent). Preferred Alternative B 1c, Cape Hatteras Gear Restricted Area with Access Based on Performance, would result in a reduction of loggerhead sea turtle discards by 1 percent. Preferred Alternative B 1f, the Small Gulf of Mexico

Gear Restricted Area (April-May), would result in a reduction of loggerhead sea turtle discards by 1 percent.

Total fishery-wide impacts of the preferred gear restricted area alternatives on loggerhead sea turtle discards are shown in the bottom row of Table 4.12. NMFS estimates that the preferred alternatives would collectively reduce the numbers of loggerhead sea turtles discarded across the fishery by 2 percent.

4.2.2.1.7 Alternative B 1h - Pelagic and Bottom Longline Transiting Closed Areas (Preferred)

No Action

Under the No Action alternative, those HMS permitted vessels that possess longline gear, inclusive of both pelagic longline and bottom longline, would not be allow to enter the existing longline closed areas or proposed gear restricted areas, even for purposes of transiting the area. Instead, the vessels must go around these closed/gear restricted areas to remain in compliance with the regulations. As the No Action alternative would not alter fishing practices, it would have neutral impacts on restricted/prohibited HMS and protected species, and would not have any further impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 BiOp and in the 2006 Consolidated HMS FMP.

Pelagic and Bottom Longline Transiting Closed Areas (Preferred)

Under this alternative, NMFS would allow HMS permitted vessels that possess bottom or pelagic longline gear on board to transit closed areas and proposed gear restricted areas, if the longline gear is stowed in such a fashion that renders the gear unavailable for use. This alternative would require fishermen to remove and stow the gangions, hooks, and buoys from the mainline and drum. The hooks could not be baited. As this alternative would not alter fishing practices, it would have neutral impacts on restricted/prohibited HMS and protected species, and would not have any further impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 BiOp and in the 2006 Consolidated HMS FMP.

4.2.2.2 Gear Measures

Alternative B 2b would authorize vessels with Swordfish Incidental Permit to use buoy gear, and Alternative B 2c would allow vessels with a Swordfish Directed or Incidental permit and an Atlantic Tunas Longline permit to retain BAYs and bluefin when fishing with buoy gear. Allowing vessels fishing with buoy gear to retain bluefin or BAYs may provide incentive for vessels that previously fished at night for swordfish, to fish during the daytime for BAYs.

These alternatives would have a neutral effect on protected species, although it is difficult to predict due to the lack of relevant data. Although more billfish may be caught as a result of fishing during the day, there may be a beneficial impact on protected species if fishing effort with pelagic longline gear declines.

4.2.2.3 Access to Closed Areas

No Action

The no action alternative would have a minor positive impact on billfish and protected species by continuing the protection from pelagic longline impacts during the time of the closures.

Access to Certain Pelagic Longline Closed Areas

Access to certain pelagic longline closed areas would have a neutral impact on billfish and protected species and essential fish habitat. The design of the alternative, which includes limited, conditional access, with reporting requirements, would result in a limited amount of access to closed areas with 100 percent observer by NMFS. NMFS could close access to the area if it determines that bycatch of marine mammals or protected species that is inconsistent with the Marine Mammal Protection Act, Pelagic Longline Take Reduction Plan, or the Pelagic Longline BiOp (2004).

4.2.3 Bluefin Tuna Quota Controls

4.2.3.1 No Action

Under this alternative, there would be no anticipated change in the catch of protected species or impact on essential fish habitat.

4.2.3.2 Individual Bluefin Quotas (IBQs)

The amount of protected species caught under this alternative would depend upon the amount of fishing effort by the Longline category, as well as the location of fishing, and whether or not individual vessels reach their IBQ and subsequently fish with gear other than pelagic longline. The amount of total fishing effort and the amount of protected species catch would depend not only upon the total bluefin quota, but also may be affected by the number and type of vessels eligible to receive bluefin allocations and the amount of allocations. If the number of active vessels declines or the IBQs have the effect of reducing fishing effort, due to the constraining effect of bluefin quota on some vessels, the amount of protected species catch could be reduced. The proportion of vessels that needs additional quota ranges from 14 to 42 percent, depending upon the size of the quota and the method of quota allocation. This provides an indication that bluefin may constrain longline fishing effort if vessels do not obtain additional bluefin via a quota lease. The amount of fishing effort associated with the IBQ alternative would depend upon which alternatives it is combined with such as reallocation measures or new gear restricted areas, or access to closed areas. For most pelagic longline vessels, the amount of fishing effort would not be determined by the amount of bluefin allocation under an IBQ, but would be related to other factors.

The preferred alternative to eliminate target catch requirements for pelagic longline vessels may eliminate the fishing scenario where a vessel fishes for additional target species in order to satisfy the ratio of target catch to bluefin, which may reduce fishing effort by pelagic longline vessels and have a slight beneficial impact on protected species.

The alternative to require pelagic longline vessels to retain all legal-sized bluefin tuna that are dead would be expected to have neutral impacts on protected species, because the alternative would have little or no impact on fishing effort or the deployment of gear.

In summary, the IBQ and associated alternatives (elimination of target catch requirement and mandatory retention of all legal-sized fish) would have a neutral or indirect, minor beneficial impact on protected species, due to the potential effect on fishing effort.

4.2.3.3 Regional and Group Quota Controls

Regional or group quota controls would close designated geographic regions (or groups of vessels) to the use of pelagic longline gear when it is projected that the relevant bluefin tuna quota will be caught. The amount of overall fishing effort and the potential protected species catch would depend primarily upon the amount of total bluefin quota, but is not expected to exceed the amount of fishing effort associated with the No Action Alternative. The fishing effort by pelagic longline gear may also be further constrained by the regional quotas. Compared with the No Action Alternative, implementation of regional or group quota controls may result in different levels of fishing on a regional basis. The relative percent of the quota allocated to each region or group would determine the maximum catch of bluefin for each region or group, as well as the associated fishing effort with pelagic longline gear. If future patterns of fishing effort by region change, or the seasonal distribution of bluefin changes, the pattern of fishing effort with pelagic longline gear may be altered. It is difficult to predict potential patterns of effort redistribution that may result from regional quota controls, but there may be regional reductions or increases in fishing effort and minor beneficial or adverse impacts, respectively on protected species. The pelagic longline fishing effort in all regions would be indirectly constrained by the bluefin quota.

In summary, the impacts of regional or group quotas on protected species would be neutral or minor beneficial.

4.2.4 Enhanced Reporting

The enhanced reporting alternatives include VMS reporting requirements for the Longline and Purse Seine categories; authorizing NMFS to require electronic monitoring of the Longline category; automated catch reporting for the General, Harpoon, and Charter/Headboat categories; increased levels of observer deployment; a logbook requirement for the General and Harpoon categories; and expansion of the scope of the Large Pelagics Survey.

These alternatives would have indirect, long–term, minor, beneficial impacts on protected species if they result in more accurate or precise data on protected species or increased biological information. Specifically, the future increased levels of observer deployment may be likely to have positive biological impacts on protected species, because protected species information is collected by observers. The other reporting alternatives do not pertain to protected species so would not impact protected species data, unless implemented and modified in the future to include data on protected species.

The enhanced reporting measures would not impact essential fish habitat.

4.2.5 Other Measures

4.2.5.1.1 Modify General Category Sub-Period Allocations

The action to extend the January fishery through March 31 or until the January subquota is reached, whichever happens first, may result in temporal and spatial shifts in landings depending on the date the available subquota is reached. The available (codified) quota for the January time period since this change was effective has lasted until January 22, 2012, and February 15, 2013. NMFS anticipated in the 2011 EA that the action likely would lengthen the General category season by only a few weeks, with the duration of the extension dependent on weather conditions and availability of large medium and giant bluefin to the fishery during the winter months. Under the status quo alternative, the shift in bluefin landings, both temporally (to later in the season) and geographically to the South (i.e., off the mid- and south Atlantic states of North Carolina, South Carolina, Georgia, and the Florida East Coast) could result in a slight decrease or increase in protected resource interactions, discards, and incidental catch of other finfish. However, given the limited nature of this alternative, NMFS does not expect any adverse ecological impacts.

Temporal and spatial shifts in landings associated with the alternative to divide the General category quota into 12 equal subquotas (Alternative E 1b) and the alternative to allow transfer of quota from a later period to an earlier one (Alternative E 1c) could decrease or increase protected resource interactions, discards, and incidental catch of other finfish, depending on the time of year. The recreational bluefin fishery, commercial fisheries for other tunas, and pelagic longline fishery are open year round, so handgear and longline gear is currently able to be used in all open areas even during the months of April and May. NMFS would continue to carry forward unharvested General category quota from one time period to the next time period. The biological impacts with respect to protected species are expected to be neutral under these alternatives, because the measures would have little impact on fishing effort and the deployment of gear. Therefore, the preferred alternative should not have adverse impacts on protected species, or have any further impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 BiOp and in the 2006 Consolidated HMS FMP.

4.2.5.2 NMFS Authority to Adjust Harpoon Category Retention Limits

Under the preferred alternative for NMFS adjustment of Harpoon category retention limits, the biological impacts with respect to protected species are expected to be neutral, because the alternative would have little impact on fishing effort and the deployment of gear. Although few data are available, it is believed that the selective nature of harpoon gear has minimal impact on discards or interactions with non-target species. Therefore, the preferred alternative should not have adverse impacts on protected species, or have any further impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 BiOp and in the 2006 Consolidated HMS FMP.

4.2.5.3 Angling Category Subquota Distribution

Under the preferred alternative to modify the Angling category subquota distribution, the biological impacts with respect to protected species are expected to be neutral, because the alternative would have little impact on fishing effort and the deployment of gear. NMFS would not expect fishing behavior to change as a result of this alternative, in part because there should not currently be targeted effort on bluefin in the Gulf of Mexico regardless of the incidental trophy fish allowance. Therefore, the preferred alternative in this should not have adverse impacts on protected species, or have any further impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 BiOp and in the 2006 Consolidated HMS FMP.

4.2.5.4 Change Start Date of Purse Seine Category to June 1

Under the preferred alternative to change the start date of the Purse Seine category, the biological impacts with respect to protected species are expected to be neutral, because the alternative would have little impact on fishing effort and the deployment of gear, other than the ability for the gear to be used up to six weeks earlier (i.e., beginning June 1, when the commercial handgear fisheries for bluefin tuna resume). Therefore, the preferred alternative should not have adverse impacts on protected species, or have any further impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 BiOp and in the 2006 Consolidated HMS FMP.

4.2.5.5 Rule Regarding Permit Category Changes

Under the preferred alternative to provide additional flexibility for vessels obtaining an open access Atlantic Tunas or an HMS permit, the biological impacts with respect to protected species are expected to be neutral as this action is administrative in nature. Therefore, this preferred alternative would have neutral impacts on protected species, and would not change impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 BiOp and in the 2006 Consolidated HMS FMP.

4.2.5.6 Northern Albacore Tuna Quota

Based on recent landings (Table 3.38), there is no evidence to suggest that implementation of quota would constrain fishing effort for northern albacore in the future (under similar levels of quota). To the extent there may be a reduction in fishing effort if NMFS exercises framework ability to more tightly control catches, there may be indirect, minor, beneficial, impacts to other species. The preferred alternatives for the northern albacore quota, including the implementation of an annual domestic quota and framework authority for inseason management, are not expected to significantly alter current fishing practices or bycatch mortality rates in general, and would not be expected to change previously analyzed endangered species or marine mammal interaction rates or magnitudes. Therefore, the preferred alternatives should not have adverse impacts on protected species, or have any further impacts on endangered species, marine mammals, or critical habitat beyond those considered in the 2001 and 2004 BiOps and in the Consolidated HMS FMP.

4.2.6 Combined Measures

4.2.6.1 Longline Category Measures

The pelagic longline fishery is defined as a Category I fishery, with "frequent serious injury or incidental mortality to marine mammals." The combined biological impacts of the alternatives applicable to the Longline category would result principally from impacts of the Gear Restricted Areas, quota controls, and reallocation alternatives. The gear restricted area impacts depend upon the specific gear restricted area. All of the gear restricted area alternatives would have a minor beneficial effect on protected species, with the exception of the Cape Hatteras Gear Restricted Area, which would have a neutral effect. These impacts are due to potential minor changes in the number of interactions between pelagic longline gear and protected species due to redistribution or localized reductions in fishing effort caused by the gear restricted areas. The IBQ alternative would have a neutral or minor beneficial impact as a result of potential reductions in fishing effort. The regional or group quotas would have a neutral impact, but if regional shifts in effort occur, could have a minor adverse impact. Any regional shifts in effort would likely be minor due to the constraining effect of regional and group quotas.

The quota reallocation alternatives combined with quota control alternatives would not result in an increase in fishing effort and therefore would have a neutral or minor beneficial effect on protected species and habitat. If fishing effort is constrained by alternatives designed to limit bluefin catch, impacts on protected species would also be constrained, resulting in the minor beneficial effort. The net impact of the preferred alternatives affecting the Longline category on protected species would be neutral or minor beneficial. A complete discuss of effect of the alternatives applicable to the Longline category on quota allocation and fishing effort is located in Section 4.1.6.1. The impacts of the alternatives affecting the Longline category on EFH would be neutral.

4.2.6.2 Purse Seine Category Measures

The combined biological impacts of the alternatives applicable to the Purse Seine category would result principally from impacts of the reallocation alternatives. Under any of the combinations of codified and annual reallocation alternatives, the Purse Seine quota would be reduced compared to the No Action alternative. A reduction to bluefin quota allocations may reduce the amount of potential fishing effort by the Purse Seine category. The impact is likely to be neutral however, because purse seine gear is classified as Category III ("remote likelihood of serious injury or known incidental mortality to marine mammals"), and the Purse Seine category has been very inactive for several years. The alternatives applicable to the Purse Seine category would have a neutral impact on essential fish habitat.

4.2.6.3 General Category Measures

The impacts of the alternatives applicable to the General category are the combined impacts of the reallocation and reporting alternatives, the ability to reallocate quota from a later time period to an earlier one, as well as the rules that would modify the timing of changes to permit categories. The alternatives would result in relatively minor changes to the amount and timing of General category fishing effort. The impacts of the alternatives applicable to the General category on protected species and essential fish habitat are expected to be neutral. Handgear

used by the General category is classified as Category III ("remote likelihood of serious injury or known incidental mortality to marine mammals").

4.2.6.4 Harpoon Category Measures

The impacts of the alternatives applicable to the Harpoon category are the combined impacts of the reallocation and reporting alternatives, the ability to adjust retention limits inseason, as well as the rules that would modify the timing of changes to permit categories. The alternatives would result in relatively minor changes to the amount and timing of Harpoon category fishing effort. The impacts of the alternatives applicable to the Harpoon category on protected species and essential fish habitat are expected to be neutral. Harpoon gear used by the Harpoon category is classified as Category III ("remote likelihood of serious injury or known incidental mortality to marine mammals").

4.2.6.5 Angling Category Measures

The combined impacts of the alternatives applicable to the Angling category are the combined impacts of the reallocation and reporting alternatives, as well as the rules that would allocate a portion of the trophy south sub-quota to the Gulf of Mexico, and modify the timing of changes to permit categories. The combined biological impacts of the alternatives applicable to the Angling category are expected to be neutral. Handgear used by the Angling category is classified as Category III ("remote likelihood of serious injury or known incidental mortality to marine mammals").

Chapter 4 References

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5.0 SOCIAL AND ECONOMIC CONSEQUENCES

This chapter assesses the social and economic impacts of the alternatives presented in this document. The primary purpose of this chapter is to provide the baseline economic data and economic impact analysis for the Regulatory Impact Review (RIR) in Chapter 7 and the Initial Regulatory Flexibility Analysis in Chapter 8. Furthermore, the NEPA implementing regulations (40 C.F.R. 1508.14) require that when "economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment." The alternatives have social and economic impacts interrelated with impacts on the human environment and thus are incorporated into the DEIS. While this chapter provides an economic analysis, it is not a stand-alone analysis as it refers back to, provides background data for, and builds upon the specific data and analyses provided in Chapters 3 and 4.

5.1 Allocation Alternatives

5.1.1 Alternative A 1 – No Action

The No Action alternative would make no changes to the current percentages that each quota category is allocated (General: 47.1 percent; Harpoon: 3.9 percent; Purse Seine: 18.6 percent; Longline: 8.1 percent; Trap: 0.1 percent; Angling: 19.7 percent; Reserve: 2.5 percent). Dead discards would continue to be accounted for through the annual specification process without altering the baseline allocations.

In the short-term, if NMFS continued to address the dead discards with the same accounting methodology it has used the past several years, this alternative could have minor to moderate direct adverse economic impacts on the Longline category when the category reaches its adjusted quota. For example, in 2012, NMFS projected that the Longline category was likely to fully harvest its allocated quota before the end of the fishing year, and closed the southern area on May 29, 2012 (77 FR 31546) and the northern area on June 30, 2012 (77 FR 38011, June 26, 2012). In 2013, the Longline category northern and southern areas were closed on June 25, 2013 (78 FR 36685, June 19, 2013) because the adjusted quota had been reached. For now, NMFS has been able to cover all of the landings and dead discards within then overall available quota. In the future, however, if recent trends continue (such as increased bluefin tuna interactions), annual scenarios are very likely to arise in which there is not enough quota to cover all of the fishery's operations as they are currently carried out. This would result in uncertainty in the fisheries particularly if the longline category continues to operate as it does, without reducing its bluefin tuna interactions. In order to stay within the existing overall quota in this situation, NMFS would be faced potentially with seeking closure of the longline fishery or reducing fishing quotas in other categories. Both would have costs in the form of lost revenue for the affected fishery.

In the long-term, there could be additional minor to moderate direct adverse economic impacts if other bluefin quota categories are closed early in the fishing year to account for dead discards, since this would reduce the amount of actual bluefin landings and associated revenues. This situation could occur if dead discards exceed the estimated dead discards by a sufficient

threshold and cause NMFS to reallocate from directed users in other categories to maintain ICCAT compliance with the overall quota. Table 5.1 provides data on percent of adjusted quota being utilized each year. As can be seen from the data, quota utilization has increased in recent years in many categories. With the inclusion of dead discards, the total percent of baseline quota used has risen to 93 percent in 2011 and 100 percent in 2012. If this trend continues, it is likely that the Longline category will not be able to land bluefin tuna after the first few months of the year due to dead discards. Revenues from bluefin landings would likely be reduced, since much of the quota would be utilized to cover dead discards.

Table 5.1 Trends in the baseline bluefin quota utilized from 2006 to 2012.

	2006	2007	2008	2009	2010	2011	2012
Category	Percent of Baseline Quota Used						
General	23	22	43	69	118	106	105
Harpoon	39	26	48	105	50	81	48
Longline	46 109 incl DD	29 104 incl DD	63 195 incl DD	122 133 incl DD	87 230 incl DD	75 207 incl DD	90 330 incl dd
Trap	0	0	25	0	0	0	0
Purse Seine	1	13	0	6	0	0	1
Angling	66	221	191	284	95	100	82
TOTAL	30	59	65	104	83	79	75
TOTAL (incl. DD)	36	67	79	124	99	93	100

2007 “bridge period” fishing year was June 2007-December 2007; 2006 fishing year was June 2006-May 2007

NMFS considers potential change in revenue to be the primary direct social impact of each allocation alternative. The magnitude of the impact of the current trend in bluefin quota utilization and of not taking action regarding quota allocation on individual fishermen could vary based on the number of permit holders per category (Table 5.2), and the extent to which the fishermen in the commercial categories rely on revenue from bluefin landings. For example, the General category has a large number of permit holders, but it is comprised of both fishermen whose sole income comes from commercial fishing, as well as a large number of individuals who have other primary sources of income. Additionally for this category, a large percentage of bluefin landings are made by a relatively small number of individuals, and some General category fishermen target tunas other than bluefin. NMFS collects data about all bluefin tuna fishing but does not differentiate within categories to this sub-level of activity (i.e., whether fishermen are targeting other tunas on specific trips, whether fishermen have other sources of income, etc.). As a result, that aspect of our social impacts analysis must be generalized and/or qualitative. For the Harpoon category, relative impacts for individual permit holders could be of a greater magnitude since they are divided among a smaller pool (13) of permit holders which

are all likely to be full-time commercial fishermen (B. McHale, pers. com.). The Charter/Headboat category is comprised of individuals who may fish for any of the HMS covered under the permit, depending upon their location and interests. Bluefin landings may be assigned to either the Angling or General category quotas depending upon the size class of bluefin retained, and vary on a trip by trip basis. Social impacts to this category are likely to vary between those identified for the General and Angling categories.

Secondary social impacts for these alternatives could include changes in degree of satisfaction and attitudes based on the increase or decrease in the availability of fishing opportunities. In some cases, the availability of a fishing opportunity (i.e., Angling category, some General category fishermen) may be as important as retaining a fish. In addition, the prohibition on keeping bluefin after NMFS closes a category, even if a bluefin has been killed incidentally while fishing for other species, could result in dissatisfaction and an adverse social impact. During scoping for this amendment, fishermen from several categories, including the Longline category, commented on the waste associated with dead discards of bluefin in the pelagic longline fishery.

Table 5.2 Number of permit holders per permit category as of October 2012 (NMFS 2012)

Permit Category	Number of Permit holders
Angling	23,061
Charter/Headboat	4,129
General	4,084
Longline	253
Harpoon	13
Trap	8
Purse Seine	3

Like the minor to moderate, direct, adverse, short-term economic impacts discussed above for this No Action alternative, similar social impacts for this alternative would likely be limited to the Longline category, which includes a relatively small number of permit holders. Minor to moderate longer-term direct adverse impacts of quota shortages could also impact the other categories in the future.

5.1.2 Alternative A 2 – Permanent Reallocation

The Permanent Reallocation Alternatives would redistribute baseline quota percentages among categories. To analyze the potential economic impacts of the reallocation alternatives among quota categories, NMFS first examined the average ex-vessel price of bluefin from 2006 to 2011.

Table 5.3 Average Ex-vessel price per pound of Bluefin Tuna (2006 – 2011) Source: http://research.stlouisfed.org/fred2/graph/?id=GDPDEF

Year	Ex-vessel price per pound (nominal dollars)	GDP Deflator	Ex-vessel price per pound (2012 dollars)
2006	$8.51	103.2	$9.52
2007	$8.63	106.2	$9.38
2008	$9.35	108.6	$9.94
2009	$8.18	109.5	$8.62
2010	$8.35	111.0	$8.68
2011	$10.08	113.4	$10.26
Average	$8.85		$9.40

To adjust for inflation, the GDP Deflator (an economic index of price levels for all domestically produced, final goods and services in the economy) was used to calculate the average ex-vessel price per pound of bluefin in 2012 dollars. The ratio of the 2012 GDP Deflator (115.4) to the GDP Deflator for the year being examined was used to calculate the real ex-vessel price per pound in 2012 dollars. These calculations are detailed in Table 5.3. The average ex-vessel price of bluefin per pound from 2006 to 2011 was $9.40 in 2012 dollars. To determine any potential change in revenue associated with quota adjustment alternatives, we looked at how each alternative would change the metric tons (ww) allocated to each commercial quota category. To convert bluefin metric tons of whole weight to pounds of dressed weight, we multiplied the tonnage difference by 2,204.62 mt per pound to convert the metric tons into pounds and then divided by 1.25, the average ratio of whole weight to dressed weight for tuna. The resulting change in pounds dressed weight was then multiplied by $9.40 (the average ex-vessel price from 2006-2012) to estimate the potential changes in revenue.

In general, depending upon the distribution strategy, redistributing a limited quota would likely result in positive economic impacts for fishermen in categories that receive an increase in quota and negative impacts for those that lose quota.

5.1.2.1 Alternative A 2a - Reallocation to Longline Category Based on Historical 68 mt Dead Discard Allowance

This alternative would reallocate 68 mt to the Longline category (a number based on the separate dead discard allowance in an earlier ICCAT recommendation that is not in effect now), increasing the Longline category by 83.56% and decreasing other categories by a bit more than 7% (in the General, Harpoon, Purse Seine, Angling, and Reserve categories). This reallocation could have negative economic effects on vessel owners in categories that land bluefin tuna but that lose quota under the reallocation in this alternative. Table 5.4 lists the number of vessels in each category that landed at least one bluefin between 2006 and 2011 and are considered "active." The category quota changes are detailed in Table 5.5 and the potential revenue change

per vessel is based on the maximum number of vessels that landed at least one bluefin from 2006 to 2011.

Table 5.4 Number of commercial vessels by category and by year that landed at least one bluefin.

Category	2006	2007	2008	2009	2010	2011	Average	Maximum
General	366	314	378	475	552	592	446	592
Harpoon	14	17	14	19	17	17	16	19
Longline	60	73	87	76	92	78	78	92
Purse Seine	2	1	0	1	0	0	1	2
Total	442	405	479	571	661	687	541	705

By allowing longline vessels to land, rather than discard, incidentally-caught bluefin tuna, the reallocation of 68 mt would increase the potential revenue from bluefin for the entire Longline category by approximately $1 million per year. The General category would face a potential reduction in the maximum revenue from bluefin of approximately $530,000 per year. The Harpoon category would face a potential reduction in the maximum revenue from bluefin of approximately $45,000 per year. The Purse Seine category could face a potential reduction in the maximum revenue from bluefin of approximately $210,000 per year. In addition, the Angling category would potentially face unquantified reductions in economic and social activity associated with 7.36 percent reduction in available quota.

Table 5.5 Impacts of a reallocation to Longline category based on historical 68 mt dead discard allowance (see Table 5.4 for the number of active vessels by category)

Category	Current Allocation (mt)	Revised Allocation* after Deducting (or Adding) Portion of 68 mt	Total Change	Percent Change	Potential Revenue Change (± $)	Potential Revenue Change per Active Vessel
General	435.1	403.1	-32	-7.35%	-$530,520	-$896
Harpoon	36	33.3	-2.7	-7.50%	-$44,763	-$2,355
Purse Seine	171.8	159.1	-12.7	-7.39%	-$210,550	-$105,275
Longline	74.8	137.3	+62.5	83.56%	$1,036,171	$11,263
Trap	0.9	0.9	0	0.00%	$0	0
Angling	182	168.6	-13.4	-7.36%	NA	NA
Reserve	23.1	21.4	-1.7	-7.36%	-$28,184	NA
Totals	923.7	923.7	0	0.00%	$0	NA

NA indicates categories that do not commercially sell bluefin.

The adverse long-term direct social impacts of reduced revenue for individual permit holders vary for individual permit holders, keeping in mind that this quantitative estimate is not useful for all categories. Although the magnitude of revenue loss per vessel owner appears to be high for the Purse Seine category, this alternative would likely have minor adverse social impacts on Purse Seine fishermen since landings in this category have recently been very low. Purse seine fishermen state that they have chosen not to fish on the mixed size-class schools of bluefin that have been available on the fishing grounds in order to avoid high discard mortality of smaller fish although at least one purse fishermen continues to express interest in fishing, which may indicate that the purse seine vessels may become more active in the future if fishery and market conditions change. The potential revenue reduction per active purse seine vessel is approximately $105,275 annually. Impacts are moderate for the other categories losing revenue. Active vessels in the General category could experience a reduction of $896 in revenue annually per vessel and active vessels in the Harpoon category could experience a reduction of $2,355 annually per vessel. Direct impacts of potential increased revenue for Longline category permit holders would be moderate, long-term, and beneficial. Longline category fishermen may perceive this as a fair way to compensate for the loss of the 68 mt dead discard allowance from ICCAT while fishermen in other categories may be unwilling accept any quota reductions to account for dead discards in a different fishery. This is a preferred alternative because it would balance adverse impacts among all categories.

5.1.2.2 Alternative A 2b - Reallocation Incorporating Recent Catch Data

Alternative A 2b would permanently revise the quota allocations for all categories to reflect recent catch. Table 5.6 details this quota reallocation and how it compares to the current allocation. Reallocating the quota based on recent catch data would result in an 83.56% increase in the Longline category quota and an increase in Angling category of 47.1%. However, this reallocation alternative would result in a decrease in the quotas of the General, Harpoon, Purse Seine, Trap, and Reserve categories of 10.85%, 15.56%, 49.01%, 55.56%, and 48.05% respectively.

Table 5.6 Impacts of reallocation based on incorporating recent catch data. (See Table 5.2 for the number of permit holders by category)

Category	Current Allocation (mt)	Revised Allocation* (mt)	Total Change (mt)	Percent Change	Potential Revenue Change (± $)	Potential Revenue Change per Active Vessel
General	435.1	387.9	-47.2	-10.85%	-$782,517	-$1,321
Harpoon	36	30.4	-5.6	-15.56%	-$92,841	-$4,886
Purse Seine	171.8	103.1	-84.2	-49.01%	-$1,395,930	-$697,965
Longline	74.8	143.5	62.7	83.82%	$1,039,487	-$11,299
Trap	0.9	0.4	-0.5	-55.56%	-$8,289	0
Angling	182	267.8	85.8	47.14%	NA	NA
Reserve	23.1	12	-11.1	-48.05%	-$184,024	NA
Total	923.7	923.7	0	0.00%	$0	NA

NA indicates categories that do not commercially sell bluefin.

The codified quota allocation would potentially allow longline vessels to land, rather than discard, a larger percentage of their incidentally-caught bluefin tuna, provided they were of legal minimum size. This alternative's revised quota allocation could increase the potential revenue from incidentally-caught bluefin for the Longline category by approximately $1.0 million per year, however this is highly unlikely since a large portion of these bluefin will be below the commercial minimum size and therefore would be accounted for with no economic gain. The General category could face a potential reduction in the maximum revenue from bluefin of approximately $783,000 per year. The Harpoon category could face a potential reduction in the maximum revenue from bluefin of approximately $93,000 per year. The Purse Seine category could face a potential reduction in the maximum revenue from bluefin of approximately $1.4 million per year. The Reserve category could face a potential reduction in the maximum revenue from bluefin of approximately $184,000 per year. In addition, the Angling category would potentially face unquantified gains in economic and social activity associated with 47.1 percent increase in available quota.

This alternative may be considered unfair by some fishermen, likely those in the categories that would have reduced quotas, because bluefin landings and catch can vary for a variety of ecological and anthropogenic reasons, including regulatory actions.

Although the magnitude of revenue loss appears to be high for the Purse Seine category, this alternative would likely have minor adverse social impacts on Purse Seine fishermen since landings in this category have recently been very low, as discussed in the previous alternative. The Longline category would benefit from direct, moderate, long-term gains in revenue.

5.1.2.3 Alternative A 2c - Reallocation from Purse Seine to Longline Category

A permanent reallocation of two-fifths of the Purse Seine category to the Longline category would result in 91.84% increase in the Longline category quota and a decrease the Purse Seine quota by 39.99%. These changes are detailed in Table 5.7.

Table 5.7 Impacts of a reallocation from Purse Seine to Longline Category. (See Table 5.2 for the number of permit holders by category)

Category	Current Allocation (mt)	Revised Allocation* (mt)	Total Change (mt)	Percent Change	Potential Revenue Change (± $)	Potential Revenue Change per Active Vessel
General	435.1	435.1	0	0.00%	$0	0
Harpoon	36	36	0	0.00%	$0	0
Purse Seine	171.8	103.1	-68.7	-39.99%	-$1,138,960	-$569,480
Longline	74.8	143.5	68.7	91.84%	$1,138,960	-$12,380
Trap	0.9	0.9	0	0.00%		0
Angling	182	182	0	0.00%		NA
Reserve	23.1	23.1	0	0.00%		NA
Total	923.7	923.7	0	0.00%	$0	NA

NA indicates categories that do not commercially sell bluefin.

The permanent reallocation of two-fifths of the Purse Seine category to the Longline category would increase the potential revenue from incidentally-caught bluefin for the Longline category by approximately $1.1 million per year, however this is highly unlikely since a large portion of these bluefin will be below the commercial minimum size and therefore would be accounted for with no economic gain. The Purse Seine category could face a potential reduction in the maximum revenue from bluefin of an equivalent $1.1 million per year. The other bluefin quota categories would not be impacted by this alternative. In addition to the adverse economic consequences, this alternative would likely be considered unfair by Purse Seine category fishermen since their allocation has been singled out for reduction. Longline fishermen would have moderate, direct, long-term, beneficial social impacts from this alternative due to the increase in revenue and quota, as described in previous alternatives.

5.1.3 Alternative A 3 – Annual Reallocation

Annual reallocation Alternatives A 3a and A 3b, would reallocate anticipated unused quota from the Purse Seine category to other quota categories and allocate a reduced amount of quota to the Purse Seine category in proportion to the number of permitted vessels (respectively).

5.1.3.1 Alternative A 3a - Annual Reallocation of Bluefin Quota from Purse Seine Category (Preferred)

Under alternative A 3a, NMFS would reallocate the Purse Seine category bluefin quota that is projected to be unused (based on the previous year's landings and dead discards), from the Purse Seine category to other quota categories, including the Reserve category, on an annual basis. Table 5.8 details how this reallocation would work and how it might impact the potential revenue associated with the purse seine quota.

Table 5.8 Annual reallocation of bluefin quota from the Purse Seine category, based on U.S. quota of 923.7 mt

Amount of Purse Seine Base Quota *Caught* by Purse Seine Category in Year X	Amount of Purse Seine Base Quota *Allocated* to Purse Seine Category in Year X + 1	Amount of Purse Seine Base Quota *Available for Reallocation* to other Categories in Year X + 1	Percent Change if Maximum Quota Available for Reallocation is Utilized	Potential Revenue Change (± $)
0 to 34.4 mt (0 to 20%)	43.0 mt (25% (minimum quota))	128.8 mt 75%	-75%	-$2,135,342
>34.4 to 77.3 mt (>20% to 45%)	85.9 mt 50%	85.9 mt 50%	-50%	-$1,424,114
>77.3 to 120.3 mt (>45% to 70%)	128.9 mt 75%	42.9 mt 25%	-25%	$711,228
>120.3 mt to 171.8 (>70% to 100%)	171.8 mt 100%	0 mt 0%	0	$0

In recent years, very little of the Purse Seine category quota has been landed (See Chapter 3). If that continues into the future, under alternative A 3a, the Purse Seine quota could be reduced by 75 percent. The 128.8 mt associated with that reduction would reduce the potential maximum revenue from bluefin that the purse seine fleet could land by $2.1 million annually. However, given the recent bluefin landings history of the purse seine fleet, it is unlikely that future bluefin landings would be constrained substantially by this reduction and allocations would be re-evaluated on an annual basis. Therefore, alternative A 3a would likely only result in minor direct adverse short-term economic impacts to the Purse Seine category. Economic impacts to the other categories are likely to be direct, moderate, and beneficial in the short-term due to increased revenue and fishing opportunities.

Adverse social impacts on Purse Seine category fishermen are likely because of potential annual reductions to quota; however, the magnitude will likely be minor since the impacts are short-term and re-evaluated every year and therefore would not reduce Purse Seine category fishing activity in the long-term. In addition, the Purse Seine category quota is the only quota that would be reduced by this alternative. Other categories would benefit from the potential of increased revenue, and this alternative may provide a better business planning environment for NMFS and

fishermen by alleviating the large reservoir of unused Purse Seine quota and distributing it prior to the start of the fishing and management season.

5.1.3.2 Alternative A 3b – Annual Purse Seine Allocation Commensurate with the Number of Purse Seine Vessels

This alternative would allocate annual quota to the Purse Seine category commensurate with the number of permitted Purse Seine vessels. Table 5.9 lays out the various scenarios and the potential quota change associated with each number of permitted vessels.

Table 5.9 Annual Purse Seine Allocation Commensurate with the Number of Purse Seine Vessels

Number of Permitted Purse Seine Vessels	Purse Seine Allocation (% of total quota)	Purse Seine Quota (based on example of 923.7 mt U.S. quota)	Quota Available for Transfer to Reserve Category from the Purse Seine Category	Current Allocation	Total Change (mt)	Percent Change	Economic Impact (± $)
1	3.7	34.2	137.6	171.8	-137.6	-80.09%	-$2,281,235
2	7.4	68.3	103.5	171.8	-103.5	-60.24%	-$1,715,900
3	11.2	103.5	68.3	171.8	-68.3	-39.76%	-$1,132,328
4	14.9	137.6	34.2	171.8	-34.2	-19.91%	-$566,993
5	18.6	171.8	0	171.8	0	0.00%	$0

The impacts of Alternative A 3b would be similar to A 3a. Alternative A 3b would also likely only result in minor direct adverse short-term economic impacts if current bluefin fishing levels remain the same. Minor adverse short-term social impacts include the loss of potential revenue, and change in the culture of the purse seine fishery to reflect the recent loss of fishing vessels and reduction in participation.

5.1.4 Alternative A 4 – Modifications to Reserve Category

5.1.4.1 Alternative A 4a - No Action

Under the No Action alternative, there would be no changes to the allocation to the Reserve category or the determination criteria that are considered prior to making any adjustments to/from this category. There would be neutral short or long-term economic impacts associated with maintaining the allocation to the Reserve category and the determination criteria.

5.1.4.2 Alternative A 4b - Modify Reserve Category (Preferred)

This alternative would increase the amount of quota that may be put into the Reserve category and increase the potential uses of Reserve category quota. Specifically, it would potentially increase the Reserve category quota beyond the current baseline allocation of 2.5 percent and

broaden the determination criteria considered in making adjustments to/from the Reserve category. This could result in moderate beneficial economic impacts if unused quota from a previous year could be reallocated to the Reserve category to potentially offset any overharvests in another category, consistent with ICCAT recommendations on carry-forward of unharvested quota.

To broaden the potential uses of Reserve category quota, this alternative would add the following six objectives of quota adjustment to the current list of nine criteria and relevant factors NMFS considers when making inseason or annual quota adjustments: (10) optimize fishing opportunity; (11) account for dead discards; (12) facilitate quota accounting; (13) support industry-funded observers through quota allocations and/or generation of revenue; (14) support other fishing monitoring programs through quota allocations and/or generation of revenue; and (15) support research through quota allocations and/or generation of revenue. For example, Reserve bluefin quota could be transferred to the General category if pelagic longline vessels were authorized to fish under General category rules (Sub-Alternative B 1b), or bluefin quota from the Reserve category could be used to support industry-funded observers for a directed category such as the Purse Seine, General, or Harpoon categories (Alternative D 4c). Another example is that quota categories may be restored quota which was ‘contributed’ pursuant to Alternative A 2a (Permanent Reallocation to Longline category Based on Historical 68 mt Dead Discard Allowance). These six modifications to the quota adjustment criteria are intended to provide additional flexibility to enhance and facilitate the management of the fishery. These combined modifications would potentially result in short-term moderate beneficial economic impacts because the additional flexibility in using the Reserve category would allow for the optimization of fishing opportunity and better accommodate accounting for dead discards and quota compliance.

5.2 Area Based Alternatives

The management alternatives in this section are geographically based and rely principally upon either restricting the use of pelagic longline gear in specific areas or providing vessels that possess pelagic longline gear conditional access to current closed areas or portions thereof. This document refers to the currently existing area-based restrictions as “closed areas,” and refers to the alternatives under consideration as “gear restricted areas.”

5.2.1 Alternative B 1 – Gear Restricted Areas

NMFS considered a range of alternatives from maintaining existing pelagic longline closures (the no action alternative) to a year- round gear restricted area of the entire Gulf of Mexico EEZ (west of 82º longitude) in order to reduce interactions with bluefin tuna. NMFS is considering gear restrictions to pelagic longline gear off the coast of North Carolina and in the western Gulf of Mexico, and the use of handgear by pelagic longline vessels in certain gear restricted areas.

5.2.1.1 Alternative B 1a – No Action

The No Action Alternative would result in the status quo regarding gear restricted areas. Although the current closed areas would remain effective, the data indicate that large numbers of

interactions of pelagic longline gear with bluefin occur in consistent areas during predictable time periods, which are outside of the current closed areas. The No Action alternative would not reduce dead discards. The magnitude of the discards in the pelagic longline fishery is more likely to stay the same or increase under the No Action alternative, without implementation of a new gear restricted area. This could result in moderate long-term adverse social and economic impacts when the Longline category exceeds its quota earlier in the fishing year because of dead discards and therefore cannot land bluefin for the remainder of the year or under Alternative C4b, NMFS Closure of the Pelagic Longline Fishery, the fleet is required to shut down.

5.2.1.2 Alternative B 1b – Cape Hatteras Gear Restricted Area

This alternative would define a modified rectangular area in the Atlantic and would prohibit the use of pelagic longline gear during a five-month period from December through April. The specific time and area of the Cape Hatteras Gear Restricted Area represents a time and area combination likely to result in reduced bluefin interactions based on past patterns of interactions. NMFS tailored the Cape Hatteras Gear Restricted Area to maximize the reductions in bluefin interactions while minimizing the area closed to pelagic longline gear.

This alternative is expected to have moderate short and long-term direct adverse economic impacts on 43 vessels that have historically fished in the Cape Hatteras Gear Restricted Area during the months of December through April. The average annual revenue from 2006 through 2011 from all fishing sets made in what this alternative would make a gear restricted area has been approximately $1.18 million during the restricted months assuming that fishing effort does not move to other areas.

However, it is likely that some of the vessels that would be impacted by this gear restricted area would redistribute their effort to other fishing areas. Based on natural breaks in the percentage of sets vessels made inside and outside of the proposed gear restricted area, NMFS estimated that if a vessel historically made less than 40% of its sets in the gear restricted area, it would likely redistribute all of its effort. If a vessel made more than 40% but less than 75% of its sets in the gear restricted area, it would likely redistribute 50% of its effort impacted by the gear restricted area to other areas. Finally, if a vessel made more than 75% of its sets solely within the gear restricted area, NMFS assumed the vessel would not likely shift its effort to other areas. Based on these individually calculated redistribution rates, the percent of fishing in other areas during the gear restriction time period, and the catch per unit effort for each vessel in each statistical area, NMFS estimated the potential landings associated with redistributed effort associated with fishing sets displaced by the gear restricted area. The net impact of the Cape Hatteras Gear Restricted Area on fishing revenues after considering likely redistribution of effort is estimated to be $781,000 per year. This is $396,000 less annually than the estimated impact if we assume no effort redistribution will occur. Table 5.10 provides details on the loss of revenues before and after redistribution by major species landed.

Table 5.10 Fishery-wide Estimated revenue impacts of the Cape Hatteras Gear Restricted Area on 43 affected vessels

	Bluefin Tuna	Swordfish	Bigeye Tuna	Yellowfin Tuna	Dolphin	Wahoo Tuna	Shortfin Mako	Total
Loss of Revenue with no redistribution	$59,944	$756,104	$150,790	$132,873	$3,106	$1,252	$72,690	$1,176,760
Loss of Revenue with redistribution	$40,887	$451,941	$95,333	$120,443	$2,572	$1,057	$68,737	$780,970

Alternative B 1b would result in moderate short- and long-term adverse social and economic impacts as a result of restricting longline vessels from fishing in the Cape Hatteras Gear Restricted Area thus causing decreased revenues and increased costs associated with fishing in potentially more distant waters if vessels operators redistribute their effort.

5.2.1.3 Alternative B 1c – Cape Hatteras Gear Restricted Area with Access based on Performance (Preferred)

This alternative would use the same area off Cape Hatteras, North Carolina as in Alternative B 1b, and would define criteria for access by HMS permitted vessels fishing with pelagic longline gear during the five-month period from December through April. Vessels that are determined by NMFS to have relatively low rates of interactions with bluefin based on past performance, and that are compliant with reporting and monitoring requirements, would be allowed to fish in the area using pelagic longline gear. Vessels that have demonstrated an inability to avoid bluefin would not be allowed to fish with pelagic longline gear in this area; or if a vessel can avoid bluefin, but has poor compliance with logbook reporting and POP observer requirements, it would not be allowed to fish with pelagic longline gear in this area from December through April. Individual vessel data would be evaluated annually for the purpose of determining access, in order to provide future opportunities and accommodate changes in fishing behavior, both positive and negative, based on performance.

Based on the performance criteria outlined in Chapter 4 and in the Appendices, NMFS determined that, of 161 active vessels in the entire pelagic longline fleet, 43 vessels fished in the Cape Hatteras Gear Restricted Area or buffer region during the five-month period from December through April from 2006 through 2011. Of these 43 active vessels, 18 vessels that fished in the Cape Hatteras Gear Restricted Area or buffer region would not meet the criteria for access based on their inability to avoid bluefin tuna, and/or compliance with POP observer and logbook reporting requirements. The average annual revenue from fishing sets made in the gear restricted area by these 18 vessels is approximately $419,000 during the restricted months.

However, it is likely that some of the vessels that would be impacted by this alternative's implementation of the gear restricted area would redistribute their effort to other fishing areas. Six of the 18 restricted vessels made at least 75 percent of their sets in the Cape Hatteras Gear Restricted Area. NMFS assumes those vessel would not likely redistribute effort. However, 7 vessels made between 40 and 75 percent of their sets outside of the gear restricted area, so

NMFS estimated that those would likely redistribute 50% of effort impacted by the gear restricted area to other areas and the final 5 vessel are assumed to likely redistribute all of their effort to other areas. The net impact of Alternative B 1c on fishing revenues after redistribution of effort is estimated to be $292,000 per year. This is $127,000 less annually than the estimated impact with no redistribution and $489,000 less than Alternative B 1b (where the gear restricted area would apply regardless of performance). Table 5.11 provides details on the loss of revenues before and after redistribution by major species landed.

Table 5.11 Estimated revenue impacts of the Cape Hatteras Gear Restricted Area with access based on performance

	Bluefin Tuna	Swordfish	Bigeye Tuna	Yellowfin Tuna	Dolphin	Wahoo Tuna	Shortfin Mako	Total
Loss of Revenue with no redistribution	$28,614	$288,489	$48,739	$27,537	$623	$225	$24,820	$419,047
Loss of Revenue with redistribution	$20,984	$190,903	$33,017	$24,571	-$156	-$225	$22,669	$291,763

Alternative B 1c would result in moderate short- and long-term adverse social and economic impacts as a result of restricting longline vessels from fishing in the Cape Hatteras Gear Restricted Area thus causing decreased revenues and increased costs associated with fishing in potentially more distant waters if vessels operators redistribute their effort.

5.2.1.4 Alternative B 1d - Allow Pelagic Longline Vessels to Fish under General Category Rules (Preferred)

This alternative would allow vessels with an Atlantic Tunas Longline permit to fish under the rules/regulations applicable to the General category as they pertain to targeting bluefin using non-pelagic longline-gear (gear authorized under the General category, including: rod and reel, handline, harpoon, etc.), in the area defined as the Cape Hatteras Gear Restricted Area, during the time of the restriction (December through April), when the General category fishery is open. The bluefin landed with authorized handgear would be counted against the General category quota.

The amount of bluefin landings allowed under this alternative would be limited by the available General category subquotas for December and for the January period (under the preferred alternative E 1c). Alternative B 1d would result in short-term, direct, minor, beneficial economic impacts for Longline category fishermen that otherwise would not be able to fish for bluefin in the Cape Hatteras Gear Restricted Area. It would result in short-term, direct, minor, adverse economic impacts for General category participants to the extent that any Longline category vessel landings bluefin under General category rules results in the available subquota being met earlier than it would otherwise. Average 2011 and 2012 prices were $6.10 and $6.19 for the Longline category, respectively, and $8.90 and $9.31 for the General category, respectively. At an average 2012 weight of 372 lb for a bluefin caught in the General category and an average price of $9.31, a loss or gain of one fish is approximately $3,500 (more than the average

Longline value of approximately $2,500 per incidental bluefin, at an average weight of 402 lb for a bluefin landed in the Longline northern area and a price of $6.19/lb). However, if NMFS transferred quota to January within the General category allocation to offset the amount used by pelagic longline vessels fishing under the General category rules (from Purse Seine category annual reallocation), impacts on General category vessels could be reduced or even neutral.

If a Longline category vessel chooses to fish with General category gear in the Cape Hatteras Gear Restricted Area versus outside the area with pelagic longline gear, the ability to land and sell bigeye, albacore, yellowfin, and skipjack from that area would result in short-term, direct, minor, beneficial economic impacts, although substantially less so than continuing to use longline gear, which accounts for a much larger proportion of catch of bigeye, albacore, and yellowfin tuna than does handgear.

5.2.1.5 Alternative B 1e – Gulf of Mexico Exclusive Economic Zone (EEZ) Gear Restricted Area (March – May)

This alternative would prohibit the use of pelagic longline gear in the Gulf of Mexico (GOM) for 3 months each year. Specifically, this alternative would define the EEZ as an irregular-shaped area in the Gulf of Mexico and prohibit the use of pelagic longline gear during the three-month period from March through May (annually), which coincides with the bluefin tuna spawning season.

This alternative is expected to have moderate short and long-term direct adverse economic impacts on 66 vessels that have historically fished in the Gulf of Mexico EEZ during the months of March through May. The average annual revenue from fishing sets made in the gear restricted area is approximately $1.48 million during the closure months. There would also be benefits in the long-term if the gear restricted area helps the stock recover.

Often vessels are able to redistribute their effort when faced with an area closure. However, pelagic longline vessels based in the Gulf of Mexico have reported very little fishing activity (less than 1 percent of sets) outside of the Gulf of Mexico based a review of logbook records from 2006 through 2011. This indicates that there is a low likelihood that pelagic longline vessels based in the Gulf of Mexico would shift their fishing effort to other areas for the months of March through May, at least in the short-term. Therefore, the economic impact of the Gulf of Mexico Gear Restricted Area on fishing revenues is estimated to be $1.48 million per year. Table 5.12 provides details on the loss of revenues by major species landed.

Table 5.12 Estimated revenue impacts of the Gulf of Mexico EEZ Gear Restricted Area

	Bluefin Tuna	Swordfish	Bigeye Tuna	Yellowfin Tuna	Dolphin	Wahoo Tuna	Shortfin Mako	Total
Loss of Revenue	$115,899	$782,909	$12,026	$530,735	$18,722	$12,445	$7,711	$1,480,447

5.2.1.6 Alternative B 1f – Small Gulf of Mexico Gear Restricted Area (Preferred)

This alternative would define a rectangular area in the Gulf of Mexico and prohibit the use of pelagic longline gear in that area during the two-month period from April through May. The specific time and area of the Small Gulf of Mexico Gear Restricted Area represents a time and area combination likely to result in reduced interactions based on past patterns of interactions. The Small Gulf of Mexico Gear Restricted Area would provide a narrower restriction based upon the locations of historical bluefin interactions, and would provide a different balance of achieving the principal objectives than the Gulf of Mexico EEZ Gear Restricted Area. NMFS tailored the Small Gulf of Mexico Gear Restricted Area to maximize the reductions in bluefin interactions while minimizing the area where pelagic longline gear use is restricted.

This alternative is expected to have moderate short and long-term direct adverse economic impacts on 34 vessels that have historically fished in the Small Gulf of Mexico Gear Restricted Area during the months of April and May. The average annual revenue from total fishing sets made in the gear restricted area is approximately $249,000 during the restricted months.

However, it is likely that some of the vessels that would be impacted by this gear restricted area would be able to redistribute their effort to other fishing areas within the Gulf of Mexico. Based on natural breaks in the percentage of sets vessels made inside and outside of the proposed gear restricted area, NMFS estimated that if a vessel historically made less than 40% of their sets in the gear restricted area, it would likely redistribute all of its effort. If a vessel made more than 40%, but less than 75% of its sets in the gear restricted area, it would likely redistribute 50% of its effort impacted by the gear restricted area to other areas, within the Gulf of Mexico. Finally, if a vessel made more than 75% of its sets solely within the gear restricted area, NMFS assumed it would not likely shift its effort to other areas. Based on these individually calculated redistribution rates, the percent of fishing done in other areas during the gear restriction time period, and the catch per unit effort for each vessel in each statistical area, NMFS estimated the potential landings associated with redistributed effort associated with fishing sets displaced by the gear restricted area. The net impact of the Small Gulf of Mexico Gear Restricted Area on fishing revenues after redistribution of effort is estimated to be $92,000 per year. This is $157,000 less annually than the estimated impact with no redistribution. Table 5.13 provides details on the loss of revenues before and after redistribution by major species landed.

Table 5.13 Estimated revenue impacts of the Small Gulf of Mexico Gear Restricted Area

	Bluefin Tuna	Swordfish	Bigeye Tuna	Yellowfin Tuna	Dolphin	Wahoo Tuna	Shortfin Mako	Total
Loss of Revenue with no redistribution	$34,735	$81,079	$534	$129,209	$1,327	$1,583	$215	$248,682
Loss of Revenue with redistribution	$23,027	$11,583	-$267*	$59,500	-$2,416*	$452	-$269*	$91,610

*Negative loss refers to an increase in revenue.

5.2.1.7 Alternative B 1g – Gulf of Mexico Gear Restricted Area (year-round)

This alternative would prohibit the use of pelagic longlines in the same area as in the Gulf of Mexico EEZ Gear Restricted Area (Alternative B 1e; i.e., anywhere in the Gulf of Mexico), year-round. This comprehensive gear restricted area would provide the maximum reduction in bluefin discards in the Gulf of Mexico.

This alternative is expected to have moderate short and long-term direct adverse economic impacts on 69 vessels that have historically fished in the Gulf of Mexico EEZ. The average total annual revenue made in the gear restricted area is approximately $6.79 million.

Often vessels are able to redistribute their effort when face with an area closure. However, pelagic longline vessels based in the Gulf of Mexico have reported very little fishing activity (less than 1 percent of sets) outside of the Gulf of Mexico based a review of logbook records from 2006 through 2011. This indicates that there is a low likelihood that pelagic longline vessels based in the Gulf of Mexico would shift their fishing effort to other areas, at least in the short-term. Therefore, the economic impact of the year-round Gulf of Mexico Gear Restricted Area on fishing revenues is estimated to be the full $6.79 million per year. Table 5.14 provides details on the loss of revenues by major species landed.

Table 5.14 Estimated revenue impacts of the Year-Round Gulf of Mexico Gear Restricted Area

	Bluefin Tuna	Swordfish	Bigeye Tuna	Yellowfin Tuna	Dolphin	Wahoo Tuna	Shortfin Mako	Total
Loss of Revenue	$207,151	$2,089,885	$144,094	$3,964,682	$210,268	$155,186	$16,865	$6,788,131

5.2.1.8 Alternative B 1h –Transiting Closed Areas – No Action

Under the No Action alternative, those HMS permitted vessels that possess longline gear, inclusive of both pelagic longline and bottom longline, would not be allowed to enter the existing longline closed areas, even for purposes of transiting the area. This measure would also apply to the Gear Restricted Area areas if finalized, as warranted. Instead, the vessels must go around these closed areas to remain in compliance with the current regulations.

As there are a number of time/area closures for vessels possessing pelagic and bottom longline gear and the current regulations do not provide longline vessels the ability to stow their gear and transit the areas, this alternative would result in direct minor adverse economic and social impacts by potentially requiring vessels to use more fuel and time in taking indirect routes to and from the fishing grounds. This restriction has also raised safety-at-sea concerns due to the increased and indirect transit times.

5.2.1.9 Alternative B 1i – Allow Transiting Closed Areas (Preferred)

This alternative would allow HMS vessels that possess bottom or pelagic longline gear on board to transit the closed areas and Gear Restricted Areas, if finalized, if they remove and stow the gangions, hooks, and buoys from the mainline and drum. The hooks could not be baited.

Allowing pelagic and bottom longline vessels to transit closed and gear restricted areas after removing and stowing gear would result in direct short- and long-term minor beneficial economic impacts by potentially reducing fuel costs and time at sea for vessels that need to transit the closed or restricted areas. Allowing transit through these areas could also potentially improve safety at sea by allowing more direct transit routes and reducing transit time, particularly during inclement weather.

5.2.2 Alternative B 2 – Gear Measures

5.2.2.1 Alternative B 2a– No Action

The "no action" alternative would not change current authorized gear requirements (with respect to the use of buoy gear and associated restrictions on possession of bigeye, albacore, yellowfin, and skipjack tunas (BAYS) and bluefin) applicable to those vessels with an Atlantic Tunas Longline category permit and either a Swordfish Directed or Swordfish Incidental permit. Currently, vessels with an Atlantic Tunas Longline category permit must also have either a Swordfish Directed or Incidental permit, and a Shark Directed or Incidental permit. There are no economic impacts associated with this "no action" alternative.

5.2.2.2 Alternative B 2b – Authorization of Vessels with a Swordfish Incidental Permit to Use Buoy Gear

This alternative would authorize vessels with a Swordfish Incidental permit to fish with buoy gear, except vessels fishing in the East Florida Coast closed area. Under this alternative, vessels would still be limited to 35 buoys. The rationale for this alternative is to provide increased flexibility and encouragement for pelagic longline vessels to utilize gears other than pelagic longline to maintain and enhance fishing opportunities. This would result in short- and long-term direct minor beneficial economic impacts by providing greater flexibility in the gear type that can be used and also by reducing the need to acquire a different permit to use buoy gear. Providing greater flexibility in the gear types that can be used allows vessel greater ability to use the most efficient fishing technology for the vessel and fishing conditions, reducing costs associated with discarding, and reducing the costs associated with the potential need to acquire different permits while fishing with buoy gear.

5.2.2.3 Alternative B 2c – Allow Vessels with a Swordfish Directed or Incidental Permit and an Atlantic Tunas Longline Permit to Retain BAYS and Bluefin when Fishing with Buoy Gear

This alternative would allow vessels with an Atlantic Tunas Longline category permit and the Swordfish Directed or Incidental permit to retain BAYS and bluefin when fishing with buoy gear. The rationale for this alternative is the same as for Alternative B 2b: to provide increased flexibility and encouragement for pelagic longline vessels to utilize gears other than pelagic longline to maintain and enhance fishing opportunities in the context of new restrictions that may

be implemented by Amendment 7. This would result in short- and long-term direct beneficial economic impacts by increase the potential revenue opportunities by allowing additional species to be landed when using buoy gear, reducing costs associated with discarding, and reducing the costs associated with the potential need to acquire different permits while fishing with buoy gear. This alternative would have no effect on vessels with a Swordfish Incidental permit, unless Alternative B 2b is adopted since that alternative authorizes the use of buoy gear for vessels with a Swordfish Incidental permit. Without Alternative B 2b, this alternative would provide additional flexibility for vessels with a Swordfish Directed permit and an Atlantic Tunas Longline permit.

5.2.3 Alternative B 3 – Access to Closed Areas using Pelagic Longline Gear

5.2.3.1 Alternative B 3a – No Action

This No Action alternative would maintain the current regulations that do not allow pelagic longline vessels to fish in a closed area with pelagic longline gear during the time of the closure. There would be no new economic impacts as a result of this alternative.

5.2.3.2 Alternative B 3b – Limited Conditional Access to Closed Areas (Preferred)

This alternative would allow restricted and conditional access to the following closed areas: Charleston Bump closed area (February through April), a portion of the Florida East Coast closed area (year-round), the DeSoto Canyon closed area (year-round), and the Northeastern U.S. closed area (June). All trips into any of the eligible closed areas would be required to be observed. The scope of the alternative and its effects would depend upon the level of observer coverage. If an industry-funded observer program is developed and implemented, the procedures for observer deployment may be modified, and additional limitations to access may be developed to maintain conservation benefits. Participating vessels would be required to “declare into” the area via their VMS unit and report species caught and effort daily via VMS. There would be minor short- and long-term direct beneficial economic and social impacts associated with the added option for vessels to potentially fish in these areas. That could potentially increase landings revenues and decrease fishing costs by providing access to closer and/or more productive fishing areas.

5.2.3.2.1 SubAlternative B 3b – Performance Criteria for Access to Closed Areas (preferred)

In addition to the requirement to carry an observer and to declare and report catch via VMS, this subalternative would further require that permitted pelagic longline vessels meet various performance criteria to be authorized to fish in a closed area. The performance criteria may lead to beneficial social and economic incentives for fishery participants to better comply with reporting and monitoring requirements and reduce bluefin interaction rates.

Revenue that potentially would be gained if this alternative were implemented is shown in Table 5.15. In Chapter 4, the maximum number of potential observed trips into the closed areas was estimated based on historical rates of observer coverage (per quarter) in various statistical areas, and the fact that observer coverage would be a condition of a trip into a closed area. The table

below provides an estimate of potential revenue based on the maximum number of trips into the closed areas (per year), and the average revenue per trip by geographic area. It is import to note that these revenue estimates are an overestimate, with a large amount of uncertainty. The estimates are high because it is very unlikely that all observed trips in a particular statistical area would fish in a closed area. The estimates are uncertain because the average revenue per trip data is from locations outside the closed areas, and may not represent the potential revenue from inside the closed areas.

Table 5.15 Potential Revenue from Access to Closed Areas. (Source: NMFS Pelagic Observer Program data, and Table 3.45

Statistical Area	Average Revenue per Trip (2006-2011)	Closed Area that May be Accessed	Projected Maximum Number of Trips into Closed Area per Year*	Potential Revenue
FEC	$ 17,575	Portion of FEC	20	$ 351,500
GOM	$ 17,692	DeSoto Canyons	80	$ 1,415,360
NEC	$ 40,726	Northeast Closure	2	$ 81,452
SAB	$ 17,575	Charleston Bump	5	$ 87,875

*See discussion in Chapter 4, based on number of observed trips

The FEC and SAB average revenue values are based on a single estimate of revenue per trip for the south Atlantic region, and not separate estimates for each statistical area.

5.3 Bluefin tuna Quota Controls

These alternatives include management to limit the total annual amount of bluefin landings and dead discards in the Longline category by prohibiting the use of pelagic longline gear when the quota has been, or is projected to be, reached. Both bluefin landings and dead discards would count toward the Longline category quota. The following alternatives would control landings and dead discards at the level of the individual vessel, or at the level of regions, or groups of vessels.

5.3.1 Alternative C 1 – No Action

Under this alternative, there would be no change to the current regulations that restrict pelagic longline vessel retention of bluefin once the Longline incidental category quota has been reached; hence, the total amount of dead discards would not be restricted as long as such discards could be accounted for within the overall available quota. Under current regulations, when the incidental landings of bluefin reach the Longline quota, permitted pelagic longline vessels are

prohibited from retaining and landing bluefin, but may continue to fish for their target species and must discard all bluefin. The amount of bluefin that are caught (landed or discarded dead) by vessels fishing with pelagic longline gear would not be capped but landings and discards must be accounted for within the available ICCAT quota. Although there are many factors that influence the amount of fishing effort in the pelagic longline fishery, and the amount of bluefin that this gear interacts with would be indirectly restrained by other regulations and factors, there would not be a specific limit on the amount of bluefin the fishery could catch as long as the overall U.S. quota were not exceeded. The social and economic impacts of the No Action alternative are neutral in the short- and long-term.

5.3.2 Alternative C 2 – Individual Bluefin Quotas (IBQs)

This alternative would implement IBQs for vessels permitted in the Atlantic tunas Longline category that would result in prohibiting the use of pelagic longline gear when the vessel's annual pelagic longline IBQ has been caught.

5.3.2.1 Alternative C 2a – Vessels Eligible to Receive Bluefin Quota Shares

To initiate an IBQ program, the first issue that needs to be addressed is eligibility. NMFS considered two alternatives for vessel eligibility to receive bluefin quota shares. The first alternative would consider any permitted Atlantic Tunas longline vessel (Alternative C 2a1) as being eligible to receive an initial allocation of IBQs. The second alternative would consider only active permitted Atlantic Tunas longline vessels.

5.3.2.1.1 Sub-Alternative C 2a.1 – Any Permitted Atlantic Tunas Longline Vessel

To examine the impact of Alternative C 2a1, NMFS reviewed the number of Atlantic Tuna longline limited access permits from 2006 through 2012. Table 5.16 provides those permit numbers.

Table 5.16 Number of Atlantic Tuna Longline Limited Access Permits (2006-2012)

Category	2006	2007	2008	2009	2010	2011	2012*
Longline	214	218	241	259	248	242	253

* As of October 2012. The actual number of 2012 permit in each category is subject to change as individuals renew their permits or allow them to expire.

Based on the most recent number of Atlantic Tuna longline limited access permit holders, NMFS estimates that 253 vessels would be eligible to receive IBQs under this alternative. While this alternative might be more inclusive of all members of the fishery, it would reduce the amount of IBQs allocated to each vessel. Permit holders that have been inactive from 2006 through 2011 would not likely utilize these IBQs for their own fishing. Those inactive vessels may decide to only lease their IBQs and remain inactive, which the other participants in the fishery may view as unfair, thus have negative social consequences. There would also likely be negative short-

term and potentially long-term direct adverse economic impacts associated with reduced initial allocation of IBQs to the most active participants in the fishery. Their initial allocations would likely be insufficient to maintain their current levels of fishing activity and they may not be able to find IBQs to lease or have sufficient capital to lease a sufficient amount of IBQs. This would have negative short-term and potentially long-term direct adverse economic impact on those vessels because it would likely reduce revenues for most of the active Longline category vessels by an even greater extent than Alternative C 2a.2, IBQ allocation to active permitted Atlantic Tunas longline vessels only.

5.3.2.1.2 Sub-Alternative C 2a.2 – Active Permitted Atlantic Tunas Longline Vessels Only

Based on HMS Logbook records from 2006-2011, there were 161 active pelagic longline vessels during that period, with active defined as having reported in the HMS Logbook successfully setting pelagic longline gear at least once between 2006 and 2011. Allocation of quota shares to a smaller number of vessels may reduce the likelihood that a permitted vessel without quota shares will fish and increase the likelihood that available quota will be sufficient for active vessels. One socioeconomic consequence of this alternative is that some inactive vessels may have been planning to be active in the future, invested in the preparing to become active in the fishery, but either became active after the period of eligibility or had not yet completed preparations for entering the fishery. These inactive permit holders may view this allocation as being inequitable. This would have negative short-term and potentially long-term direct adverse economic impact on those vessels because they would not have the option to go fishing in the future unless they leased IBQs from vessels that were allocated IBQs.

5.3.2.2 Alternative C 2b –Bluefin Quota Share Formulas

In addition to determining who is eligible to receive IBQs, NMFS also considered four alternatives for how IBQs should be initially allocated to those eligible vessel owners. Those alternatives include allocating IBQs equally, based on landings of designated species, based on designated species landings and the ratio of bluefin catch to designated species landings, and based on regional designations. The following sections discuss the social and economic consequences of these alternatives.

5.3.2.2.1 Sub-Alternative C 2b.1 – Equal Quota Shares of Bluefin

Under Alternative C 2b.1, NMFS would base the initial allocation of IBQs based on an equal share of the quota to eligible vessels. Table 2.14 details how much IBQ vessels would receive given various quota reallocation and the two eligibility alternatives. Based on 253 Tuna Longline permit holders in 2012, there would only be sufficient quota for 1 bluefin share per permit holder (74.8 mt/253 = 0.296 mt/permit). Based on 161 active Longline category vessels, an equal share would mean that 0.62% of the quota would be allocated to each vessel. Given the current 74.8 mt Longline category base quota and 0.25 mt per bluefin , there would just less than 2 bluefin available for each vessel (0.46 mt IBQ allocation per vessel). Given that preferred alternative is to have active vessels be eligible for IBQs, the following analysis assumes quota share is only allocated to the 161 active Longline category vessels from 2006 to 2011.

To determine the value of landings associated with the Longline category, NMFS examined the landings weight and ex-vessel prices of the following designated species: swordfish, yellowfin tuna, bigeye tuna, albacore tuna, skipjack tuna, dolphin, wahoo, blue shark, porbeagle, shortfin mako, and thresher shark. These values are listed in Table 5.17. Based on the total revenue divided by the total pounds of these species landed from 2006 to 2011, NMFS determined the average ex-vessel price per pound for designated species to be $4.10. This average price of designated species landing is used to estimate the change in revenues associated with the various allocations.

Table 5.17 Average ex-vessel price of designated species 2006 - 2011

Species	Pounds	Ex-Vessel Price per lb 2011	Revenue
Swordfish	21,291,892	$4.51	$96,026,433
Yellowfin	17,173,022	$3.59	$61,651,149
Bigeye	4,725,011	$7.85	$37,091,336
Albacore	1,530,865	$1.29	$1,974,816
Skipjack	5,968	$1.17	$6,983
Dolphin	4,393,987	$2.01	$8,831,914
Wahoo	553,940	$2.71	$1,501,177
Blue shark	89,052	$1.35	$120,220
Porbeagle	3,822	$1.35	$5,160
Shortfin Mako	1,256,328	$1.35	$1,696,043
Thresher shark	42,421	$1.35	$57,268
Shark fin	69,581	$11.9	$828,016
Total	51,135,889		$209,790,515
Average		$4.10	

Using the ratio of bluefin tuna landings and dead discards to designated species weight, NMFS estimated the potential landings each vessel could make given its initial IBQ. These estimated potential landings were then compared to average annual historical landings to estimate the reduction in designated species. These calculations are listed in Table 5.18. In addition, the total amount of IBQ needed by each vessel to maintain historical landings is also estimated and the surplus (i.e., unused IBQ) for each vessel was also calculated and summed across the fleet for each scenario and provided in Table 5.18. If transfers are allowed under Alternatives C 2c, much of the surplus IBQ could be leased or sold to vessels with shortfalls. Under the 74.8 mt scenario, NMFS estimates that there could be a reduction of 4.3 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 51 percent and result in a reduction in annual revenues or approximately $17.8 million. Under the 137 mt scenario, NMFS estimates that there could be a reduction of 2.4 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 24

percent and result in a reduction in annual revenues or approximately $8.2 million. Under the 216.7 mt scenario, NMFS estimates that there could be a reduction of 1.2 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 14 percent and result in a reduction in annual revenues or approximately $4.8 million.

Table 5.18 Impact of Equal Quota Shares of Bluefin

Quota Scenario (mt)	Vessel Allocation (mt)	Reduction in designated species landings (lb)	Reduction in Annual Landings Revenue	Percent Change	Total IBQ shortfall to maintain historical landings	Surplus IBQ potentially available for trade
74.8	0.46	-4,330,945	-$17,756,874	-50.89%	74.91	27.81
137	0.85	-2,006,488	-$8,226,602	-23.58%	54.68	64.95
216.7	1.35	-1,166,104	-$4,781,027	-13.70%	38.22	109.21

5.3.2.2.2 Sub-Alternative C 2b.2 – Based on Designated Species Landings

Under Alternative C 2b.2, NMFS would base the initial allocation of IBQs on the historical landings of designated species landings from 2006 through 2011. The designated species include swordfish, yellowfin tuna, bigeye tuna, albacore tuna, skipjack tuna, dolphin, wahoo, blue shark, porbeagle, shortfin mako, and thresher shark. These are the main marketable pelagic species landed by pelagic longline vessels in addition to bluefin. The 161 active pelagic longline vessels were ranked in order by the weight of designated species landings and then divided into three equal sized bins. The top third of the group landed 367,609 lb or more of designated species from 2006 to 2011 and was placed in the High bin and assigned a score of 3. Vessels that landed between 367,608 lb and 127,075 lb of designated species were placed in the Medium bin and assigned a score of 2. Vessels that landed less than 127,075 lb of designated species were placed in the Low bin and assigned a score of 1. Table 5.20 lists these bins and the levels of designated species landings associated with each bin.

In order to ensure than the lowest bin at least received the minimum allocation to go fishing in the Gulf of Mexico (i.e., 0.25 mt), NMFS determined the percent allocations starting with the 74.8 mt scenario for the Low bin. In order for vessels in the Low bin to receive 0.25 mt allocation, NMFS calculated that the Low would need to receive a 0.34 percent allocation of the Longline category quota. Vessels in the Medium bin would receive a 0.54 percent allocation of the Longline category quota. Finally, vessels placed in the High bin based on designated species landings would receive a 1.0 percent allocation of the Longline category quota. This would roughly give vessels allocations of 1 bluefin in the Low bin, 2 bluefin in the Medium bin, and 3 bluefin in the High bin. d to vessels with shortfalls.

Table 5.19 details the estimated outcomes associated with these allocations based on designated species landings. In addition, the total amount of IBQ needed by each vessel to maintain

historical landings is also estimated and the surplus (i.e., unused IBQ) for each vessel was also calculated and summed across the fleet for each scenario and provided in d to vessels with shortfalls.

Table 5.19. If transfers are allowed under Alternative C 2c, much of the surplus IBQ could be leased or sold to vessels with shortfalls.

Table 5.19 IBQ allocation based on designated species landings

Quota Scenario (mt)	Vessel Allocations by Bin (mt)	Reduction in designated species landings (lb)	Estimated Reduction in Annual Landings Revenue	Percent Change	Total IBQ shortfall to maintain historical landings	Surplus IBQ potentially available for trade
74.8	0.25 (low), 0.40 (medium), 0.75 (high)	-3,561,859	-$14,603,622	-41.85%	175.01	22.13
137	0.47(low), 0.74 (medium), 1.37 (high)	-2,397,701	-$9,830,575	-28.17%	146.84	56.82
216.7	0.74 (low), 1.17 (medium), 2.17 (high)	-1,554,166	-$6,372,079	-18.26%	120.92	111.02

Under the 74.8 mt Longline category scenario, vessels in the Low bin would receive an IBQ of 0.25 mt annually, vessels in the Medium bin would receive 0.40 mt, and vessels in the High bin would receive 0.75 mt. Using the ratio of bluefin tuna landings and dead discards to designated species weight, NMFS estimated the potential landings each vessel could make given its initial IBQ. These estimated potential landings were then compared to average annual historical landings to estimate the reduction in designated species. Under the 74.8 mt scenario, NMFS estimates that there could be a reduction of 3.6 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 42 percent and result in a reduction in annual revenues or approximately $14.6 million.

Under the 137 mt Longline category scenario, vessels in the Low bin would receive an IBQ of 0.47 mt annually, vessels in the Medium bin would receive 0.74 mt, and vessels in the High bin would receive 1.37 mt. Using the ratio of bluefin tuna landings and dead discards to designated species weight, NMFS estimated the potential landings each vessel could make given its initial IBQ. These estimated potential landings were then compared to average annual historical landings to estimate the reduction in designated species. Under the 137 mt scenario, NMFS

estimates that there could be a reduction of 2.4 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 28 percent and result in a reduction in annual revenues or approximately $9.8 million.

Under the 216.7 mt Longline category scenario, vessels in the Low bin would receive an IBQ of 0.74 mt annually, vessels in the Medium bin would receive 1.17 mt, and vessels in the High bin would receive 2.17 mt. Using the ratio of bluefin tuna landings and dead discards to designated species weight, NMFS estimated the potential landings each vessel could make given its initial IBQ. These estimated potential landings were then compared to average annual historical landings to estimate the reduction in designated species. Under the 216.7 mt scenario, NMFS estimates that there could be a reduction of 1.6 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 18 percent and result in a reduction in annual revenues or approximately $6.4 million.

5.3.2.2.3 Sub-Alternative C 2b.3 – Based on Designated Species Landings and the Ratio of Bluefin Catch to Designated Species Landings (Preferred)

In order to develop a two factor approach to allocating bluefin tuna, the 161 active vessels in the pelagic longline fleet from 2006 to 2011 were initially divided into 3 equal bins sorted by total target catch (swordfish, yellowfin tuna, and bigeye tuna) and also by the ratio of bluefin to target catch. However, after further study, NMFS determined that other pelagic species also contributed greatly to pelagic longline revenues. NMFS designated the following species for consideration in calculating the two factors: swordfish, yellowfin tuna, bigeye tuna, albacore tuna, skipjack tuna, dolphin, wahoo, blue shark, porbeagle, shortfin mako, and thresher shark. NMFS initially used the number of fish to determine these ratios, but after noticing the much larger number of smaller dolphin and wahoo landings, NMFS calculated these ratios based on the weight of the designated species landings.

Table 5.20 Scoring of the Two Factors That Determine IBQ Allocation in Sub-Alternative C 2b.3 (Based on Designated Species Landings and the Ratio of Bluefin Catch to Designated Species Landings).

Bins (Based on Percentiles)	Total Designated Species Landings (lb)	Bluefin / Designated Species Ratio (x 10,000)
High (100 – 66%)	>=367,609 (Score 3)	< 0.2884 (Score 3)
Medium (66 – 33%)	367,608 – 127,075 (Score 2)	0.2884 – 0.9427 (Score 2)
Low (33 – 0%)	< 127,075 (Score 1)	> 0.9427 (Score 1)

A score of 1 to 3 (low to high) was assigned to each bin in order to allow the two metrics to be combined. For example, a vessel with a 2006-2011 total pounds of designated species landings of 5,000 would be placed in the high bin and assigned a score of 3. If that vessel also had a bluefin tuna/designated species landings ratio of less than 0.001, it would be placed in the top bin and get a bluefin to designated species ratio (i.e., bluefin avoidance score) score of 3. The combined score for the high total designated species landings and high avoidance of bluefin would be 6 (3 + 3). On the other hand, a vessel with a 2006 to 2011 total designated species landings of only 500 fish would receive a total designated species landings score of 1. If that vessel also never interacted with bluefin during that period, it would receive a score of 3 (high) for its bluefin to designated species landings ratio. The overall score for this vessel would be a 4 (1 +3) and it would be placed in the Medium rating score bin. Vessels assigned to a particular rating tier would get equal shares of bluefin quota.

Table 5.21 Proposed Allocation Bins under Alternative C 2b.3 (Based on Designated Species Landings and the Ratio of Bluefin Catch to Designated Species Landings).

Rating Score	# Vessels	% of Active	% of Total Allocation	Individual % of quota	Per vessel Bluefin Allocation*
6 - 5 (High)	42	26%	44%	1.0%	0.75 mt
4 (Medium)	78	48%	42%	0.54%	0.40 mt
3 - 2 (Low)	41	26%	14%	0.34%	0.25 mt

* Based on 74.8 mt base quota.

In developing the bluefin IBQ allocations for each bin, NMFS assigned the lowest bin at least 1 bluefin (0.25 mt) to ensure that vessels would be able to fish on at least one trip. Given that 41 vessels would be in that Low tier, approximately 14% of the total 74.8 mt quota would be needed to allocate each vessel 1 bluefin (Table 5.21). The remaining 86% of the quota was then divided up to approximately provide 3 bluefin to the High tier and 2 bluefin to the Medium tier. There was not sufficient quota to provide 2 full bluefin (0.50 mt) for each vessel in the Medium tier, but NMFS believes that it is likely less than 161 vessels may actually fish because some vessels may have been destroyed by hurricanes or the vessel may have been sold out of the fishery.

There are several benefits associated with using these proposed allocation bins. The individual allocations reward fishermen that have avoided bluefin tuna. It also differentiates quota allocations to highly active vessels versus vessels with fairly low fishing activity, which may be perceived as more fair. Using a tiered rating system, versus a formulaic continuous allocation method, reduces the sensitivity of the allocation outcome on the accuracy of historical fishing records because a small adjustment in historical logbook records would not likely result in a change in the individual quota that an individual is assigned. The disadvantage is that the two tiered system of scoring is a bit more complicated and not as easy to explain. Also, some highly active vessels with high bluefin interaction rates would still end up being in the Medium tier, which may be perceived as unfair.

The individual vessel scoring and allocations have been calculated for this alternative. Table 5.22 details the estimated outcomes associated with these allocations based on designated species landings.

Table 5.22 IBQ allocation based on designated species landings and the ratio of bluefin catch to designated species landings

Quota Scenario (mt)	Vessel Allocations (mt)	Reduction in designated species landings (lb)	Estimated Reduction in Annual Landings Revenue	Percent Change	Total IBQ shortfall to maintain historical landings	Surplus IBQ potentially available for trade
74.8	0.25 (low), 0.40 (medium), 0.75 (high)	-3,098,708	-$12,704,704	-36.41%	76.07	36.36
137	0.47(low), 0.74 (medium), 1.37 (high)	-2,187,744	-$8,969,751	-25.70%	61.64	84.10
216.7	0.74 (low), 1.17 (medium), 2.17 (high)	-1,460,837	-$5,989,430	-17.16%	48.16	150.30

Using the ratio of bluefin tuna landings and dead discards to designated species weight, NMFS estimated the potential landings each vessel could make given its initial IBQ. These estimated potential landings were then compared to average annual historical landings to estimate the reduction in designated species. These calculations are listed in Table 5.22. Under the 74.8 mt scenario, NMFS estimates that there could be a reduction of 3.1 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 36 percent and result in a reduction in annual revenues or approximately $12.7 million. Under the 137 mt scenario, NMFS estimates that there could be a reduction of 2.2 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 26 percent and result in a reduction in annual revenues or approximately $9.0 million. Under the 216.7 mt scenario, NMFS estimates that there could be a reduction of 1.5 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 17 percent and result in a reduction in annual revenues or approximately $6.0 million.

5.3.2.2.4 Sub-Alternative C 2b.4 – Regional Designations and Restrictions (Preferred)

After allocating quota shares based upon the allocation formula (Alternatives C 2b.1 equal quota shares of bluefin, C 2b.2 based on designated species landings, or C 2b.3 based on designated species landings and the ratio of bluefin catch to designated species landings), this subalternative would then designate all pelagic longline quota shares and allocations as either “Gulf of Mexico” or “Atlantic” based upon the geographic location of sets (associated with the vessels fishing history used to determine the vessel’s quota share). Gulf of Mexico quota allocation could be used in either the Gulf of Mexico or the Atlantic, but Atlantic quota allocation could only be used in the Atlantic (and not the Gulf of Mexico).

For a vessel to fish in the Gulf of Mexico, the vessel would be required to have the minimum amount of bluefin quota to depart on a trip to fish with pelagic longline gear, but the quota would have to be Gulf of Mexico quota. The minimum IBQ amount required to fish in the Gulf of Mexico would be 0.25 mt based on the larger average size of bluefin in the Gulf of Mexico. The minimum IBQ amount required to fish in the Atlantic would be 0.125 mt based on the smaller average size of bluefin tuna encountered in the Atlantic.

The economic impact of creating these two regional designations would primarily be associated with the larger minimum quota required to fish in the Gulf of Mexico and the restriction from transferring or using Atlantic quota in the Gulf of Mexico. This would reduce the number of potential trading partners for IBQs in the Gulf of Mexico region, thus potentially leading to less available IBQs that could be leased and potentially making it more difficult to find potential trading partners and therefore increasing transaction costs for conducting a lease.

5.3.2.3 Alternative C 2c –Defining the Scope of Transfer

Only two subalternatives were analyzed because only two permit categories in the directed and incidental bluefin fishery are limited access systems. Only the Longline and Purse Seine categories have a limited number of fishing permits issued. The other permit categories such as General category or Angling category are open access, and there is not a limit to the number of vessels that may obtain a permit. Allowing leasing with the other permit categories would not be feasible because they are open access fisheries, without a defined pool of eligible participants. In general, leasing should decrease the adverse short- and long-term economic impacts associated with IBQs by allowing vessels constrained by their initial allocation the ability to acquire more IBQs and thus increase their ability to land more fish. Vessel owners that have sufficient IBQs can also benefit by earning lease revenue if they are successful in leasing their surplus IBQs.

5.3.2.3.1 Sub-Alternative C 2c.1 – Transfer of Quota among Pelagic Longline Vessels Only

This sub-alternative would allow transfer of bluefin quota shares or quota allocation among permitted Atlantic Tunas Longline category vessels only, and would not include transferring with other limited access quota categories such as the Atlantic Tunas Purse Seine. The rationale for this sub-alternative is to provide flexibility for pelagic longline vessels to obtain or sell quota as necessary, so that allocations may be aligned with catch (i.e., vessels that catch bluefin may be able to obtain quota from those that do not interact with bluefin, or have not used their full allocation of bluefin). This sub-alternative would constrain the amount of bluefin quota available to the Longline category vessels to the Longline category quota, and not make additional quota available. Quota transfers would be allowed among all Longline category vessels with a valid limited access permit, regardless of whether they have been allocated quota under Alternative C 2b. If a vessel catches bluefin using quota that has been leased from another vessel, the fishing history associated with the catch of bluefin tuna would be associated with the vessel that catches the bluefin (the lessee, not the lessor vessel). In other words, the lessee (vessel catching the fish) gets the ‘credit’ for the landings and dead discards, and not the lessor (the vessel that transferred the quota allocation to the catching vessel).

Table 5.23 Economic impacts of annual allocation trading on IBQ scenarios

Quota (mt)	Reduction in designated species landings (lb)	Estimated Reduction in Annual Landings Revenue	Total IBQ shortfall to maintain historical landings (mt)	Surplus IBQ potentially available for trade (mt)	Additional IBQ needed after 1st trade*	Additional IBQ needed after 2nd trade*	Potential Change in Designated Species Landings after trading
74.8	-3,098,708	-$12,704,704	76.07	36.36	48.35	30.84	-$2,825,555
137	-2,187,744	-$8,969,751	61.64	84.10	14.79	1.42	-$34,824
216.7	-1,460,837	-$5,989,430	48.16	150.30	3.68	0	$0

*Based on equal acquisition of surplus IBQ.

The economic impacts of the three main IBQ quota scenarios are substantially reduced if the trading of annual allocation is authorized. NMFS examined the estimated amount of IBQs each vessel would use based on their historical fishing practices. Some vessel would have an estimated shortfall of IBQs while other vessels would have a surplus of IBQs given their historical fishing practices. NMFS assumed that the total surplus of IBQs would potentially be traded to vessels with IBQ shortfalls. To simulate trading, the total amount of IBQs surplus was divided equally by the number of vessels that needed additional IBQs. This occurred in two rounds of trades. The outcome of these transfers is detailed in Table 5.23. Under the 74.8 mt quota scenario the estimated reduction in annual revenues goes from $12.7 million under no trading down to $2.8 million with trading. Under the 137 mt quota scenario the estimated reduction in annual revenues goes from $9.0 million under no trading down to $35,000 with trading. Finally, under the 216.7 mt quota scenario the estimated reduction in annual revenues goes from $6.0 million under no trading down to no change in annual revenues with trading since there would be a sufficient amount of surplus quota to easily cover the vessels that do not receive initial IBQ allocations to cover their historical fishing levels. While this alternative would have short-term direct minor beneficial economic impacts, those beneficial impacts would be lower than those under sub-alternative C 2c.2.

5.3.2.3.2 Sub-Alternative C 2c.2– Transfer among Pelagic Longline and Purse Seine Vessels (Preferred)

This sub-alternative would allow transfer of bluefin quota shares or quota allocation between those permitted in the limited access Atlantic Tunas Longline and Purse Seine categories. This sub-alternative would provide flexibility for pelagic longline vessels to obtain, lease, or sell quota as necessary, so that allocations may be aligned with catch (i.e., vessels that catch bluefin

may be able to obtain quota from those that do not interact with bluefin, or have not used their full allocation of bluefin). This sub-alternative would not constrain the amount of bluefin quota available to pelagic longline vessels (i.e., through the Longline category quota), but would make additional quota available if purse seine vessels are willing to lease quota. This alternative would also modify the Purse Seine category regulations which currently restrict the transfer of Purse Seine quota to vessels with Purse Seine category permits. Purse Seine quota would be transferable to vessels with an Atlantic tunas longline permit. Similarly, Purse Seine vessels would be able to lease quota allocation from pelagic longline vessels. Quota transfer would be allowed among all Longline category vessels with a valid limited access permit, regardless of whether they have been allocated quota under Alternative C 2b. If a vessel catches bluefin using quota that has been leased from another vessel, the fishing history associated with the catch of bluefin tuna would be associated with the vessel that catches the bluefin (the lessee, not the lessor vessel). In other words, the lessee (vessel catching the fish) gets the 'credit' for the landings and dead discards, and not the lessor (the vessel that transferred the quota allocation to the catching vessel). This alternative would have short-term direct moderate beneficial economic impacts.

5.3.2.4 Alternative C 2d – Duration of Quota Transfers

NMFS considered both annual leasing and permanent sale of IBQs. The following two sub-alternatives consider both options.

5.3.2.4.1 Sub-Alternative C 2d.1 – Annual Leasing of Quota (Preferred)

This sub-alternative would allow temporary leasing of bluefin quota among eligible vessels on an annual basis. Temporary quota transfer would give vessels flexibility to lease quota, but as a separate and distinct type of transaction from the permanent sale of quota share. Vessel owners would be able to obtain quota on an annual basis to facilitate their harvest of target species. Sub-leasing of quota would be allowed (i.e., quota leased from vessel A to vessel B, then to vessel C). This sub-alternative may be combined Sub-Alternative C 2d.2 (permanent sale of quota share), if implemented. IBQ allocation leases of one year duration would coincide with the time period of annual quota allocation for the fishery as a whole. For a particular calendar year, an individual lease transaction would be valid from the time of the lease until December 31. This alternative would have short-term direct moderate beneficial economic impacts to participants in the fishery. However, in the long-term, the annual transaction costs associated with matching lessors and lessees, the costs associated with drafting agreements, and the uncertainty vessel owners would face regarding quota availability would reduce some of the economic benefits associated with leasing.

5.3.2.4.2 Sub-Alternative C 2d.2 –Permanent Sale of Quota

This sub-alternative would allow permanent sale of quota share among eligible vessels. Through this sub-alternative, vessel owners would be able to purchase (or sell) quota share and permanently increase (or decrease) their quota share percentage. Permanent sale of quota share provides a means for vessel owners to plan their business and manage their quota according to a longer time scale than a single year. Vessel owners may be able to save money through a single

quota share transaction instead of reoccurring annual quota allocation transactions. This sub-alternative may be combined with the temporary transfer of quota (i.e., annual leasing of quota, Sub-Alternative C 2d.2), but is a separate and distinct type of transaction. (Note, that elsewhere in this document NMFS considers measures for permanent quota reallocation alternatives unrelated to an IBQ program; See Alternative A 2). To enable effective accounting and reduce program complexity, permanent quota share transfers would become effective in the subsequent year, and would have to be executed prior to the annual allocation of quota to quota shareholders. Annual allocation of quota needs to occur at one time, based on a fixed pool of quota share owners. Transferable quota shares would be limited to the amount of quota an individual entity could permanently transfer in order to prevent the accumulation of an excessive share of quota. This alternative would have long-term direct moderate beneficial economic impacts to participants in the fishery by allowing the ownership of IBQs to shift to where they provide the best economic benefit in the long-term. However, in the short-term, there could be issues associated with the price discovery with these new IBQs. Experiences in other catch share programs have shown that fishermen may not know how to effectively value the IBQs initially and uncertainty in this new market may cause IBQs to be undervalued in the first few years. This could result in both adverse social and economic impacts in the fishing community if participants sell out of the IBQ market in the early years for less than the long-term value of the IBQs.

5.3.2.4.3 Sub-Alternative C 2d.3 – Future Development of Transferable Quota Share (Permanent Sale of Quota) (Preferred)

This sub-alternative would allow permanent sale of quota shares among eligible vessel owners, in the future, after NMFS and fishery participants have multiple years of experience with the IBQ program. Until NMFS develops and implements a permanent IBQ transfer program, vessel owners would only be able to conduct temporary (annual) leasing of quota allocation, and therefore, vessel owners would not be able to purchase (or sell) quota share in order to permanently increase (or decrease) their quota share percentage. A phased-in approach would reduce risks for vessel owners during the initial stages of the IBQ program, when the market for bluefin quota shares would be new and uncertain. During the first years of the IBQ program, price volatility may be reduced, as well as undesirable outcomes of selling or buying quota shares at the “wrong” time or price. NMFS intends to develop a program to allow the permanent sale of quota share in the future because it would provide a means for vessel owners to plan their business and manage their quota according to a longer time scale than a single year, in a manner that would be informed by several years of the temporary leasing market. NMFS may wait until a formal evaluation of the IBQ program before developing this alternative (see IBQ Program Evaluation Alternatives C 2h.1 and C 2h.2). This sub-alternative may be combined with the temporary transfer of quota allocation (i.e., annual leasing of quota, Sub-Alternative C 2d.2), but is a separate and distinct type of transaction. While this alternative may result in long-term moderate beneficial economic impacts, the uncertainty regarding the timeline may make business planning for vessel owners and IBQ holders more difficult and result in some minor adverse economic impacts.

In conjunction with the permanent transfer program, NMFS would establish a maximum share, and other limits on quota share accumulation as necessary in order to comply with the

Magnuson-Stevens Act § 303A requirement that limited access privilege holders do not acquire an excessive share of the total limited access privileges in the program. A limit on the accumulation of quota shares may reduce the likelihood of changes in the characteristics of the pelagic longline and/or purse seine fishery that have negative effects on participating vessels or fishing communities, or potential new participants (e.g., the number of active vessels, distribution of fishing effort, inequitable concentration of limited access privileges, etc.). A phased-in approach to the development of quota share accumulation limits would enable NMFS to develop a share accumulation limit that is based on relevant data from the IBQ program. NMFS would utilize data on the temporary trading of bluefin allocation under the IBQ program, as well as related data on vessel ownership in order to effectively implement and enforce accumulation limits. In the long-term, this quota share accumulation limit may have minor adverse economic impacts, especially for highliners or owners of multiple pelagic longline vessels, since it may restrict their ability to accumulate IBQs. However, it may have beneficial social and economic impacts by avoiding equity issues and market power concentration if a few large operators accumulate a significant share of the IBQs.

5.3.2.5 Alternative C 2e –Trade Execution and Tracking

NMFS is carefully considering the design of the administrative system that would support execution and tracking of bluefin quota and quota share transfers. The processes and tools for executing transactions affect if, how, and at what costs fishermen acquire the quota they need and trade the quota they do not need. If quota transactions occur fairly easily and quickly, fishermen have the flexibility needed to react to changing conditions and needs. (Cap Log Report, 2012). The essential difference between the two alternatives is whether the system is an automated system (administered by NMFS) with the transfers executed by the vessel owner, or whether the system is a paper based system with applications submitted to NMFS for review.

5.3.2.5.1 Sub-Alternative C 2e.1 – Vessel-Owner Executed Trades (Preferred)

Under this sub-alternative, quota allocation and/or quota share transfers would be executed by the eligible vessel owners, or their representatives. For example, the two vessel owners involved in a lease of quota or sale of quota share could log into a password protected web-based computer system (i.e., a NMFS database), and execute the quota allocation or quota share transfer. Owner-executed transfers would provide the quickest execution of a transfer because any eligibility criteria would be verified automatically via the user log-in and password, and not involve the submission or review of a paper application for a transfer to/by NMFS. This would result in short- and long-term minor beneficial economic impacts resulting from reduced transactions costs.

5.3.2.5.2 Sub-Alternative C 2e.2 – NMFS-Executed Trades

Under this sub-alternative, quota and quota share transfers would be executed by NMFS. For example, a paper application for a sale of quota share could be submitted by the two vessel owners involved in the quota share transaction, and NMFS would review and approve the transaction based on eligibility criteria (and enter data into a computer database that would track the transfers of quota). This method would not include the use of a web-based system, but would

rely upon mail or facsimile submission of applications by the vessel owners to NMFS. In comparison to sub-alternative C 2e.1, this alternative may result in some minor adverse economic impacts if delays in NMFS' review of applications results in increased transactions costs and fewer trades.

5.3.2.6 Alternative C 2f – Vessel and Category Limits on Transfers

NMFS considered three alternatives for vessel and category limits on transfers. These include no individual vessel limits C 2f.1, no category limits C 2f.2, and future development of limits on quota allocation transfers.

5.3.2.6.1 Sub-Alternative C 2f.1 – No Individual Vessel Limits on Quota Allocation Transfers (Preferred)

Under this sub-alternative, there would be no limit on the amount of quota allocation an individual vessel (Longline or Purse Seine) could lease annually. This alternative would provide flexibility for vessels to purchase quota in a manner that could accommodate various levels of unintended catch of bluefin, and enable the development of an unrestricted market. Because the duration of a temporary lease would be limited to a single year, the impacts on an unrestricted market for bluefin quota would be limited in duration. Information on this unrestricted market could be used to develop future restrictions if necessary. This alternative would result in short- and long-term minor beneficial economic impacts by accommodating the various needs of vessel owners for IBQ trades.

5.3.2.6.2 Sub-Alternative C 2f.2 – No Category Limits on Quota Allocation Transfers (Preferred)

Under this sub-alternative, there would be no limit set on the total amount of quota that either the Longline or Purse Seine category (in its entirety) could lease annually. This alternative would provide flexibility for vessels to purchase quota in a manner that could accommodate various levels of unintended catch of bluefin, and enable the development of an unrestricted market. Because the duration of a temporary lease would be limited to a single year, the impacts on an unrestricted market for bluefin quota would be limited in duration. Information on this unrestricted market could be used to develop future restrictions (through proposed and final rulemaking) if necessary. This alternative would result in short- and long-term minor beneficial economic impacts by accommodating the various needs of vessel owners for IBQ trades.

5.3.2.6.3 Sub-Alternative C 2f.3 – Future Development of Limits on Quota Allocation Transfers (Preferred)

Under this sub-alternative, NMFS would consider the development of limits on the amount of quota allocation an individual vessel (Longline or Purse Seine), or the Longline or Purse Seine category (in its entirety) could lease annually. Although at the initiation of the IBQ program, NMFS does not believe there is justification for a limitation, it is possible that a limit may be deemed necessary in the future to reduce the likelihood of excessive allocation, or other potential problems such as the number of active vessels or the distribution of fishing effort. Such a

restriction would be developed through proposed and final rulemaking. This alternative could result in long-term minor adverse economic impacts if the limits cause some vessel owners to not be able to acquire sufficient IBQs for their fishing activity needs.

5.3.2.7 Alternative C 2g – Monitoring and Enforcement of IBQs

The measures under this alternative are based on the premise that the success of an IBQ program rests upon the ability to track ownership of quota shares and quota allocation holders; allocate the appropriate amount of annual harvest privileges (quota allocation); reconcile landings and dead discards against those privileges; and then balance the amounts against the total allowable quota. The current pelagic longline reporting requirements and the monitoring program that provide data on pelagic longline bluefin landings and dead discards were not designed to support inseason accounting of dead discards. More timely information on catch would be necessary in order to monitor a pelagic longline IBQ, inclusive of dead discards.

5.3.2.7.1 Sub-Alternative C 2g.1 – VMS Reporting (Preferred)

This sub-alternative is the same management alternative described in Alternative D 1b of this document. This alternative is intended to support the implementation of a pelagic longline IBQ. The economic impacts are detailed in the section below discussing Alternative D 1b.

5.3.2.7.2 Sub-Alternative C 2.g.2 - Electronic Monitoring (EM) of Longline category (Preferred)

This sub-alternative is the same management alternative described in Alternative D 2b of this document. This alternative is intended to support the implementation of a pelagic longline IBQ. The economic impacts are detailed in the section below discussing Alternative D 2b.

5.3.2.7.3 Sub-Alternative C 2g.3 – NMFS Extrapolation of Observer Data (Preferred)

Under this management approach, in order to conduct inseason quota monitoring and estimate total bluefin dead discards and landings, NMFS may extrapolate observer-generated data (in-season) regarding bluefin discards (rate, number, location, etc.) by pelagic longline vessels, based on reasonable statistical methods, and available observer data. This approach would not require a regulatory change, but would inform the public that NMFS use this management practice if warranted. NMFS would use this observer information in conjunction with, or in place of, vessel-generated estimates of bluefin discards in order to develop inseason estimates of total bluefin landings and dead discards. NMFS may use this method to estimate dead discard rates of bluefin for individual vessels in the context of an IBQ program. This management approach would address the potential for uncertain dead discard data from the pelagic longline fleet that may result from challenges in the implementation of new regulations, technical problems relating to the reporting and monitoring system, or time lags in the availability of data. This alternative would potentially have short-term minor or neutral indirect beneficial economic impacts by addressing the potential for fishery disruptions if there are issues in the transition to an IBQ monitoring system.

5.3.2.8 Alternative C 2h – Formal IBQ Program Evaluation

5.3.2.8.1 Sub-Alternative C 2h.1 – IBQ Program Evaluation after 3 years (Preferred)

Under this sub-alternative, NMFS would formally evaluate the program after three years of operation and provide the HMS Advisory Panel with a publicly-available written document with its findings. NMFS would utilize its standardized economic performance indicators as part of its review (NMFS, Office of Science and Technology) as listed in Table 2.13. This would result in neutral economic and social impacts because it is administrative in nature.

5.3.2.8.2 Sub-Alternative C 2h.2 – IBQ Program Evaluation after 5 years

Under this sub-alternative, NMFS would conduct a formal evaluation of the IBQ program after five years of operation and provide the HMS Advisory Panel with a written document with its findings. As described above, NMFS would utilize its standardized economic performance indicators (and associated standardized definitions) as part of its review. This alternative would result in neutral economic and social impacts because it is administrative in nature.

5.3.2.9 Alternative C 2i – Cost Recovery (Preferred)

Under this alternative, NMFS would develop and implement a cost recovery program of up to 3 percent of the costs of management, data collection and analysis, and enforcement activities. The Magnuson-Stevens Act provides NMFS the authority for cost recovery under § 303A(e). A cost recovery program would not be implemented until after the IBQ program evaluation described in Alternative C 2h. Immediate implementation of a cost recovery program without the information obtained from the operation of the fishery under an IBQ program would be very difficult, and increase costs and uncertainty for fishing vessels during a time period when the fishery would be bearing other new costs and sources of uncertainty. This alternative could result in direct long-term moderate adverse economic impacts to the industry.

5.3.2.10 Alternative C 2j - Appeals of Quota Shares (Preferred)

This alternative would implement an appeals process for administrative review of NMFS' decisions regarding initial allocation of quota shares for the IBQ program. The proposed appeals process for administrative review of NMFS's decisions regarding initial allocation of quota shares for the IBQ program would result in neutral economic impacts because it would utilize the National Appeals Office procedures and ensure a standardized and centralized appeals process, which would provide procedural certainty to the participants.

5.3.2.11 Alternative C 2k – Control Date (preferred)

If an IBQ program is implemented, this alternative would implement a control date in conjunction with the implementation (effective date) of the IBQ program. The control date would serve as a reference date that may be utilized with future management measures. The implementation of a control date by itself would have no effect, but would provide NMFS with a potential management tool that may be utilized if necessary as part of a future management

measure. A control date is typically used to discourage speculative fishing behavior or speculative entry into a fishery and notifies the public that a date may be used in conjunction with future management measures. This alternative would like result in neutral economic impacts and would only result in beneficial short-term economic impacts if it actually discouraged speculative fishing behavior that may have occurred without the control date.

5.3.2.12 Alternative C 2l - Measures Associated with an IBQ (preferred)

5.3.2.12.1 Sub-Alternative C 2l.1 – Elimination of Target Catch Requirement

Current target catch requirement (i.e., 1 bluefin per 2,000 lb, 2 bluefin per 6,000 lb, or 3 bluefin per 30,000 lb of species other than bluefin) acts at the level of an individual trip to limit bluefin retention, but does not prevent interactions potentially resulting in discarding bluefin dead (although it is intended to disincentivize interactions with bluefin by reducing any financial incentive for such interactions by limiting retention). The target catch requirement therefore contributes to the discarding of bluefin if the amount of target catch species is insufficient to retain the numbers of bluefin caught.

5.3.2.12.2 Sub-Alternative C 2l.1a - No Action

Under this sub-alternative, the current target catch requirements would remain in effect. This would have neutral economic impacts since it would not change what is currently in place.

5.3.2.12.3 Sub-Alternative C 2l.1b - Elimination of Target Catch Requirement (Preferred)

This sub-alternative would eliminate the current target catch requirements for pelagic longline vessels. This alternative is intended to work in conjunction with an IBQ. The objective of this alternative is to reduce bluefin dead discards and optimize fishing opportunity for target species. If an IBQ program is implemented, elimination of the target catch requirement could reduce dead discards, and enable vessels to fish for target species in a more flexible manner. A vessel that has caught some bluefin but has insufficient target species to meet the target catch requirement would no longer have to choose between discarding bluefin or fishing for more target species; rather, the vessel would use the annual IBQ. Thus, the IBQ would replace the target catch requirement as the means of limiting the amount of bluefin landed and discarded dead per vessel on an annual basis, instead of on a per trip basis. This alternative would likely have direct short- and long-term minor beneficial economic impacts.

5.3.2.12.4 Sub-Alternative C 2l.2 – Mandatory Retention of Commercial Legal-Sized Bluefin (dead)

5.3.2.12.4.1 Sub-Alternative C 2l.2a - No Action

This sub-alternative would maintain the status quo regarding retention of bluefin by pelagic longline vessels. There would be no requirement to retain commercial legal-sized bluefin that are dead. Vessels would continue to be able to discard bluefin even if they are of commercial legal-size (i.e., 73” or greater) and dead. If the IBQ program is implemented, all dead discards

would be accounted for under that program. This alternative would have neutral economic impacts since it does not change what is currently occurring.

5.3.2.12.4.2 Sub-Alternative C 2l.2b - Mandatory Retention of Legal-Sized Bluefin (dead) (Preferred)

Pelagic longline vessels would be required to retain all legal-sized commercial bluefin tuna that are dead at haul-back. Because these fish would be required to be retained, legal discards and the waste of fish would be decreased, and it would be more likely that such fish are accurately accounted for, and result in a positive use (marketed, used for scientific information, etc.). However, given that current behavior may be to discard some catch in order to optimize landings value of bluefin tuna, there could be minor adverse economic impacts associated with this alternative from loss of sale of higher valued bluefin versus the potentially lower value of bluefin that would now be retained under mandatory retention.

5.3.3 Alternative C 3 – Regional and Group Quotas

In addition to IBQs, NMFS also considered regional quotas and group quotas for the pelagic longline fishery as part of quota control measures.

5.3.3.1 Alternative C 3a – Regional Quotas

This alternative would implement annual bluefin quotas by region for vessels possessing the Atlantic Tunas Longline category permit (combined with the required shark and swordfish limited access permits) that would result in prohibiting the use of pelagic longline gear when a particular region's annual bluefin quota has been caught. Both bluefin landings and dead discards would count toward the regional quota. Annual bluefin quotas would be associated with defined geographic regions.

Regional quotas associated with specified regions would be independent from one another, and therefore reduce somewhat the potential for 'derby' fishing behavior (where there is the incentive for individual vessels to fish sooner rather than later). There is more accountability for those fishing in a particular region, because there would be limits in each region rather than a single limit for the entire category, with no restriction on the relative number of bluefin that could be landed or discarded dead in a particular region. Specifically, the regions would be those currently defined to support the Longline category reporting requirements: Caribbean (CAR), Gulf of Mexico (GOM), Florida East Coast (FEC), South Atlantic Bight (SAB), Mid-Atlantic Bight (MAB), Northeast Coastal (NEC), Northeast Distant (NED), North Central Atlantic (NCA), Sargasso (SAR), and Southern Atlantic Tuna (SAT).

While regional quotas may be simpler than an IBQ system and have advantages over a single quota allocated for the entire Longline category, some regions may face chronic shortages of bluefin quota if that region experiences increased fishing effort or bluefin interaction rates. It is difficult to predict the total amount of fishing effort that would occur under regional quotas, and the amount of bluefin quota that would be caught. There is likely to be less fishing effort under the Regional quota control alternative (compared with the No Action alternative) because a few

vessels could catch a large number of bluefin, and cause the closure of the entire area to the use of pelagic longline gear. The historical data indicate that the majority of bluefin have been caught by relatively few vessels. The amount of target species catch such as swordfish and yellowfin tuna would depend primarily upon the amount of fishing effort and whether the regional quotas or IBQs become constraining. If the regional quotas reduce pelagic longline fishing effort, there may be some minor adverse economic and social impacts on regional fishing communities where effort is reduced.

5.3.3.2 Alternative C 3b – Group Quotas

This alternative would implement a quota system for vessels possessing the Atlantic Tunas Longline category permit (combined with the required shark and swordfish limited access permits) that would define three bluefin quota groups and assign vessels with a valid permit to one of the three groups. Both bluefin landings and dead discards would count toward the group quotas. Each active vessel would be assigned to a quota group based upon the associated permit's historical bluefin interactions to "designated species" landings ratio. Active vessels with relatively high numbers of bluefin interactions would be assigned to one quota group, active vessels with a moderate level of bluefin interactions would be assigned to a second group, and the active vessels with a low level of bluefin interactions would be assigned to a third quota group.

A group quota system may be simpler than an IBQ system and may have advantages over a single quota allocated for the entire Longline category. Group quotas would be relatively independent of one another, and therefore reduce the potential for 'derby' fishing behavior (where there is the incentive for individual vessels to fish sooner rather than later) compared with a single quota for the entire category. Group quotas are different from regional quotas because vessels fishing under the same quota may be fishing in diverse regions, but would have a similar fishing history with respect to bluefin. Because some vessels have high interactions with bluefin (Section 3.6.1.2; Figure 3.16) creating quota groups of vessels with similar bluefin fishing histories may reduce the likelihood that vessels with high interactions with bluefin would disadvantage other vessels that do not tend to interact with bluefin. In other words, vessels that are able to avoid bluefin interactions may be insulated from the fishing behavior of vessels that do not avoid bluefin interactions (and cause the quota to be reached, with the resultant prohibition on the use of pelagic longline gear). The rate at which each quota is attained would result from the fishing behavior of the grouped vessels.

Under the current quota allocation (8.1%) and the 2012 quota (74.8 mt) to illustrate, the low avoider quota group would be allocated 24.1 mt and the medium and high avoider quota groups would be allocated 25.1 mt. Although the three quota groups have almost the identical number of vessels assigned to them (53, 54, 54, respectively), as well as similar quota, the average amount of bluefin that they caught historically varies from group to group. The number of bluefin tuna interactions from 2006 to 2011 for the low, medium, and high avoiders was 8,050, 1,348, and 95, respectively. Converted to averages, the average number of bluefin interactions would be 1,342, 225, and 16. Utilizing a rough conversion factor of a .125 mt per fish, 225 fish is equivalent to 28 mt. The high and medium avoider groups are likely to have adequate quota, whereas the low avoider group would have inadequate quota if the future interaction rate of the

vessels is similar. The average number of interactions associated with the low avoider group equates to approximately 168 mt. It is likely that the group quota associated with vessels with the highest historical rate of bluefin interactions would be attained first. This indicates that there would be potentially significant direct short- and long-term adverse economic impacts to the low avoider group. However, there could be moderate to minor positive economic impacts to the high and medium avoider groups.

5.3.4 Alternative C 4 – NMFS Ability to Close the Pelagic Longline Fishery

5.3.4.1 Alternative C 4a – No Action

Under this alternative, the current regulatory situation would continue, in which NMFS does not have the ability to prohibit the use of pelagic longline gear when the bluefin quota is attained, outside of conduction an emergency action. When the quota is projected to be reached, pelagic longline vessels may no longer retain bluefin tuna, but may continue to fish for their target species, and must discard any bluefin caught. The social and economic impacts of this alternative would lead to short- and long-term direct minor economic and social impacts due the loss of revenue from bluefin tuna. If the overall U.S. quota for bluefin remains similar to the quota in recent years, the overall level of landings and dead discards may be similar to the range of levels shown in Table 3.17 in Chapter 3.

5.3.4.2 Alternative C 4b – NMFS Closure of the Pelagic Longline Fishery (Preferred)

Under this alternative, NMFS would close the pelagic longline fishery (i.e., prohibit the use of pelagic longline gear) when the total Longline category bluefin quota is reached; projected to be reached; is exceeded; or, in order to prevent over-harvest of the Longline category bluefin quota and prevent further discarding of bluefin; or when there is high uncertainty regarding the estimated or documented levels of bluefin catch. The economic impacts of this alternative would depend upon when the closure occurred, ranging from January through December. The time the pelagic longline fishery would be closed would depend upon many factors, including the size of the Longline category quota, the type of quota control alternative and other alternatives implemented by Amendment 7, and non-regulatory factors. The range of quotas that would be available to the Longline category would depend upon the combination of alternatives implemented, and is discussed in detail in Section 4.1.6.1. This analysis does not focus on predicting when a closure might occur, but provides a range of impacts based upon historical data, and the range of possible closure times. Potential impacts were quantified by using the total revenue from pelagic longline sets per month.

Table 5.24 shows the number of reported pelagic longline trips by month, and the average number of trips per month. Table 5.25 shows average revenue by month based all the pelagic longline sets made in that month based on logbook reports, weighout slips, and ex-vessel prices from dealer reports.

Table 5.24 Number of Reported Pelagic Longline Trips by Month, 2006- 2011 (HMS Logbook data)

Month	2006	2007	2008	2009	2010	2011	Total	Average # Trips per Month
Jan	88	132	114	102	128	86	650	108
Feb	66	84	90	72	80	63	455	76
Mar	71	101	82	91	115	64	524	87
Apr	66	95	88	82	102	93	526	88
May	127	138	140	145	124	127	801	134
Jun	128	125	121	130	101	124	729	122
Jul	142	163	160	153	123	130	871	145
Aug	139	152	143	163	120	126	843	141
Sep	139	135	121	158	104	139	796	133
Oct	131	152	133	139	133	136	824	137
Nov	98	120	105	104	84	116	627	105
Dec	93	107	102	83	70	115	570	95
Total	1,288	1,504	1,399	1,422	1,284	1,319	8,216	1,369

Table 5.25 Average Revenue by Month from 2006 – 2011 (Based on HMS Logbook data, weighout slips, and dealer reports).

Month	Revenue ($)	Percent	Cumulative Percent	Remaining Percent
Jan	1,796,235	6.15	6.15	93.85
Feb	1,695,266	5.81	11.96	88.04
Mar	1,632,418	5.59	17.55	82.45
Apr	1,739,985	5.96	23.51	76.49
May	2,472,749	8.47	31.97	68.03
Jun	2,398,723	8.21	40.19	59.81
Jul	2,425,221	8.31	48.49	51.51
Aug	3,068,131	10.51	59.00	41.00
Sep	3,360,103	11.51	70.51	29.49
Oct	3,645,403	12.48	82.99	17.01
Nov	2,709,729	9.28	92.27	7.73
Dec	2,256,316	7.73	100.00	0.00
Total	29,200,281			

For example, if the use of pelagic longline gear is prohibited at the end of March, approximately 18 percent of the annual revenue would have been obtained by the fishery, but 82 percent of the annual revenue from fishing with pelagic longline gear would be forgone. If the use of pelagic longline gear is prohibited at the end of August, approximately 59 percent of the annual revenue

would have been obtained, but approximately 41 percent of the annual revenue would be forgone.

Table 5.26 Estimated revenue loss of Longline Category closure based on month of closure

Closure Month	Estimated Revenue Loss ($)
January	29,200,281
February	27,404,046
March	25,708,780
April	24,076,362
May	22,336,377
June	19,863,628
July	17,464,905
August	15,039,684
September	11,971,553
October	8,611,450
November	4,966,047
December	2,256,318

Based on the Longline category being closed in late spring and early summer over the past few years and the 2013 closure occurring in June, NMFS estimates that a June closure is a plausible example to examine. Table 5.26 lists the potential revenue loss by month of closure. A June closure of the pelagic longline fishery would result in a potential loss of revenue of approximately $19.8 million. This would result in a major short-term adverse direct economic impact to the pelagic longline fishery and this economic impact would continue into the long-term if landings and dead discard rates continue along the current trend. Adverse economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries would likely occur when a closure happens.

Under the IBQ alternative (Alternative C 2), closure of the pelagic longline fishery as a whole is less likely to occur because individual vessels would have vessel-specific limits on their catch (dead discards and landings) of bluefin. In contrast, under a regional or group quota alternative (Alternative C 3), where individual vessels would not be constrained with respect to the amount of bluefin they may discard, relatively few vessels with a high number of bluefin interactions could result in closure of the fishery, or a portion of the fishery.

5.4 Enhanced Reporting Alternatives

5.4.1 VMS Requirements

5.4.1.1 Alternative D 1a – No Action

Purse Seine Category

Under the No Action alternative, there would be no requirement under HMS regulations for an Atlantic Tunas Purse Seine category vessel to obtain a VMS unit and there would be no change to the reporting requirements applicable to purse seine vessels.

This alternative would result in indirect and direct neutral impacts in the short and long-term because it would not change current management of Atlantic Tunas purse seine fishery. Purse seine vessels are not currently required to have an E-MTU VMS as a condition of their Atlantic tunas permit. However, because many of these vessels are engaged in other fisheries managed by the New England Fishery Management Council that have similar VMS requirements, they already have E-MTU VMS installed and functioning consistent with regulations for Northeast Multispecies and/or scallop fisheries.

Pelagic Longline Category

Under the No Action alternative, there would be no additional VMS requirements under HMS regulations for a vessel using pelagic longline gear.

This alternative would result in indirect and direct neutral impacts in the short and long-term for pelagic longline vessel owners because it would not change current management of the Atlantic HMS pelagic longline fishery. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected. This alternative would make no changes to the current VMS reporting requirements applicable to vessels possessing pelagic longline gear. Existing regulations require all Atlantic HMS vessels that are required to use VMS to provide a hail-out declaration using their E-MTU VMS units, indicating target species and gear possessed onboard the vessel, at least two hours before leaving port on every trip. Further, vessels are required to provide a hail-in declaration, using their E-MTU VMS units, providing information on the timing and location of landing at least three hours before returning to port. At this time, vessels can turn their units off when they are at port, however, a proposed rule is in development that would consider requiring 24/7 position reporting for pelagic longline vessels.

5.4.1.2 Alternative D 1b – VMS Requirements for the Purse Seine and Longline Categories (Preferred)

E-MTU VMS installation and operation

<u>Purse Seine Category</u>

This alternative would require the three vessels with an Atlantic Tunas Purse Seine category permit to have an E-MTU VMS unit installed by a qualified marine electrician in order to remain eligible for the Purse Seine permit. Purse seine vessel owners would be required to provide a hail-out declaration using their E-MTU VMS units, indicating target species and gear possessed onboard the vessel, at least two hours before leaving port on every trip. Purse seine vessel owners would also be required to provide a hail-in declaration, using their E-MTU VMS units,

providing information on the timing and location of landing at least three hours before returning to port. If a vessel owner anticipates that the trip will be shorter than three hours in duration, they may provide the hail-in information in conjunction with the trip hail-out information (prior to the trip when they provide information on target species and gear). The units would be required to be powered up two hours before leaving port and be on and sending position information to NMFS every hour while away from port.

All of the three vessels that are currently authorized to deploy purse seine gear for Atlantic tunas have already installed E-MTU VMS units in compliance with regulations for other Council-managed fisheries, including Northeast Multispecies and/or Atlantic scallop. If vessels have not already had a type-approved E-MTU VMS unit installed, or if permits were transferred to vessels that have not yet installed E-MTU VMS, they may be eligible for reimbursement (up to $3,100) to offset the costs of procuring a type-approved unit subject to availability of funds. This reimbursement would only cover the cost of the E-MTU VMS and could not be applied to offset installation costs by a qualified marine electrician ($400) or monthly communication costs ($44). Initial costs, per vessel, for compliance with E-MTU VMS requirements included in this alternative would be $3,500 if no reimbursement were received and $400 if a reimbursement were received. On a monthly basis, vessels would be required to establish a communication service plan corresponding to the type-approved E-MTU VMS selected. Costs vary based on the E-MTU VMS unit and communication service provider selected, however, these costs are $44/month and include hourly transmission reporting and a limited amount of hail in and hail out declarations. Charges vary by communication service provider for additional messaging or transmission of data in excess of what is required by the Agency. Furthermore, costs will also vary depending on how many trips a vessel makes on a monthly basis as the number of declarations (hail in/hail out) increase proportionately.

If a vessel has already installed a type-approved E-MTU VMS unit, this alternative would have neutral direct and indirect socioeconomic impacts in the short and long-term as the only expense would be monthly communication service fees which they are already paying for participation in a Council-managed fishery. If vessels do not have an E-MTU VMS unit installed or an Atlantic tunas purse seine permit is transferred to another vessel lacking VMS, direct, adverse, short-term socioeconomic impacts are expected as a result of having to pay for the E-MTU VMS unit and a qualified marine electrician to install the unit. In the long-term, direct economic impacts would become minor, because monthly communication service provider costs ($44) would be the only expense. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected.

Pelagic Longline Fishery

Pelagic longline vessels are already required to use an E-MTU VMS that has been installed by a qualified marine electrician to provide hourly position reports and hail in/out declarations to provide information on target species, gear possessed, and expected time/location of landing. Therefore, this alternative would result in neutral socioeconomic impacts in the short and long term. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected.

Reporting Bluefin tuna interactions using E-MTU VMS

This alternative would require vessels fishing for Atlantic tunas with pelagic longline or purse seine gear to report daily the number of bluefin retained, discarded (dead and alive), fish disposition, and fishing effort (number of sets, number of hooks, respectively). This alternative is intended to support the inseason monitoring of the purse seine and pelagic longline fisheries. Although NMFS currently has the authority to require logbook reporting for the purse seine fishery, NMFS has not exercised this authority (see Section 2.3.7). Current information on the catch of the purse seine fishery is limited to dealer data on sold fish, and does not include information of discarded bluefin or other species caught and/or discarded. Inseason information on catch, including dead discards, would enhance NMFS' ability to monitor and manage all quota categories.

Purse Seine

The characteristics of the purse seine fishery are unique. Many bluefin may be caught in a relatively short period of time, and the proportion of discarded to retained fish may be high in some instances. More timely information on retained and discarded bluefin would improve the current monitoring of bluefin landings and dead discards. This alternative would provide timely information on purse seine fishing effort, and improve NMFS' ability to interpret and utilize the bluefin data in the context of the fishery as a whole. Recently, there has been very limited effort in the Atlantic tunas purse seine fishery for a variety of reasons, including availability and quantity of commercial size bluefin and/or current permit holders are participating in Council-managed fisheries. This alternative would require vessel operators to use their E-MTU VMS to submit electronic reports describing the number and size of bluefin that were landed and discarded dead.

Vessel operators fishing for Atlantic tunas with purse seine gear would already be required to have an E-MTU VMS unit installed and capable of submitting hourly position reports while fishing in addition to hail out/in declarations before and after fishing. This alternative would, however, increase the amount of information that vessel operators provide using their E-MTU VMS units. Typically, fishermen would make a single declaration for each trip that details the quantity and size of bluefin retained. This alternative would result in neutral economic impacts in the short and long-term because of the fact that the vessel owners would already be paying, on average, $44 per month to cover the costs of a communication service provider. The number of additional transmissions necessary to report bluefin retained and discarded dead are not expected to exceed the typical monthly allowance for data sent using the E-MTU VMS. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected.

Pelagic Longline

With respect to pelagic longline vessels, this alternative is intended to support the implementation of a pelagic longline IBQ program, whether individual or regional, described under Section 2.3. For example, under an IBQ program, each vessel must not harvest more than is permitted by the total of his/her quota share. The IBQ program would require the ability to

track quota shares and quota allocations, reconcile landings against quota allocations, and then balance the amounts against the total allowable quota. Although the current pelagic longline reporting requirements and the monitoring program provides data on pelagic longline discards and landings, and enables inseason monitoring and management based upon landings, the reporting requirements and monitoring program were not designed to support inseason monitoring of dead discards. More timely information on dead discards would be necessary in order to monitor and enforce a pelagic longline IBQ program. Although the current information on bluefin discards from the pelagic longline fishery, which is obtained through logbook data on effort and catches from the observer program, is sufficient to estimate bluefin dead discards on an annual basis, the time lag associated with the current information is not useful for "real-time" in-season monitoring of an IBQ program. Specifically, there is a time lag between the time logbooks are submitted or the field information is recorded by the observer during the fishing trip, the time the data are entered into a database, and the time the data are finalized (after a process of quality control) and available for use. A trip declaration requirement could be necessary in order for NMFS to obtain timely information on pelagic longline fishing effort, and interpret and utilize the bluefin data in the context of the fishery as a whole.

HMS logbook data (2006-2011) indicate that, on average, pelagic longline vessels have 1.15 (9,493 interactions/8,250 trips = 1.15 interactions/trip) with a bluefin per vessel per trip. This alternative would require all pelagic longline vessel operators to report all interactions (kept, discarded dead, discarded alive) and estimate fish size (> or < than 73" CFL) using their E-MTU VMS within 12 hours. Furthermore, additional information on fishing effort, including the number of hooks deployed on the set that had a bluefin would also be reported.

This alternative is expected to neutral to minor adverse socioeconomic impacts on pelagic longline vessel operators and owners in the short and long-term. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected. Existing regulations require all pelagic longline vessel operators to provide hail out/in declarations and provide location reports on an hourly basis at all times while they are away from port. In order to comply with these regulations, vessel owners must subscribe to a communication service plan that includes an allowance for sending similar declarations (hail out/in) describing target species, fishing gear possessed, and estimated time/location of landing using their E-MTU VMS. This alternative would require, on average, 1.15 additional reports per trip that describe bluefin interactions and fishing effort. Because of the minimal time (approximately 5 minutes) required to submit these reports and the fact that owners would already be enrolled in a communication service plan that would encompass these additional transmissions, adverse socioeconomic impacts are not expected.

5.4.2 Electronic Monitoring of Longline Category

5.4.2.1 Alternative D 2a – No Action

Under this alternative, NMFS would maintain the status quo and would not pursue any additional measures that would require permitted pelagic longline vessels to install electronic devices such as cameras in order to support the monitoring or verification of bluefin catch under an IBQ quota system. Currently, pelagic longline vessels are required to use E-MTU VMS units to provide hourly position reports while away from port and to provide hail out/in declarations describing

target species, fishing gear onboard, and time/location of landing. Under this alternative, these requirements would be maintained, and no additional electronic monitoring requirements would be implemented.

This alternative would result in neutral economic impacts in the short and long-term because it would maintain existing requirements. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected.

5.4.2.2 Alternative D 2b –Electronic Monitoring of Longline Category (Preferred)

This alternative would require the use of electronic monitoring, including video cameras, by all vessels issued an Atlantic Tunas Longline permit that intend to fish for highly migratory species. Specifically, vessels would be required to install and maintain video cameras and associated data recording and monitoring equipment in order to record all longline catch and relevant data regarding pelagic longline gear retrieval and deployment. The objective of this alternative is for NMFS to use the recorded data as a principal source of information to verify the accuracy of counts and identification of bluefin reported by the vessel owner/operator using their E-MTU VMS units and logbooks. Secondly, electronic monitoring would enable the collection of video image and fishing effort data that may be used in conjunction with other sources of information to estimate bluefin dead discards. Lastly, electronic monitoring would augment the ability of an observer to fulfill their duties, by providing a record of catch during the time periods the observer may be unable to observe the catch directly.

More specifically, this alternative would require the installation of NMFS-approved equipment that may include one to four video cameras, a recording device, video monitor, hydraulic pressure transducer, winch rotation sensor, system control box, or other equipment needed to achieve the objectives. Vessel owner/operators would be required to install, maintain, facilitate inspection of the equipment by NMFS, and obtain NMFS approval of the equipment. The vessel owner/operator would be required to store and make the data available to NMFS for at least 120 days, and facilitate the submission of data to NMFS. The vessel operator would be responsible for ensuring that all catch is handled in a manner than enables the electronic monitoring system to record such fish, and must identify a crew person or employee responsible for ensuring that all handling, retention, and sorting of bluefin occurs in accordance with the regulations.

The requirements associated with this alternative would be phased in over a period of time due to the complexity, costs, and logistical constraints associated with the implementation of an electronic monitoring program. NMFS would communicate in writing with the vessel owners during all phases of the program to provide information to assistant vessel owners, and facilitate the provision of technical assistance.

This alternative would require both fixed and variable costs over the service life of each camera installed onboard. The cost of an electronic system bought in 2010, over its five year projected lifespan, is about $3,565 a year. This includes 4% of the purchase price for maintenance costs and a 7% interest rate on the loan to buy a system (NMFS - NOPAT, 2013). The variable costs for vessel owners include data retrieval ($45/hour; 2 hr per trip; technician travel ($0.5/mile; 100 miles for each trip); fishing activity interpretation ($47/hour; 0.25 hr/trip); and catch data

interpretation ($47/hour; 1.5 hr/trip). The estimated total variable costs would be approximately $ 225 per trip and the annual fixed costs would be $ $ 3,835 for the purchase and installation of the equipment, and six services per year; $45/hour; 1 hr six times per year). Based on the 161 pelagic longline vessels that have fished between 2006 and 2011, NMFS estimates that the total annual costs to the fleet would be approximately $ 875,500 per year.

The average number of pelagic longline trips per vessel was 8 per year. Figure 5.1shows the distribution of the average number of trips per year (from 2006-2011). Figure 5.2 shows the distribution of electronic monitoring costs per trip, not including the cost of purchase and installation of the equipment, based upon the average number of trips, and Figure 5.3 shows the distribution of electronic monitoring costs per trip, including the cost of purchase and installation of the equipment, based upon the average number of trips. At this level of fishing activity the cost to an individual vessel would be $ 5,343 per year. This estimate based upon the use of electronic monitoring as an auditing tool, and 100% of the data is not analyzed. This cost estimate is lower than some of the published data because most of the published information is based upon monitoring programs where up to 100% of the video footage is analyzed, and therefore there is a high cost associated with catch data interpretation. This estimate is based upon catch data interpretation of one longline haul per trip.

This alternative would result in moderate direct and indirect adverse economic impacts to pelagic longline vessel owners in the short- and long-term. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected.

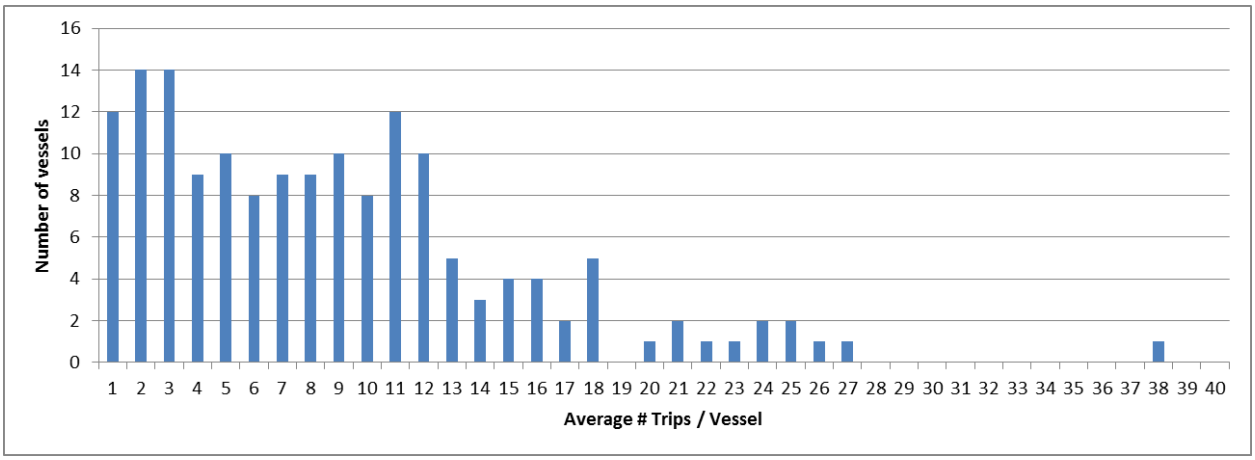

Figure 5.1 Number of pelagic longline vessels by average number of pelagic longline trips per vessel 92006 – 2011)

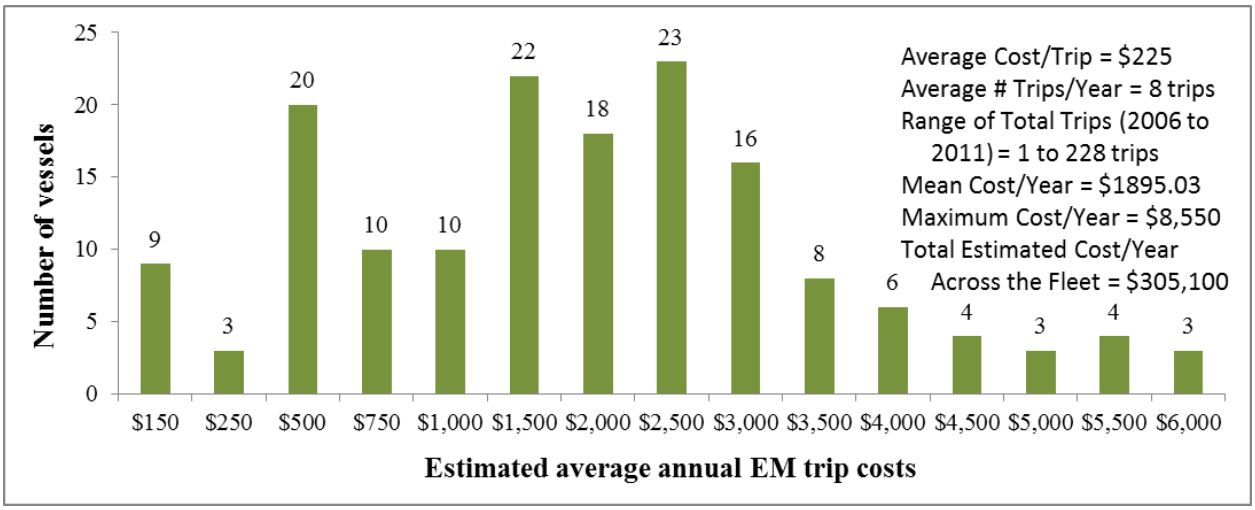

Figure 5.2 Number of pelagic longline vessels and estimated average costs for electronic monitoring based upon the number of trips (not including cost of purchase and installation of equipment)

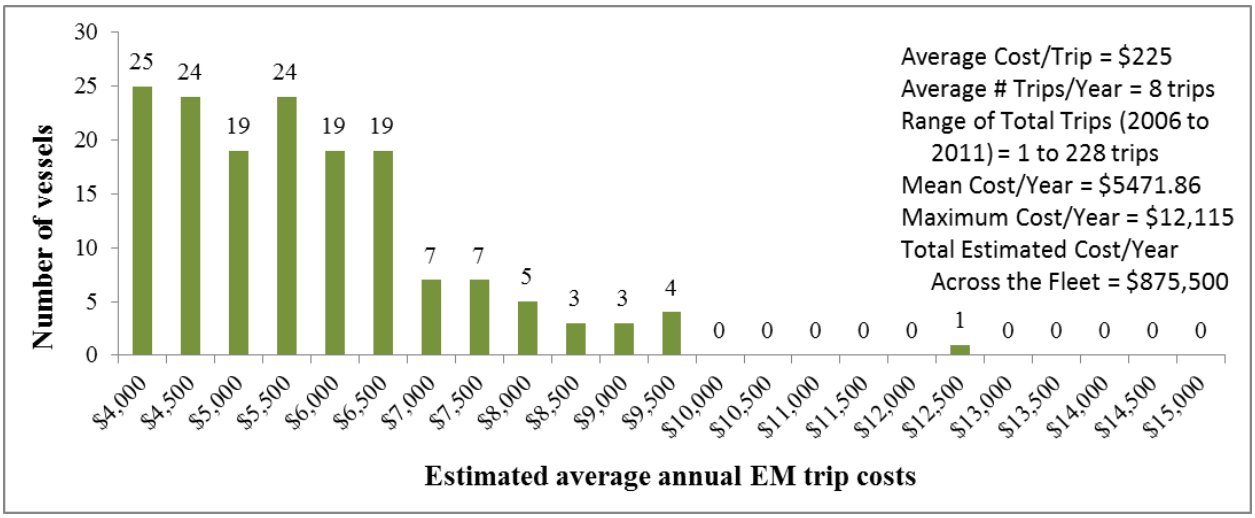

Figure 5.3 Number of pelagic longline vessels and estimated average annual electronic monitoring costs, based on number of trips per year (not including cost of purchase and installation of equipment).

5.4.3 Automated Catch Reporting

The preferred alternative would require Atlantic Tunas General, Harpoon and HMS Charter/Headboat permit holders to report their bluefin catch (i.e., landings and discards) using an expanded version of the bluefin recreational automated landings reporting system (ALRS). The automated system includes two reporting options, one that is web-based and an interactive

voice response telephone system. The "No Action" alternative is not preferred and would have no social or economic impacts.

The primary direct minor long-term adverse social and economic impacts of the preferred alternative are the amount of time the new reporting requirement would take, and the reporting costs, respectively.

NMFS estimated the potential annual catch for each permit category based on previous years data (Table 5.27) and multiplied it by the 5 minutes it takes to complete a report (NMFS 2013) for each fish to estimate a total reporting burden of 607 hours affecting a total of potentially 8,226 permit holders as a result of this alternative. Since the data are collected online or via telephone, there are no monetary costs to fishermen or direct economic impacts to fishermen from this alternative.

Table 5.27 Estimated annual catch for each permit category based on previous years data

Permit Category	Number of Permit holders in 2012 (NMFS 2012)	Number of Bluefin Landed in 2012 (NMFS BLUEFIN Dealer Landings data; LPS)	Projected Annual Number of Bluefin Caught and Released	Projected Total Annual Catch (Number of Fish)	Total Amount of Time (hrs) @ 5 mins. Per response / 60 mins/ hour
General	4,084	2727	123	2850	238
Harpoon	13	128	128	256	21
Charter/Headboat	4,129	3721	458	4179	348
TOTAL	8,226	6576	709	7285	607

Adjustments to both the online and IVR systems of the ALRS to implement catch reporting for General, Harpoon, and HMS Charter/Headboat category permit holders are estimated to cost NMFS between $15,000 and $35,000 (B. McHale, pers. comm.) Annual maintenance would likely cost approximately $8,700 per year, which is the current cost for maintaining the ALRS and the call-in system for reports of other recreational HMS landings (NMFS 2013).

Other social and economic impacts of this alternative could include a perception of increased fairness in distribution of reporting requirements among the diversity of participants in the fishery, and a potential reduction in fishing opportunities and income from increased accounting for dead discards. Currently, catch reporting is only required of recreational fishermen and the pelagic longline category (aside from LPS interviews of charter/headboat and General category fishermen). Fishermen in the recreational and pelagic longline fisheries may consider more similar data collection requirements among the different quota categories, to be a positive social impact. Although additional estimates of dead discards could reduce the amount of quota available for harvest, better estimates of fishing mortality would improve international management of bluefin, and better data on location and extent of bluefin catch could increase

effectiveness of inseason domestic management, both of which could in part mitigate negative economic impacts.

5.4.4 Deployment of Observers

5.4.4.1 Alternative D 4a - No Action (Preferred)

Under alternative D 4a, the No Action alternative, there would be no changes to the current observer coverage in the Atlantic Tunas Longline, General, Purse Seine, Harpoon, or HMS Charter/Headboat categories. Therefore, there would be no additional cost to small businesses.

5.4.4.2 Alternative D 4b - NMFS-Funded Observers

Alternative D 4b would increase the level of NMFS-funded observers on a portion of trips by vessels fishing under the Atlantic Tunas Longline, General, Purse Seine, Harpoon, or HMS Charter/Headboat categories. There might be some minor costs to vessel operators with the increased chance that they will be selected for observer coverage and will have to accommodate an observer.

5.4.5 Logbook Requirement

5.4.5.1 Alternative D 5a - No Action (Preferred)

Alternative D 5, the No Action alternative, is preferred and would make no changes to the current logbook requirements applicable to any of the permit categories. It would have neutral economic and social impact on fishing vessel owners.

5.4.5.2 Alternative D 5b - Logbook Requirement

This alternative would require the reporting of catch by Atlantic Tunas General, Harpoon, and HMS Charter/Headboat category vessels targeting bluefin through submission of an HMS logbook to NMFS. The direct social and economic impacts of this non-preferred alternative include the amount of time to complete logbook forms and the cost of submission (i.e., mailing) for all fishermen permitted in the affected permit categories. These impacts would be minor, adverse, and long-term. A high-end proxy for the impacts of this alternative is the current reporting burden and cost for the entire HMS logbook program, which have been estimated for all commercial HMS fisheries (28,614 permits, NMFS 2011a). The annual reporting burden for the entire program is estimated at 36,189 hours and costs are $94,779 for postage. A more refined estimate is also presented here which estimates the number of fishermen impacted as those likely to conduct directed fishing trips for bluefin as the total number of General, Charter/Headboat, and Harpoon category permit holders in the states from Maine through South Carolina (6,735, Table 5.28). This is likely also an over-estimate, since many General and Charter/Headboat permit holders in these states fish for yellowfin, or other tunas rather than bluefin, or, for Charter/Headboat permit holders, other HMS. The average annual number of trips that each permit holder per category takes was previously calculated by NMFS (2011a) and is given in Table 5.28. This method estimates an annual reporting burden of 16,526 hours and a cost of $8,263.

Table 5.28 Estimated logbook costs by permit category

Permit Category	Number of Permits (ME through SC, NMFS 2012)	Number of Trips per Year	Total Number of Trips	Reporting Burden (12 min/report)	Cost ($0.50/report)
General	3,666	10	36,660	7,332 hrs	$3,666
Harpoon	13	10	130	26 hrs	$13
Charter/Headboat	3,056	15	45,840	9,168 hrs	$4,584
Total	6,735			16,526 hrs	$8,263

Currently, NMFS spends approximately $450,165 on the HMS Logbook program (NMFS 2011a). With the possible addition of approximately 50% more reporting hours (16,526), the cost for NMFS could increase by 50% ($225,082).

Like the alternative to require automatic catch reporting for these same permit categories, additional social impacts of this alternative could be a perception of increased fairness in distribution of reporting requirements among the diversity of participants in the fishery, and a potential reduction in fishing opportunities from increased accounting for dead discards. Currently, only pelagic longline vessels are selected for HMS logbook reporting which includes accounting of dead discards and effort, although some other HMS permit holders may be required to submit logbooks because of the other (i.e., non-HMS) permits they hold. Fishermen in the pelagic longline fishery may consider more similar data collection requirements to be a positive social impact. Although additional estimates of dead discards could reduce the amount of quota available for harvest, better estimates of fishing mortality would improve international management of bluefin, and better data on location and extent of bluefin catch could increase effectiveness of inseason domestic management, which could in part mitigate negative economic impacts.

5.4.6 Expand the Scope of the Large Pelagics Survey

"No Action" is the preferred alternative for the scope of the Large Pelagics Survey, and would have no social or economic impacts. The non-preferred alternative would expand the Large Pelagics Survey to include May, November, and December, and add surveys to the states south of Virginia in order to increase the amount of information available about the recreational bluefin fishery, and further refine recreational bluefin landings estimates.

The direct social impact of the non-preferred alternative is the amount of time that fishermen would expend participating in the survey. The impacts would be minor, adverse, and long-term. There are no direct costs to fishermen since the survey is conducted in person and over the phone, and there would be no direct economic impacts to fishermen for this alternative. NMFS estimates that the dockside survey takes 5 minutes on average, the phone survey takes 8 minutes,

and collection of supplemental biological information takes about 1 minute. Previously, NMFS estimated that annual implementation of the Large Pelagics Survey throughout Atlantic and Gulf coastal states using the current target sample-size of 7,870 for the dockside survey, 10,780 for the phone survey and 1,500 for the biological survey would result in a reporting burden of 656 hours, 924 hours, and 25 hours respectively, for a total reporting burden of 1,730 hours (NMFS 2011b). This estimate could be used as a high-end proxy for the reporting burden associated with this alternative. Another method for estimating the reporting burden associated with this alternative is to use a ratio comparing the sample frame (i.e., number of permits) used in the coastwide estimate with the sample frame for the alternative (i.e., number of permits in states south of VA). Using this method, the reporting burden estimate is 559 hours (Table 5.29). Because of the sampling design, adding the months of May, November, and December is not expected to add any reporting burden or cost (Ron Salz, pers. comm.).

At a fully funded level, the average annual cost to the Federal government for the Large Pelagics Survey is approximately $2.2 million. Again, this cost could be used as a high-end estimate for costs to the government for this alternative because, based on current program costs, the cost would likely be lower. Applying the sampling frame ratio factor of 0.075 to this figure produces a lower cost estimate of $165,000.

Table 5.29 Burden estimate for the Large Pelagics Survey

Geographic Sampling Frame	Number of Angling and CHB Permits (NMFS 2012)	Number of Burden Hours (Permits x .075)
NC, SC, GA, FL	7,457	559
Total	23,061	1730

5.5 Other Alternatives

5.5.1 Alternative E 1 – Modify General Category Sub-Period Allocations

5.5.1.1 Alternative E 1a – No Action

If no action is taken to modify the General category sub-period allocations, social and economic impacts would be neutral and largely would vary by geographic area, with continued higher potential revenues during the summer months in the northeast and lower amounts to winter fishery participants off the mid- and south Atlantic states. General category participants that fish in the January bluefin fishery may continue to perceive a disadvantage as the available quota for that period is relatively small (5.3% of the General category quota) and that they do not benefit from the rollover of unused quota either inseason, from one time period to the next, nor do they benefit from prior-year underharvest because of the timing of the annual final quota specifications (published in the middle of the year).

Ex-vessel gross revenues (nominal values) from recorded sales of bluefin in all commercial categories for the last 7 years are presented in Table 5.30. The combination of stable or reduced

ex-vessel prices (Table 5.31) and reduced commercial landings (Table 5.32) had a severe impact on ex-vessel gross revenues in 2006 and 2007, but increased overall ex-vessel prices and landings, particularly in the General category, led to a modest total increase in ex-vessel gross revenues in 2008 through 2012. Revenues for the General category were $9,167,720 in 2012, at the highest level since 2002.

Table 5.30 Ex-vessel gross revenues in the U.S. Atlantic Bluefin fishery by commercial fishing category, 2000-2012. Source: Bluefin Dealer Report Database.

Year	General	Harpoon	Incidental (Longline/Trap)	Purse Seine	Total
2012	$9,167,720	$346,245	$1,184,722	$46,137	$10,744,824
2011	$8,799,627	$455,859	$972,575	--	$10,228,061
2010	$7,814,366	$202,643	$878,908	--	$8,895,917
2009	$5,040,772	$498,877	$1,247,600	$149,934	$6,937,183
2008	$3,975,244	$313,781	$722,016	--	$5,011,041
2007	$2,259,194	$160,845	$807,954	$451,390	$3,679,383
2006	$2,526,052	$265,951	$558,022	$33,819	$3,383,844

Revenues contained in the table reflect calendar year summaries.

The bluefin fishery was managed on a fishing year basis (June through May) versus a calendar year basis (January through December) starting with the implementation of the 1999 FMP in 2000 until January 2008, when management reverted to a calendar year basis. Revenues are presented on a calendar year (versus fishing year) basis for 2008. The 2007 fishing year was June 1, 2007-December 31, 2007.

Prior to the 2007 bluefin specifications, NMFS reported values as converted to 1996 dollars (using the Consumer Price Index Conversion Factors). In this table, all prices are presented as nominal dollars, consistent with methods used in the Consolidated HMS FMP.

There were no Purse Seine category landings in 2008, 2010, or 2011.

Table 5.31 Ex-vessel average price (per lb, round weight) for bluefin by commercial fishing category, 2006-2012. Source: Bluefin Dealer Report Database.

Category	2006	2007	2008	2009	2010	2011	2012
General	7.60	7.82	8.44	7.60	6.93	8.90	9.31
Harpoon	5.45	5.98	6.36	5.50	5.75	7.12	9.13
Incidental (Longline/Trap)	4.84	4.98	4.78	4.48	4.96	6.10	6.19
Purse Seine	4.28	7.31	n/a	5.96	n/a	n/a	12.46*

* price likely reflects relatively small amount of purse seine-caught bluefin on market

Prices contained in the table reflect calendar year averages. The bluefin fishery was managed on an offset fishing year basis (June through May) versus a calendar year basis (January through December) starting with the implementation of the 1999 HMS FMP in 2000 until January 2008, when management reverted to a calendar year basis. Prices are presented on a calendar year (versus offset fishing year) basis for 2008 and 2009. The 2007 fishing year was June 1, 2007-December 31, 2007.

Prior to the 2007 bluefin specifications, NMFS reported values as converted to 1996 dollars (using the Consumer Price Index Conversion Factors). In this table, all prices are presented as nominal dollars, consistent with methods used in the Consolidated HMS FMP.

There were no Purse Seine category landings in 2008, 2010, and 2011.

Table 5.32 Bluefin landings (metric tons) by year and category, 2000-2012. Source: NERO dealer report database, LPS, Maryland and North Carolina catch card data, and NMFS Automated Landings Reporting System.

Category	2006	2007	2008	2009	2010	2011	2012
General	160	122	235	327	528	462	456
Harpoon	22	12	22	41	18	29	17
Purse Seine	4	28	0	11	0	0	2
Longline North & NED	28	26	33	77	45	38	39
Longline South	38	9	42	54	44	37	51
Trap	0	0	0.3	0	0	0	0
Angling	187	507	438	566	179	182	144
Total	439	704	773	1,076	814	748	709

The bluefin fishery was managed on a fishing year basis (June through May) versus a calendar year basis (January through December) starting with the implementation of the 1999 FMP in 2000 until January 2008, when management reverted to a calendar year basis. Landings are presented on a calendar year (versus fishing year) basis for 2008 through 2010. The 2007 fishing year was June 1, 2007-December 31, 2007.

Totals are subject to rounding error.

5.5.1.2 Alternative E 1b – Establish 12 Equal Monthly Sub-Quotas

This alternative was considered in the 2011 Environmental Assessment for a Rule to Adjust the Atlantic Bluefin Tuna General and Harpoon Category Regulations. It would allow the General category to remain open year-round and would revise subquotas so that they are evenly distributed throughout the year (i.e., the base quota of 435.1 mt would be divided into monthly subquotas of 8.3 percent of the General category base quota, or 36.1 mt). NMFS would continue to carry forward unharvested General category quota from one time period to the next time period.

As discussed in Section 4.1.5.1 and shown in Table 4.23, this alternative would result in increased harvest in the earlier portions of the General category bluefin season and decreased harvest in the later portions of the season. To calculate potential changes in revenues, the amount of potential landings and the value of those landings per current time period can be examined (assuming full harvest). For example, for the current January period (which continues until the available subquota is taken, or March 31, whichever comes first), the base quota is 23.1 mt. Under this alternative, 36.1 mt would be available per month, so the total base quota available for January through March is 108.3 mt. General category price information for these three months is currently available for January only as the General category fishery closed in January in 2012 following implementation of the 2011 General and Harpoon category regulatory amendment that extended the end date of the January fishery to March 31. Table 5.33 and Table 5.34 show current and potential annual gross revenues per time period under the No Action alternative and Alternative E 1b. For early season (January-March) General category participants, an additional 85.2 mt would be available (i.e., 108.3-23.1 mt). At $9.13/lb, this represents potential increased revenue of approximately $1.7 million overall during this time period, nearly five times the current amount. NMFS does not have General category price/lb information for April or May since there is currently no General category fishing during those months, but using $9.13/lb as an estimate, potential revenues for each of those months would be $726,621 (i.e. 36.1 mt * 9.13/lb). Potential revenues for the current June-August and September periods would decrease by approximately $2.2 million (50%) and $1.7 million (69%), given recent average price ($9.13 and $9.61, respectively). For October-November and for December, potential revenues would increase by approximately $317,000 (28%) and $287,000 (60%) at $9.21/lb and $9.65/lb, respectively. Relative to the No Action alternative, under Alternative E 1b, there would generally be substantially increased revenues for January through May and October through December and substantially decreased revenues for June through September, and total annual revenues would decrease by approximately $100,000 (1%).

Table 5.33 Potential General Category Gross Revenues from Base Quotas under Current Subquota Allocation Percentages.

Time Period	% of General Category Quota	Current Annual Base Quota Equivalent in mt*	Current Annual Base Quota Equivalent in lb*	Average Ex-Vessel $ (2012)	Potential Annual Gross Revenues
January-March	5.3	23.1	50,926	$9.13	$464,954
April-May	na	na	na	Na	na
June-Aug	50.0	217.6	479,721	$9.13	$4,379,853
September	26.5	115.3	254,190	$9.61	$2,442,766
October-November	13.0	56.6	124,780	$9.21	$1,149,224
December	5.2	22.6	49,824	$9.65	$480,802
TOTAL	100.0	435.2			$8,917,599

*Totals subject to rounding error

Table 5.34 Comparative Potential General Category Gross Revenues from Base Quotas under Alternative E 1b (12 Equal Monthly Subquotas).

Time Period	% of General Category Quota	Current Annual Base Quota Equivalent in mt*	Current Annual Base Quota Equivalent in lb*	Average Ex-Vessel $ (2012)	Potential Annual Gross Revenues
January-March	25	108.3	238,758	$9.13	$2,179,861
April-May	16.7	72.2	159,172	$9.13**	$1,453,240
June-Aug	25	108.3	238,758	$9.13	$2,179,861
September	8.3	36.1	79,586	$9.61	$764,821
October-November	16.7	72.2	159,172	$9.21	$1,465,974
December	8.3	36.1	79,586	$9.65	$768,005
TOTAL	100.0	435.2			$8,811,765

*Totals subject to rounding error ** assumed, based on January and Jun-Aug average prices

5.5.1.3 Alternative E 1c – Provide Additional Flexibility for General Category Quota-Adjustment (Preferred)

This alternative, similar to Alternative E 1b, could result in a shift in the distribution of quota and thus fishing opportunities to the earlier portion of the year. For example, in 2011 and 2012, June through August General category landings totaled 140.3 mt and 192.2 mt, out of an available (base) quota of 217.6 mt. In 2010, June through August General category landings totaled 125.4 mt of an available (adjusted) quota of 269.4 mt. If quota that is anticipated to be unused in the first part of the summer season is made available to January period General category participants and bluefin are landed against the January period subquota, it would potentially result in improved and fuller use of the General category quota. Also, because bluefin price per lb is often higher in the January period than during the summer, shifting quota to this earlier period would result in beneficial impacts to early season General category participants off the mid- and south Atlantic states. It is possible, however, that an increase of bluefin on the market in the January period could reduce the average price for that time of year. Participants in the summer fishery may perceive such quota transfer to be a shift away from historical participants in the traditional General category bluefin fishing areas off New England and thus adverse. However, because unused quota rolls forward within a calendar year from one period to the next, any unused quota from the adjusted January period would return to the June through August period and onward if not used completely during that period. Overall, short-term, direct impacts depend on the amount and timing of quota transferred inseason and would be expected to be neutral to minor, beneficial for January fishery participants and neutral to minor, adverse impacts for participants in the June through December General category fishery.

5.5.2 Alternative E 2 – NMFS Ability to Adjust Harpoon Category Retention Limits Inseason

5.5.2.1 Alternative E 2a – No Action

Under the No Action alternative, Harpoon category participants would continue to have the ability to retain and land up to four large medium fish per vessel per day, as well as unlimited giants. The economic impact of the No Action alternative is expected to be direct and neutral to slightly beneficial and short-term as participants would continue to be able to retain and land a 3rd and 4th large medium bluefin, if available, and would not have to discard these fish if caught while targeting giant bluefin. In 2012, the first year following implementation of the four-fish limit on large mediums, there were only two trips on which three large mediums were landed and two trips on which four large mediums were landed, or 6% total of successful trips.

Harpoon quota revenues in 2012 were 24 percent lower than 2011 and 71 percent higher than in 2010.

5.5.2.2 Alternative E2b - NMFS Ability to Adjust Harpoon Category Retention Limits Inseason

If NMFS changes the regulations to implement the daily retention limit of large medium bluefin over a range of two to four bluefin, the default large medium limit would be set at two fish. On a per-trip basis, there would be minor short-term direct adverse social and economic impacts that would depend on availability of large mediums to Harpoon category vessels on a per trip basis and the actual retention limit that NMFS sets inseason (or that is in place by default). Looking at successful 2012 trips, NMFS can estimate potential impacts of this change by determining the number of trips on which three or four large mediums were landed in 2012 and assuming that those fish may not be able to be landed under this alternative. Using 2012 successful trip data, if the limit was set at two large mediums, the revenue from up to six large mediums would be foregone for the season, and with a three fish limit, the revenue of up to two large mediums would be foregone. At an average 2012 weight of 296 lbs and an average price of $9.13/lb for the Harpoon category, a loss of one to six fish would be approximately $2,702 to $16,215 for the Harpoon category as a whole for the year.

Potentially beneficial social and economic impacts are possible if a lower limit at the beginning of the season results in the Harpoon category quota lasting longer into the season, as the average price/lb is generally higher in July and August than it is in June. NMFS has not needed to close the Harpoon category in recent years (i.e., as a result of the quota being met), but depending on the size of the amount of quota available and the number of Harpoon category participants, this may be a consideration.

5.5.3 Alternative E 3 – Angling Category Subquota Distribution

5.5.3.1 Alternative E 3a – No Action

Under the No Action alternative, Angling category participants fishing south of 39°18’ N. lat. would continue to have their landings of trophy bluefin count toward a shared 66.7% of the Angling category large medium and giant bluefin subquota. The social impact of the No Action alternative is expected to vary by geographic area and be dependent of availability of trophy-sized bluefin on the fishing grounds. If the pattern of high activity off Virginia and North

Carolina continues, fishermen in the mid-Atlantic may have greater opportunities to land a bluefin and participants in the Gulf of Mexico may have no opportunity to land a bluefin when the fish are in their area as the southern trophy fishery may already be closed for the year. For Angling and Charter/Headboat fishermen, based on the last two years, there would be direct, beneficial, short-term social impacts in the mid-Atlantic and direct, adverse, short-term impacts for participants south of that area, including the Gulf of Mexico. The issue of economic costs for Angling category participants is not relevant as there is no sale of tunas by Angling category participants. For charter vessels, which sell fishing trips to recreational fishermen, economic impacts are expected to be neutral to beneficial for those in the mid-Atlantic and neutral to adverse for those south of that area, including the Gulf of Mexico, as the perceived opportunity to land a trophy bluefin may be diminished. This should be tempered in the Gulf of Mexico, where there is no directed fishing for bluefin allowed. Given that the current southern trophy bluefin subquota of 2.8 mt represents approximately 17-30 individual fish, impacts are expected to be minor.

5.5.3.2 Alternative E 3a – Allocate a Portion of the Trophy South Sub-Quota to the Gulf of Mexico (Preferred)

Under the preferred alternative, a portion of the trophy south subquota would be allocated specifically for the Gulf of Mexico. Specifically, the trophy subquota would be divided as 33% each to the northern area, the southern area outside the Gulf of Mexico, and the Gulf of Mexico. At the current average trophy fish weight, this would allow annually up to 8 trophy bluefin to be landed in each of the three areas.

There would be minor, short-term, direct, beneficial social impacts to a small number of vessels in the Gulf of Mexico given the small amount of fish that would be allowed to be landed (as well as indirect beneficial economic impacts for charter vessels), but the perception of greater fairness among southern area participants may result in indirect, longer-term, beneficial, social impacts. There would be minor, short-term, direct and indirect adverse social impacts (and economic impacts for charter vessels) for those outside the Gulf of Mexico as the perceived opportunity to land a trophy bluefin may be diminished.

5.5.4 Alternative E 4 – Change Start Date of Purse Seine Category to June 1

5.5.4.1 Alternative E 4 – No Action

Under the No Action alternative, there would be no change to the start date of the Purse Seine category fishery, which is currently set at July 15. Economic impacts would be expected to be direct and neutral to adverse depending on availability of schools of bluefin for purse seine operators to decide to make a set on. That is, currently, if conditions would warrant making a set (e.g., based on information from spotter pilots) before July 15, purse seine operators would not be able to fish and would miss the economic opportunity to land and sell bluefin while the other commercial bluefin fisheries are open. Social impacts would be minor and neutral to adverse for purse seine fishery participants and would be minor and neutral to beneficial for fishermen in other categories due to reduced actual or perceived gear conflict from June 1 through July 14.

5.5.4.2 Alternative E 4b – Change Start Date of Purse Seine Category to June 1 (Preferred)

Under the preferred alternative, beginning fishing on June 1 would allow more flexibility for purse seine operators to choose when to fish, based on availability of schools of appropriate-sized bluefin and market price. Economic impacts would be expected to be direct and neutral to moderate and beneficial depending on availability of schools of bluefin for purse seine operators to decide to make a set on and market conditions. Social impacts would be minor and neutral to beneficial for purse seine fishery participants and would be minor and neutral to adverse for fishermen in other categories due to increased actual or perceived gear conflict from June 1 through July 14. In 2012, the average price per pound was $12.46, although the price likely reflects the relatively small amount of purse seine-caught bluefin on the market that year. In 2009, the last year in which there were Atlantic purse seine bluefin landings, the average price per pound was $5.96.

5.5.5 Alternative E 5 – Rule Regarding Permit Category Changes

5.5.5.1 Alternative E 5a – No Action

Under the No Action alternative, there would be no changes made to current regulations regarding the ability of an applicant to make a correction to their open-access HMS permit category. The current regulations prohibit a vessel issued an open-access Atlantic Tunas or an HMS permit from changing the category of the permit after 10 calendar days from the date of issuance. This No Action alternative is administrative in nature, and therefore the social and economic impacts associated with it would be neutral for most applicants. However, for those applicants who discover their permit category may not allow the vessel to fish in a manner as intended, they may experience moderate adverse social and economic impacts at an individual level. For example, if a commercial fishermen obtained an Angling category permit (recreational) versus a General category permit (commercial) and did not discover the error until after the 10 calendar day window, their vessel would not be allowed to fish commercially for Atlantic tunas for the remainder of that year. Likewise, if recreational fishermen obtained a General category permit (commercial) versus an Angling category permit (commercial) and did not discover the error until after the 10 calendar window, their vessel would not be allowed to fish under the recreational rules and regulations for the remainder of the year. These two examples demonstrate the potential in lost fishing opportunities as a result of the No Action alternative.

5.5.5.2 Alternative E 5b – Modify Rules Regarding Permit Category Changes (preferred)

Under the preferred alternative, NMFS would allow category changes to an open-access HMS permit issued for a time period greater than 10 calendar days (e.g., 30, 45, or 60 days), provided the vessel has not fished as verified via landings data. This alternative would result in neutral social and economic impacts for most applicants as there are approximately 20 requests annually that would fall outside the 10 calendar day window. However, for those applicants who discover their permit category may not allow the vessel to fish in a manner as intended (~20 per year), they would experience moderate beneficial social and economic impacts provided they discover

the error in the liberalize window (e.g., 30, 45, or 60 days). Using the two examples illustrated above and assuming no bluefin were caught in either case, each applicant would be allowed to correct their open-access HMS permit category to match their intended fishing practices for the remainder of that year, thereby mitigating the potential of lost fishing opportunities, as well as potential income.

5.5.6 Alternative E 6 – Northern Albacore Tuna Quota

5.5.6.1 Alternative E 6a – No Action

In the last 10 years, U.S. catches reached or exceeded the current U.S. initial quota (527 mt for 2013) in 2004 with 646 mt and in 2007 with 532 mt. However, catches have been less than the adjusted U.S. quotas (currently about 659 mt) for the last several years now. Under the No Action alternative, there is no domestic mechanism to limit annual catches of northern albacore beyond the current requirements for Atlantic tunas or HMS vessel permits, authorized gear, observers/logbooks, and time/area closures. Therefore, expected short-term, direct economic impacts and social impacts under the No Action alternative would be neutral. If future overharvests result in the United States being out of compliance with the ICCAT recommendation, the United States would need to put control measures in place and neutral to adverse longer-term direct economic and social impacts could occur if the resulting annual quota needs to be reduced by the amount of the overharvest.

5.5.6.2 Alternative E 6b – Implement U.S. Northern Atlantic Albacore Tuna Quota

If NMFS implements a domestic quota for northern albacore and recent catch levels continue, and the U.S. quota (including the adjusted quota) recommended by ICCAT is maintained at the current amount, economic and social impacts would not be expected. However, if either the U.S. quota is reduced as part of a new TAC recommendation or catches increase above the current adjusted U.S. quota, there could be adverse impacts resulting from reduced future fishing opportunities and ex-vessel revenues. At an average price of $1.29/lb for commercially-landed albacore in 2011, a reduction of one mt would represent approximately $2,800 under a full quota use situation. Actual impacts would largely depend on the availability of northern albacore and the ability of fishery participants to harvest the quota. In addition, any adverse social and economic impacts of exceeding the TAC, which was adopted as part of the overall ICCAT northern albacore rebuilding program, would be reduced and, in the long term, may be beneficial for fishermen as the stock grows. There may be slight differences in the level of economic and social impacts experienced by the specific individuals of the northern albacore fishery, as well as by participants within a particular fishery sector.

5.6 Combining and Comparing Alternatives

This section considers the combined social and economic impacts of the management measures. For vessels that have a history of avoiding bluefin tuna, and continue to avoid bluefin tuna, the socio-economic impacts would be moderate and adverse, with the principal impact being the costs associated with electronic monitoring and VMS reporting. For pelagic longline vessels that have a history of interacting with many bluefin, and continue to interact with bluefin in the

future, the cumulative socio-economic impacts would be major and adverse, due to the combined impacts of the IBQ, the gear restricted areas, and the enhanced reporting measures. For the Purse Seine category, the cumulative economic impacts would be minor adverse due to the potential reallocation of quota and the enhanced reporting requirements. For the General, Harpoon, Charter/Headboat, and Angling categories, the cumulative economic impacts would be neutral or minor adverse due to the modifications to the rules that dictate how the category specific quota is managed, and the enhanced reporting requirements.

Socio-Economic Impacts of Preferred Alternatives on the Longline Category

3) The Codified Reallocation alternative would result in an additional 62.5 mt of quota for the Longline category on an annual basis (an 83.5% increase), which, under the current U.S. bluefin quota of 923.7 mt, would result in a revised baseline quota of 137 mt. If the Longline category were to land this additional 62.5 mt of bluefin quota, it would be worth approximately $1 million dollars; however, it is highly unlikely as a substantial portion of the revised baseline quota would not be landed, but would be needed to account for dead discards.
4) The Annual Reallocation alternative, would enable the agency to make additional quota available to all quota categories, including the Longline category. For example, it could increase the amount of quota available for use by the Longline category to 216.7 mt, assuming the permanent reallocation is finalized and 50% of the Purse Seine category quota were reallocated to the Longline category (under the current U.S. bluefin quota of 923.7 mt). If the Longline category landed this additional 79.7 mt of bluefin quota, it would be worth approximately $1.4 million, however it is highly unlikely as a substantial portion of the revised quota would not be landed, but would be used to account for dead discards.
5) The Cape Hatteras Gear Restricted Area with Access Based on Performance would potentially reduce revenue for the 18 vessels that would not initially be allowed access, based on their historical catch of bluefin and designated species ratio, compliance with reporting, and/or compliance with observer requirements. Specifically, if the vessels do not redistribute any of their fishing effort to other areas outside the Cape Hatteras Gear Restricted Area, the loss in revenue would be approximately $419,000 ($288,000 from swordfish; $29,000 from bluefin; and $28,000 from yellowfin, among others). If 12 vessels of the 18 affected vessels are able to redistribute a portion of their fishing effort to other areas, the loss in revenue could be reduced to approximately $292,000 ($191,000 from swordfish; $21,000 from bluefin; and $25,000 from yellowfin, among others). If vessels affected by the Cape Hatteras Gear Restricted Area choose to fish under General category rules in this area using handgear, they may be able to regain a relatively small amount of this lost revenue.
6) The Small Gulf of Mexico Gear Restricted Area would potentially reduce revenue for approximately 34 vessels that have historically fished in the Small Gulf of Mexico Gear Restricted Area during the months of April and May. Specifically, if the vessels do not redistribute any of their fishing effort to other areas outside the Small Gulf of Mexico Gear Restricted Area, the loss in revenue would be approximately $249,000 ($81,000 from swordfish; $35,000 from bluefin; and $129,000 from yellowfin). If some of the

vessels are able to redistribute a portion of their fishing effort to other areas, the loss in revenue could be reduced to approximately $292,000 ($11,000 from swordfish; $23,000 from bluefin; and $60,000 from yellowfin).

7) Allowing pelagic and bottom longline vessels to transit closed and gear restricted areas after removing and stowing gear would result in direct short- and long-term beneficial economic impacts by potentially reducing fuel costs and time at sea for vessels that need to transit the closed or restricted areas.

8) Conditional access of pelagic longline vessels to current closed areas could provide limited opportunities for additional revenue, although it is difficult to estimate the amount of revenue, and such opportunities would be limited.

9) The IBQ alternatives would allocate bluefin shares to 161 active pelagic longline vessels ("active" is defined as having reported in the HMS Logbook successfully setting pelagic longline gear at least once between 2006 and 2011). Vessels would be allocated shares of 1.0%, 0.54%, or 0.34% of the Longline category quota, and based on the revised baseline Longline category bluefin quota of 137 mt, vessels would be allocated 1.37 mt, 0.74 mt, or 0.47 mt of bluefin, respectively. The IBQ quota shares based on 137 mt would constrain approximately 24 % of pelagic longline vessels (32% of vessels with Gulf of Mexico IBQ and 20% of vessels with Atlantic IBQ). In other words, 24 percent of vessels would need to lease additional bluefin quota in order to land their historical average amount of designated species (if they do not change their behavior to reduce their historical rate of bluefin interactions). In total, the vessels would need to lease an additional 62 mt of bluefin. Seventy-six percent of pelagic longline vessels would need no additional bluefin quota in order to land their historical average amount of designated species, and those vessel with a 'surplus' (or not fishing) would be able to lease allocation and obtain additional revenue (approximately 56 mt of bluefin allocation would be available for leasing). If no leasing of bluefin allocation were to occur, there could be a reduction of 2.4 million pounds of designated species landing per year with an associated reduction in revenue of approximately 24 percent ($9 million dollars, or about $51,000 per vessel).

10) If NMFS prohibited the use of pelagic longline gear for the fishery as a whole under the alternative "NMFS Closure of the Pelagic Longline Fishery" when the entire Longline category quota is attained, the impact would depend principally upon the duration of the fishing season prior to the closure. For example, if the use of pelagic longline gear is prohibited at the end of March, approximately 18% of the annual revenue from all species would have been obtained by the fishery, but 82% of the annual revenue from fishing with pelagic longline gear would be foregone ($24 million). If the use of pelagic longline gear is prohibited at the end of August, approximately 59% of the annual revenue from all species would have been obtained, while approximately 41% of the annual revenue would be foregone ($12 million). This alternative could result in a major short-term adverse direct economic impact to the pelagic longline fishery and this economic impact would continue into the long-term if landings and dead discard rates continue along the current trend. Adverse economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries would likely occur when a closure happens.

11) The requirement for Longline category vessels to install cameras and participate in an electronic monitoring program would cost vessels an average of about $ 5,500 a year, and a total of about $ 875,500 fleet-wide. This alternative would result in moderate direct and indirect adverse economic impacts to pelagic longline vessel owners in the short- and long-term.

12) The requirement for Longline vessels to make various declarations and report bluefin through a VMS unit would cost vessels approximately $44 per month, however, the costs vary based on the E-MTU VMS unit and communication service provider selected, and the amount of vessel activity.

Socio-Economic Impacts of Preferred Alternatives on the General Category

13) The Permanent Reallocation alternative would result in reducing the General category quota by approximately 32 mt as part of the 68-mt contribution to the Longline category. This would represent a 7.35% reduction in quota, and would reduce potential revenue by approximately $530,000.

3) The Annual Reallocation alternative would make a portion of the Purse Seine category quota available to other categories, including the General category, and could result in direct, moderate, beneficial impacts in the short term. For example, under a U.S. bluefin quota of 923.7 mt, if 50% of the Purse Seine category quota were reallocated to other categories (i.e., 85.9 mt), and the General category were allocated 47.1 percent of the 85.9 mt, its gain in bluefin quota would be 40 mt (with a value of approximately $660,000 and enough to offset the 32-mt reduction in quota that would result from the "Permanent Reallocation Alternative").

4) The alternative "Modifications to the Reserve Category" could provide minor to moderate beneficial economic and social impacts in the short term if the additional Reserve category quota could be used to offset any overharvests in another category.

5) Allowing Longline category vessels to fish under General category rules would have minor, adverse economic and social impacts in short-term if the General category quota is met earlier than it otherwise would be, however, if NMFS transferred quota to January within the General category allocation and "restored" General category quota overall (from Purse Seine category annual reallocation alternative), impacts could be reduced or even neutral.

6) The Automated Catch Reporting requirement would result in minor, long-term adverse, economic and social impacts associated with the burden of reporting all bluefin catch.

7) Providing additional flexibility for General category quota adjustment would have neutral to minor, short-term impacts, with beneficial social and economic impacts for January fishery participants and negative impacts for those participating in June through December.

8) The change in the Purse Seine category start date would result in neutral to minor adverse economic and social impacts to the General category associated with additional market competition and gear conflict.

Socio-Economic Impacts of Preferred Alternatives on the Harpoon category

3) The Permanent Reallocation alternative would result in reducing Harpoon category quota by 2.6 mt as part of the 68-mt contribution to the Longline category. This would represent a 7.5% reduction in quota, and would reduce potential revenue by approximately $44,763. The Annual Reallocation alternative would make a portion of the Purse Seine category quota available to other categories, including the Harpoon category, and could result in direct, moderate, beneficial impacts in the short term. For example, under a U.S. bluefin quota of 923.7 mt, if 50% of the Purse Seine category quota were reallocated to other categories (i.e., 85.9 mt), and the Harpoon category were allocated 3.9% of the 85.9 mt, its gain in bluefin quota would be 3.4 mt (with a value of approximately $56,000 and would offset the 2.6 mt reduction in quota that results from the "Permanent Reallocation Alternative").
4) The alternative "Modifications to the Reserve Category" could provide minor to moderate beneficial economic and social impacts in the short term if the additional Reserve category quota could be used to offset any overharvests in another category.

9) The Automated Catch Reporting requirement would result in minor, long-term adverse, economic and social impacts associated with the burden of reporting all bluefin catch.
10) The ability to adjust the Harpoon category retention limit of large medium bluefin inseason could result in minor, short-term adverse economic and social impacts, but to the extent that the result may be a longer season, this could be mitigated by increased ex-vessel price/lb.
11) The change in the Purse Seine category start date would result in neutral to minor adverse economic and social impacts on the Harpoon category associated with additional market competition and gear conflict.

Socio-Economic Impacts of Preferred Alternatives on the Purse Seine category

- The Permanent Reallocation alternative would result in reducing Purse Seine quota by 12.6 mt as part of the 68-mt contribution to the Longline category. This would represent a 7.4% reduction in quota, and would reduce potential revenue by approximately $210,550.
- The Annual Reallocation alternative would make up to 75% of the Purse Seine category quota available to other categories and would result in direct, minor, adverse impacts in the short term. For example, under the U.S. bluefin quota of 923.7 mt, if 75% of the Purse Seine category quota (128.8 mt) were reallocated to other categories, the loss in potential revenue from bluefin would be approximately $2.1 million. This loss in potential revenue would not result in the reduction of actual revenue, however, because the Purse Seine category has had little or no revenue from bluefin in recent years. If the Purse Seine vessels increase their catch to specified threshold levels, the quota in the subsequent year would be increased and potential losses in revenue would be reduced accordingly.

- The IBQ alternative, which would include the opportunity to lease quota allocation from the Purse Seine category to the Longline category, would provide revenue for Purse Seine vessels. Even if 75% of the Purse Seine quota is reallocated to other categories under the "Annual Reallocation Alternative," the Purse Seine category would be allocated 25% of its baseline quota, which could then be leased by individual Purse Seine vessels to Longline category vessels (i.e., 42.9 mt, worth approximately $ 700,000; under a U.S. bluefin quota of 923.7 mt).

5) The alternative "Modifications to the Reserve Category" could provide minor to moderate beneficial economic and social impacts in the short term if the additional Reserve category quota could be used to offset any overharvests in another category.

- The change in the Purse Seine category start date would result in neutral to minor beneficial economic and social impacts.

Socio-Economic Impacts of Preferred Alternatives on the Angling category

- The Permanent Reallocation alternative would result in reducing the Angling category quota by 13.4 mt as part of the 68-mt contribution to the Longline category. This would represent a 7.4% reduction in quota, and would reduce fishing opportunities and reduce revenue to businesses that support recreational angling.
- The Annual Reallocation alternative would make a portion of the Purse Seine category quota available to other categories, including the Angling category, and could result in direct, moderate, beneficial impacts in the short term. For example, under a U.S. bluefin quota of 923.7 mt, if 50% of the Purse Seine category quota were reallocated to other categories (i.e., 85.9 mt), and the Angling category were allocated 19.7% of the 85.9 mt, its gain in bluefin quota would be 16.9 mt (enough to offset the 13.4 mt reduction in quota that results from the "Permanent Reallocation Alternative").
- The alternative "Modifications to the Reserve Category" could provide minor to moderate beneficial economic and social impacts in the short term if the additional Reserve category quota could be used to offset any overharvests in another category.
- The Trophy category subquota redistribution could have minor, short-term, beneficial social impacts for Gulf of Mexico participants and minor, short-term, adverse economic (charter vessels) and social impacts for participants in the southern area outside the Gulf of Mexico.
- The change in the Purse Seine category start date would result in neutral to minor adverse and social impacts on the Angling category associated with gear conflict.

Socio-Economic Impacts of Preferred Alternatives on the Charter/Headboat category

- The impacts of the preferred alternatives would impact the Charter/Headboat category in a unique way, given the potential applicability of either the Angling category restrictions and the General category regulations on a particular trip, based on the fishing choices made by the vessel operator to target commercial-sized bluefin (measuring 73 inches or

greater) or recreational-sized bluefin (measuring 27 to less than 73 inches). The socio-economic impacts that would apply to Charter/Headboat category are described under the General and Angling category sections.

The information this discussion is based upon may be found in Sections 5.6.1 through 5.6.5. Although the focus of this analysis is on the preferred alternatives, and does not detail the impacts of all potential combinations of management measures, the information contained in Sections 5.6.1 through 5.6.5 discuss the impacts of all the measures.

O	Neutral Impacts	–	Minor Adverse Impacts
+	Minor Beneficial Impacts	–	Moderate Adverse Impacts
+	Moderate Beneficial Impacts	●–	Significant Adverse Impacts
●+	Significant Beneficial Impacts		

Table 5.35 lists the preferred alternatives and summarizes the –social and economic impacts.

Symbol Key:

O	Neutral Impacts	Θ –	Minor Adverse Impacts
Θ +	Minor Beneficial Impacts	Ø –	Moderate Adverse Impacts
Ø +	Moderate Beneficial Impacts	●–	Significant Adverse Impacts
●+	Significant Beneficial Impacts		

Table 5.35 Economic Impacts of the Preferred Alternatives

Alternative	Description	Affected Quota Category	Quality	Timeframe	Impacts
A 2a	Reallocation to Longline Category Based on Historical 68 mt Dead Discard Allowance	All	Direct	Short- and Long-term	Θ +
A 3a	Annual Reallocation of Bluefin Quota from Purse Seine Category	Purse Seine, Longline	Direct	Short- and Long-term	Θ +
B 1c	Cape Hatteras Gear Restricted Area	Longline	Direct	Short- and Long-term	Θ –

Alternative	Description	Affected Quota Category	Quality	Timeframe	Impacts
B 1d	Allow Pelagic Longline Vessels to Fish Under General Category Rules (in Cape Hatteras Gear Restricted Area)	Longline, General	Direct	Short- and Long-term	O +
B 1f	Small Gulf of Mexico Gear Restricted Area	Longline	Direct	Short- and Long-term	O –
B 3b	Access to Closed Areas with Performance Criteria	Longline	Direct	Short- and Long-term	O +
C 2	Individual Bluefin Quotas (IBQs)	Longline Purse Seine	Direct	Short- and Long-term	Ø –
D 1b	Vessel Monitoring System (VMS) Requirements	Longline Purse Seine	Direct	Short- and Long-term	O –
D 2b	Electronic Monitoring of Longline Category	Longline	Direct	Long-term	O –
D 3b	Automated Catch Reporting	General Harpoon Charter/Headboat	Direct	Short- and Long-term	O –
E 1c	Provide Additional Flexibility for General Category Quota Adjustment	General	Direct	Short- and Long-term	o
E 2b	NMFS Ability to Adjust Harpoon Category Retention Limits Inseason	Harpoon	Direct	Short- and Long-term	o
E 3b	Allocate a Portion of the Trophy South Sub-Quota to the Gulf of Mexico	Angling	Direct	Short-term	o
E 4b	Change Start Date of Purse Seine Category to June 1	Purse Seine	Direct	Short-term	o
E 5b	Modify Rules Regarding Permit	General,	Direct	Short-term	o

Alternative	Description	Affected Quota Category	Quality	Timeframe	Impacts
	Category Changes	Harpoon, Angling, Charter/Headboat			
E 6b	Implement U.S. Northern Atlantic Albacore Tuna Quota	All	Direct	Short- and Long-term	O +
E 7b	Minor Regulatory Changes	All	Direct	Short- and Long-term	O +
E 8b	Pelagic and Bottom Longline Transiting Closed Areas (Preferred)	Longline	Direct	Short- and Long-term	O +

Chapter 5 References

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6.0 CUMULATIVE IMPACTS

A cumulative effects assessment (CEA) is a required part of an EIS according to the Council on

Environmental Quality (CEQ) (40 CFR part 1508.7). Cumulative impacts are the impacts on the environment which result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts include the total effect on a natural resource, ecosystem, or human community due to federal, non–federal, public, and private entities. Cumulative impacts may also include the effects of natural processes and events, depending on the specific resource. The goal of this section is to describe the cumulative ecological, economic, and social impacts of past, present and reasonably foreseeable future actions with regard to the management measures presented in this document. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective but rather, the intent is to focus on those effects that are truly meaningful. This chapter serves to examine the potential direct and indirect effects of the alternatives in Amendment 7 together with past, present, and reasonably foreseeable future actions that affect the HMS environment. It should also be noted that the predictions of potential synergistic effects from multiple actions, past, present and/or future will generally be qualitative in nature.

The ecosystem components considered in this cumulative impacts analysis are the following: Ecological (impacts on bluefin and other HMS), Protected Species and EFH, and Socie-Economic (the human community).

6.1 Past, Present, and Reasonably Foreseeable Actions

Note that most of the actions effecting this amendment and considered in and 6.2 come from fishery-related activities (e.g., Federal fishery management actions). As expected, these activities have fairly straight-forward effects on environmental conditions, and were, are, or will be taken, in large part, to improve those conditions. Under this regulatory regime, the cumulative impacts of past, present, and future Federal fishery management actions on the ecosystem components should be expected to result in positive long-term outcomes. Nevertheless, these actions are often associated with offsetting impacts. For example, reducing dead discards or increasing the quota accountability of a fishery may result in negative short-term socio-economic impacts for fishery participants. However, these impacts are usually necessary to bring about long-term sustainability of the resource and as such, should, in the long-term, promote positive effects on human communities, especially those that are economically dependent upon the managed resource.

Non-fishing activities were also considered when determining the combined effects from past, present, and reasonably foreseeable future actions. Activities that have meaningful effects on the ecosystem components include the introduction of chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment. These activities pose a risk to the all of the ecosystem components in the long term. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and, as such, may indirectly constrain the sustainability of the managed resources, non-

target species, and protected resources. Decreased habitat suitability would tend to reduce the tolerance of these ecosystem components to the impacts of fishing effort.

6.1.1 Fishing Activities

International Management

Since 1999, management actions pertaining to bluefin have had minor positive ecological impacts by continuing to limit bluefin mortality by U.S. fishermen in accordance with the strict quota limits set by ICCAT. Table 6.1 is a brief summary of some ICCAT recommendations that have affected U.S. domestic bluefin tuna management; currently ICCAT recommendations 08-04, 10-03, 11-06, and 12-02 are active for western Atlantic bluefin tuna management. The preferred alternatives listed in this document are consistent with the active ICCAT recommendations and continue to advance the United States' participation in the 20-year rebuilding program (1999 – 2018).

The 1999 FMP adopted ICCAT's 20-year stock rebuilding program for western Atlantic bluefin, which includes, among other things, authority for NMFS to implement ICCAT's bluefin quota allocation on a yearly basis through a framework procedure. The FEIS for the 2006 Consolidated HMS FMP (NMFS 2006) concluded that the cumulative long-term impact of the final implementing actions, including the ICCAT bluefin rebuilding program and annual quota allocation process, would be to establish sustainable fisheries for Atlantic HMS.

Table 6.1 A list of some ICCAT recommendations that have affected domestic U.S. bluefin tuna management. Source: ICCAT web page (http://www.iccat.int/en/RecsRegs.asp).

ICCAT Rec	Description	Effective (Quota Year)
74-01	Minimum size limit of 6.4 kg (14 lb) with 15% tolerance (number or weight)	1975
81-01	Catches prohibited , except 800 mt annually to enable scientific studies	1982
82-01	Scientific monitoring quota established; Limit of bluefin < 120 cm set at 15% of TAC; No directed fishing on BFT in Gulf of Mexico	1983
91-01	Reduction of quota for following period if exceed quota (overage); Minimum size of 30 kg (66 lb) or 115 cm (45") with 8% tolerance by weight	1992
93-05	Unused quota can be carried over to the subsequent year	1994
96-04 and 96-14	Discard monitoring, reporting, and minimization requirements,; penalty for exceeding quota in 2 consecutive management periods.	1997

98-07	Initiation of 20-year rebuilding program; Dead discards to be deducted from TAC: 79 mt or 2.82% of TAC (whichever is bigger); Dead discards distributed between the United States, Canada, and Japan (85.72%, 7.14%, and 7.14%, respectively); Small fish tolerance (8%) now to be an average over 4 years	1999
02-07	United States and Canada receive bycatch quotas (25 and 15 mt, respectively) to account for longline bycatch in vicinity of management area boundary	2003
06-06	Amount of underharvest that each Contracting Party may carry forward limited to 50% of its initial quota; Elimination of dead discard allowance; Small fish tolerance now 10% by weight, over a four-year period (2007-2010)	2007
08-04 (active)	Amount of underharvest that each Contracting Party may carry forward limited to 10% of TAC after 2010*; Period of small fish tolerance (10%) changed to two years (2009-2010)	2009; 2011*
10-03 (active)	If the SCRS stock assessment detects a serious threat of stock collapse, the Commission shall suspend all bluefin fisheries in the western Atlantic for the following year; Small fish tolerance (10%) maintained for 2011-2012 period; Report catches of bluefin to ICCAT monthly; Enhance biological sampling	2011
11-06 (active)	Exemptions for scientific institutions (20 mt research mortality allowance (RMA); size, gear, and closures) to allow research	2011
12-02	Prohibits the taking and landing of bluefin less than 67 cm (26”); changed quota transfer provisions such that transferred underharvest must be used to support cooperative research	2013

In October 2009, Monaco submitted a proposal to list Atlantic bluefin tuna in Appendix I of the Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES), which would prohibit international trade of the species. At the March 2010 CITES 15th Conference of Parties meeting in Doha, Qatar, the proposal was not adopted. The U.S. Department of the Interior, which is the lead Federal agency on CITES issues, subsequently

issued a press release indicating that the United States will continue to work with ICCAT parties to conserve and recover bluefin.

ICCAT reviewed the status of Atlantic bluefin stocks in 2012 and addressed the western Atlantic bluefin TAC at the November 2012 ICCAT meeting. The results of the 2012 bluefin stock assessment and bluefin recommendations stemming from the 2012 ICCAT annual meeting are available and did not substantially change from previous assessments and recommendations.

Domestic Management

A review of domestic management of Atlantic tunas, including western Atlantic bluefin tuna, is available in Chapter 3 of this DEIS (starting on page 3-8). Atlantic bluefin fisheries are managed through a quota-based system whereby quota specifications are established annually, and the fishery is closely monitored and managed with inseason actions or temporary rules. A list of some recent, major rulemakings that have affected the bluefin fishery is presented in Table 6.2. Inseason actions are not included in this list, however, these actions are designed to achieve the objectives of the 2006 Consolidated HMS FMP (which established the management framework for the bluefin fishery). Therefore, cumulative impacts of Amendment 7 can be analyzed with the 2006 Consolidated HMS FMP to address the scope of these inseason actions.

Table 6.2 The following past and ongoing actions had or would have varying degrees of synergistic impacts on the human environment when considered in conjunction with Amendment 7 to the 2006 Consolidated HMS FMP. Source: HMS SAFE Reports.

Federal Register Citation	Date Published	Rule or Notice
71 FR 30619	5/30/2006	Atlantic Bluefin Tuna Quota and Effort Controls for the General and Angling Categories
71 FR 58085	10/2/2006	Final Rule for the 2006 Consolidated HMS FMP
72 FR 7417	2/15/2007	Revised List of Equipment Models for Careful Release of Sea Turtles in the Pelagic and Bottom Longline Fisheries
72 FR 33401	6/18/2007	Atlantic Bluefin Tuna Quota and Effort Controls
72 FR 74193	12/31/2007	2008 Atlantic Bluefin Tuna Quota Specifications and Effort Controls
73 FR 31380	6/2/2008	International Trade Permit Program; Bluefin Tuna Catch Documentation Program
73 FR 54721	9/23/2008	Final Rule; Pelagic and Bottom Longline Fisheries; Gear Authorization and Turtle Control Devices
74 FR 26110	6/1/2009	2009 Atlantic Bluefin Tuna Quota Specifications and Effort Controls
74 FR 26174	6/1/2009	ANPR for Atlantic HMS Management and Permitting
74 FR 28018	6/12/2009	Final Rule for Amendment 1 to the 2006 Consolidated HMS FMP; Essential Fish Habitat
75 FR 30732	6/2/2010	2010 Atlantic Bluefin Tuna Quota Specifications

76 FR 2313	1/13/2011	Bluefin Tuna Bycatch Reduction in the Gulf of Mexico Pelagic Longline Fishery
76 FR 18653	4/5/2011	Bluefin Tuna Bycatch Reduction in the Gulf of Mexico Pelagic Longline Fishery (Weak Hook Rule)
76 FR 30919	7/5/2011	2011 Atlantic Bluefin Tuna Quotas and Management Measures
76 FR 75492	12/2/2011	Final rule to Require New Vessel Monitoring System (VMS) Units and Establish Additional Requirements in Atlantic HMS Fisheries
77 FR 24161	4/23/2012	Notice of Intent for Amendment 7 to the 2006 Consolidated HMS FMP
77 FR 44161	7/27/2012	Final Rule for the 2012 Bluefin Tuna Quota Specifications
77 FR 47303	8/8/2012	Final Rule to Require Electronic Dealer Reporting for Atlantic HMS Dealers
77 FR 52259	8/29/2012	Final Rule Regarding the Trade of HMS
77 FR 59842	10/1/2012	Final Rule for Amendment 4 to the 2006 Consolidated HMS FMP; Caribbean HMS Management
78 FR 12273	2/22/2013	Proposed Rule for Amendment 8 to the 2006 Consolidated HMS FMP; Swordfish Handgear Management
78 FR 36685	6/19/2013	Final Rule for the 2013 Bluefin Tuna Quota Specifications
78 FR 40318	7/3/2013	Final Rule for Amendment 5a to the 2006 Consolidated HMS FMP; Shark Management

List does not include in-season actions; see HMS SAFE Reports for a comprehensive listing of all bluefin tuna Federal Register notices by year.

NMFS published the 2006 Consolidated HMS FMP on July 14, 2006 (71 FR

40096). The 2006 Consolidated HMS FMP combined management measures and regulations

for all Atlantic HMS in the current management unit. Recent rulemakings and other events that affected bluefin management are listed below, and, where appropriate, related to the alternatives considered in Amendment 7:

- On June 1, 2009, NMFS released an Advance Notice of Proposed Rulemaking (ANPR) (74 FR 26174). The ANPR requested public comment on potential adjustments to the regulations primarily governing the U.S. Atlantic tuna and bluefin tuna, and North Atlantic swordfish to enable more thorough utilization of the available bluefin tuna and swordfish quotas. Some management measures that were included in the ANPR were included in the proposed rule to adjust the Atlantic bluefin tuna regulations (Nov. 4, 2009, 74 FR 57218). At the time, NMFS declared its intent to explore new regulatory

programs that would balance efforts to end overfishing of, and rebuild bluefin tuna while providing an opportunity to harvest the U.S. quota and revitalize the swordfish fishery.

- On June 12, 2009, NMFS published the Notice of Availability for Final Amendment 1 to the 2006 Consolidated HMS FMP for EFH (74 FR 28018). The amendment updated EFH for Atlantic HMS including designation of a new Habitat Area of Particular Concern (HAPC) for bluefin in the Gulf of Mexico. The amendment also analyzed potential fishing impacts on EFH and concluded that HMS gears were not having more than a minimal and temporary effect on EFH. As a result, no management measures were proposed to minimize fishing impacts on EFH.
- On May 24, 2010, NMFS received a petition from the Center for Biological Diversity (CBD) to list bluefin as threatened or endangered under the ESA and designate critical habitat concurrently with its listing. On September 21, 2010, NMFS announced a 90-day finding (75 FR 57431) that the petition presents substantial scientific information indicating the petitioned action may be warranted. NMFS conducted a species status review of bluefin to determine if the petitioned action is warranted. On May 27, 2011, NOAA announced that listing bluefin as endangered or threatened is not warranted at this time. NOAA has committed to revisit this decision by early 2013, when more information would be available about the effects of the Deepwater Horizon BP oil spill, the 2012 bluefin stock assessment, and the 2012 ICCAT bluefin recommendations. NOAA also announced on May 27, 2011, that it is formally designating both the western Atlantic and eastern Atlantic and Mediterranean stocks of bluefin as “species of concern” under the ESA. This places the species on a watchlist for concerns about its status and threats to the species.
- In April 2011, NMFS published a final rule requiring the use of weak hooks on pelagic longline vessels fishing in the Gulf of Mexico (76 FR 18653, April 5, 2011). The purpose of that action is to reduce pelagic longline catch of bluefin in the Gulf of Mexico, the only known spawning area for the western Atlantic bluefin stock. Both that action and the NED action in this rule are intended to address bluefin bycatch issues in pelagic longline fisheries, including managing bluefin catch (landings and dead discards) within available quotas.
- On July 5, 2011, NMFS published a final rule for Atlantic bluefin quotas and Atlantic tuna fisheries management measures. NMFS modified Atlantic bluefin base quotas for all domestic fishing categories; established bluefin quota specifications for the 2011 fishing year; reinstated pelagic longline target catch requirements for retaining bluefin in the NED; amended the Atlantic tunas possession-at-sea and landing regulations to allow removal of Atlantic tunas tail lobes; and clarifying the transfer-at-sea regulations for Atlantic tunas (76 FR 39019).
- On December 2, 2011, NMFS published a final rule on VMS requirements (76 FR 75492) to facilitate enhanced communication with HMS vessels at sea, provide HMS fishery participants with an additional means of sending and receiving information at sea, ensure that HMS VMS units are consistent with the current VMS technology and type approval requirements that apply to newly installed units, and to provide NMFS enforcement with additional information describing gear onboard and target species.

In addition, reasonably foreseeable future actions that may result in additional incremental cumulative impacts include:

- Amendment 8 to the 2006 Consolidated HMS FMP: The comment period for this Amendment closed on April 23, 2013, and NMFS is preparing the final rule. Amendment 8 preferred alternatives would implement new and modified commercial vessel permits that would allow permittees to retain and sell a limited number of swordfish caught on handgear. The purpose of Amendment 8 is to provide additional opportunities for U. S. fishermen to harvest swordfish using selective handgears that are low in bycatch, given the rebuilt status of swordfish and their resulting increased availability. The preferred management measures are intended to allow the United States to more fully utilize its domestic swordfish quota allocation, which is based on ICCAT recommendations. NMFS anticipates Amendment 8 would primarily affect the commercial handgear fishery, although the pelagic longline fishery could experience minor, adverse cumulative socio-economic effects as a combined result of Amendment 7 and Amendment 8.
- Amendment 5b to the 2006 Consolidated HMS FMP: This amendment will address overfishing of dusky sharks. This amendment could affect individuals in shark or pelagic longline fisheries in conjunction with the preferred alternatives affecting the pelagic longline fishery. The dusky shark management measures considered previously included time/area closures that, if proposed in Amendment A5b, could result in moderate, adverse cumulative socio-economic effects on the fishery.
- On November 14, 2012, NMFS received a petition from WildEarth Guardians to list the dusky shark as threatened or endangered under the ESA throughout its entire range, or, as an alternative, to list the Northwest Atlantic/Gulf of Mexico Distinct Population Segment (DPS) as threatened or endangered. The petitioners also requested that critical habitat be designated for the dusky shark under the ESA. On February 1, 2013, NMFS received a petition from Natural Resources Defense Council to list the northwest Atlantic DPS of dusky shark as threatened, or, as an alternative, to list the dusky shark range-wide as threatened, and a request that critical habitat be designated. These two petitions were combined and analyzed, and a positive 90-day finding was published on April 17, 2013. The outcome of the petition has the potential to affect HMS fisheries that have incidental interactions with dusky sharks.
- NMFS is considering modifications to the VMS requirements regarding “hail in” and “hail out” requirements as well as 24/7 monitoring. The proposed rule is currently in development.
- The 2013 ICCAT meeting will adopt new measures for western bluefin, North Atlantic swordfish, and northern albacore tuna. New measures could potentially affected all bluefin fishery participants and pelagic longline fishery participants that also fish for swordfish and northern albacore. The specific measures are not known at this time.
- NMFS review of the Endangered Species Act designation of bluefin as a “species of concern” when more information would be available about the effects of the Deepwater Horizon BP oil spill is available.

- NMFS is considering additional actions to implement industry-funded observer programs and IBQ trading provisions as described in Chapters 2, 4, and 5.

Finally, since pelagic longline fishermen often participate in the dolphin/wahoo fishery, NMFS also expects that there may be some cumulative effects resulting from new regulations in the dolphin/wahoo fishery. Dolphin and wahoo fisheries are managed by the South Atlantic Fishery Management Council. These fishermen would have to adapt pelagic longline fishing practices to comply with both fisheries' regulations. NMFS published a final rule (77 FR 15916; March 12, 2012) to implement the Comprehensive ACL Amendment to the FMPs for the Snapper-Grouper Fishery, the Golden Crab Fishery, the Dolphin and Wahoo Fishery, and the Pelagic Sargassum Habitat. This final rule specified ACLs and AMs for dolphin and wahoo; prohibited recreational sales of dolphin harvested from for-hire vessels; and established a minimum size limit for dolphin of 20 inches (50.8 cm) fork length to include the Federal waters off South Carolina to ensure consistency in the regulations as well as help prevent the large scale harvest of very small dolphin. Pelagic longline vessels permitted in the shark and swordfish fisheries are subject to the HMS hook size regulations, which have impacted their ability to simultaneously fish for dolphin by attaching smaller-hooked gangions directly to their pelagic longline gear.

Additional management measures taken by Regional Fishery Management Councils and Interstate Marine Fisheries Commissions, such as the eight Marine Protected Areas implemented by the South Atlantic Fishery Management Council's Amendment 14, de-hooking requirements by the Gulf of Mexico Fishery Management Council, the Interstate Shark Plan implemented by the Atlantic States Marine Fisheries Commission, and the requirement to use non-stainless steel, circle hooks in the reef fish fishery as well as other rules that have been recently implemented for protected species and to protect EFH, would all have moderate adverse cumulative socioeconomic impacts on fishery participants including pelagic longline, angling, charter/headboat and bottom longline vessels. However, these measures were implemented to help reduce interactions with protected species or increase post-release survival of non-target species and protected species, to help rebuild overfished fish stocks and end overfishing, or to protect EFH for deep-water species. Such measures would help conserve fishery resources in the long-term, which could ultimately have beneficial cumulative economic and social impacts for fishermen in the long-term.

6.1.2 Non-Fishing Activities

Non-fishing activities were also considered when determining the combined effects from past, present, and reasonably foreseeable future actions. Potential sources of non-fishing impacts are numerous and varied, and include the introduction of chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment. Non-fishing activities that may affect EFH are described in Section 10.5 of the 2006 Consolidated HMS FMP (NMFS 2006) and Amendment 1 to the 2006 Consolidated HMS FMP (NMFS, 2009). Broad categories of activities that may adversely affect HMS EFH include, but are not limited to: (1) actions that physically alter structural components or substrate, *e.g.*, dredging, filling, excavations, water diversions, impoundments and other hydrologic modifications; (2) actions that result in changes in habitat quality, *e.g.*, point source discharges; (3) activities that contribute to non-point source pollution and increased sedimentation; (4)

introduction of potentially hazardous materials; or (5) activities that diminish or disrupt the functions of EFH. If these actions are persistent or intense enough, they can result in major changes in habitat quantity as well as quality, conversion of habitats, or in complete abandonment of habitats by some species.

Gulf of Mexico Oil Spill

On April 20, 2010, an explosion on the BP/Deepwater Horizon MC252 drilling platform in the Gulf of Mexico caused the rig to sink and oil began leaking into the Gulf. Before it was finally capped in mid-July, almost 5 million barrels of oil were released into the Gulf. The spill caused significant impacts to wildlife, fisheries, habitat, and the fishing community along the large coastal areas of Louisiana, Mississippi, Texas, Alabama, and Florida.

Available information indicates that Deepwater Horizon oil and/or dispersants has had the potential to impact bluefin tuna. Muhling et al. (2012) studied the overlap between Atlantic Bluefin tuna spawning grounds and observed Deepwater Horizon surface oil in the northern Gulf of Mexico, and their preliminary estimate of the effects of the spill on larval bluefin mortality concluded that less than 12% of larval bluefin were predicted to have been located within contaminated waters in the northern Gulf of Mexico, on a weekly basis.

NOAA continues to study and assess the impacts of the oil and is expected to release a report in the future that includes more definitive information about impacts of the oil spill on bluefin tuna. NOAA and NMFS maintain publically-accessible websites regarding the oil spill and its impacts at: http://www.noaa.gov/deepwaterhorizon/index.html and http://sero.nmfs.noaa.gov/deepwater_horizon/index.html.

Climate Change

The health, security of marine resources, and socio-economic well-being of those who utilize these resources are closely tied to climate and weather. The public, businesses, resource managers, and policy leaders are increasingly seeking information to help them understand how and why climate conditions are changing and how those changes may impact their daily lives. However, even though climate change is apparent and natural climate patterns, like El Niño, can have a major impact on weather and in turn marine resources, being able to accurately predict the impact of these events is still rather complex. NOAA works with partners across various sectors to provide useful and timely climate information and without NOAA's long-term climate monitoring, research, and modeling capabilities, quantifying where and how climate conditions have changed, or predicting where and how they're likely to change would be close to impossible. If oceanographic conditions in the Atlantic or Gulf of Mexico change as a result of climate change, it is conceivable that one or more bluefin tuna life stages may be impacted, due to the extremely wide geographic range that bluefin life history occurs in**,** and the importance of oceanographic conditions to the life cycle of marine organisms.

6.2 Cumulative Ecological and Socio-Economic Impacts

The actions considered in this DEIS regarding Atlantic tunas management measures are expected to change current fishing practices, resulting in ecological impacts that are summarized below. A detailed discussion of the impacts of each of the alternatives is contained in Chapter 4. The cumulative effects analysis is presented below and summarized by a table at the end of the chapter.

Discussion of Cumulative Ecological Impacts of Preferred Alternatives

The Amendment 7 alternatives were designed to complement each other, and therefore the ecological impacts are best assessed from the perspective of evaluating the alternatives in combination.

The ecological impacts of allocation alternatives, including codified reallocation, annual reallocation, and modification of the Reserve category, in conjunction with the quota control and enhanced reporting alternatives would be beneficial to bluefin because of the increased ability to account for bluefin dead discards within the quota system and the reduced risk that landings and dead discards will exceed the U.S. quota. There would be neutral or moderate beneficial impact on other HMS and protected species, as a result of potential reductions changes in fishing effort. There would be shifts in quota among the various quota categories, but the alternatives would not affect the total amount of bluefin caught, which is set by the overall U.S. bluefin quota (and not an element of Amendment 7) as recommended by ICCAT and which implement the international bluefin rebuilding program. Overall, the cumulative ecological impacts of preferred allocation alternatives are expected to be minor and beneficial.

The ecological impacts of the preferred gear restricted area alternatives would be moderately beneficial to bluefin; neutral or beneficial for designated target species, and neutral or beneficial for protected species. Implementation of gear restricted areas, in the areas and times where pelagic longline interactions with bluefin consistently occur would reduce such interactions and reduce dead discards. The redistribution of effort models take into account the previously implemented pelagic longline closed areas. The Small Gulf of Mexico Gear Restricted Area is entirely contained within the bluefin HAPC and would provide additional protection for bluefin. The cumulative ecological effects of the Cape Hatteras Gear Restricted Area with Access based on Performance, and the Small Gulf of Mexico Gear Restricted Area tuna are expected to be moderate and beneficial for bluefin when considered in conjunction with previous rulemakings. The Cape Hatteras Gear Restricted Area with Performance-Based Access and the Small Gulf of Mexico Gear Restricted Area would reduce the number of dead discards by 29 percent and 3 percent, respectively, for a combined ‘reduction of approximately 56 mt of bluefin. Benefits for designated target species, prohibited species, and protected resources are expected to be minor and beneficial due to reductions in fishing effort.

The bluefin tuna quota control alternatives would have beneficial impacts on bluefin due to combined effect of a limit on the catch of bluefin by the Longline category and prohibition of the use of pelagic longline gear when that limit is attained. These quota control alternatives would work concurrently with the other preferred alternatives designed to reduce bluefin bycatch and

enhance reporting and monitoring, as well as the suite of management measures currently in place (e.g., current time/area closures; gear and bait requirements; prohibition on targeting in Gulf of Mexico; quota allocation; reporting requirements; and season openings and closures) that collectively advance NMFS' goal to reduce bluefin discards while still providing equitable opportunities for all categories. The IBQ would provide accountability at the level of an individual vessel and effectively incentivize the avoidance of bluefin. Because the Atlantic IBQ may not be used for bluefin caught in the Gulf of Mexico, the total proportion of the IBQ that may be used in the Gulf of Mexico is limited. Fifty seven vessels (35% of the total vessels with bluefin shares) have Gulf of Mexico IBQ. If the quota controls constrain pelagic longline fishing effort, which is likely for at least some vessels in the short term, there would be additional beneficial impacts on other HMS and protected species as fishing effort with pelagic longline gear would decrease.

The preferred reporting alternatives would have minor beneficial ecological impacts by improving the quantity and timeliness of dead discard reporting in all commercial categories, and therefore supporting a more robust quota system with reduced management uncertainty, and facilitate compliance with ICCAT recommendations. The other management alternatives, which are designed principally to modify the specific quota category rules (that control when and how each category is allowed to catch its quota, but would not change the overall effort), are expected to have a neutral cumulative ecological impact.

Summary

The cumulative ecological impacts on bluefin are expected to be moderate beneficial in the short and long term and the cumulative ecological impacts on designated target species and protected resources are expected to be neutral, or minor beneficial in the short and long term. The preferred alternatives would reduce dead discards; provide incentives to avoid bluefin; substantially increase the accountability of the quota system and improve quota management overall by reducing the risk that dead discards and landings will exceed the total U.S. quota; and enhance reporting through new requirements and incentives. The preferred alternatives would be consistent with ICCAT's bluefin rebuilding plan, Magnuson-Stevens Act requirements under National Standard One, and the 2006 Consolidated HMS FMP, and would support the elimination of overfishing and further stock rebuilding for bluefin.

Discussion of Cumulative Socio-Economic Impacts

The Amendment 7 alternatives were developed to achieve the ecological objectives while at the same time optimizing fishing opportunities. The socio-economic impacts of the preferred reallocation alternatives would have a minor adverse impact on the General, Harpoon, Angling, and Charter/Headboat categories due to reduced quotas. However, there is flexibility within the system to 'restore' quota to these categories if the quota is available, such that the adverse impacts may be reduced. The cumulative socio-economic impacts of the reallocation alternatives on the pelagic longline fishery would likely be minor and beneficial, as the reallocation scenarios for the Longline category, would allow for accounting of dead discards, and may help avoid early closures of the category that would otherwise occur to meet domestic and international management objectives. Cumulative socio-economic effects on the Purse Seine

category would depend upon its level of activity (i.e., the percentage of its quota caught, including dead discards). The socio-economic impacts would be minor adverse in the short term, if recent low levels of fishing activity continue. In the long term, the impacts would continue to be minor, but could be neutral if the level of fishing activity increased and the full quota were allocated.

The cumulative direct socioeconomic effects of the preferred gear restricted areas is expected to be minor to moderate and adverse, as some affected vessels may not be able to easily redistribute fishing effort to other areas, or; switch to new gear types. The preferred alternative on limited conditional access to pelagic longline closed areas, provided that vessels meet certain interaction and compliance criteria and trips are observed, is expected to have minor beneficial cumulative socio-economic impacts given numerous requests from pelagic longline fishermen for access to these areas.

Bluefin quota control measures would likely result in adverse cumulative socio-economic impacts for the pelagic longline fishery as a result of an IBQ system and NMFS closure the fishery when the bluefin quota is attained. All active vessels would be allocated bluefin quota share, but based on historical information, some vessels would have to modify their fishing behavior to avoid bluefin, or lease additional quota allocation. NMFS closure of the pelagic longline fishery would result in major adverse socio-economic impacts if the closure occurred early in the year, and moderate or minor impacts if the closure occurred relatively late in the year.

Enhanced reporting and monitoring requirements would result in moderate adverse socio-economic impacts to the Longline category resulting from the new VMS reporting requirements and the electronic monitoring (video camera) requirements. The Purse Seine category would have minor adverse socio-economic impacts from the VMS reporting requirements. The other commercial permit categories would have minor adverse socio-economic impacts from the preferred alternative which would require increased time spent by fishermen to report their catch.

The other management alternatives, which are designed principally to modify the specific quota category rules (that control when and how each category is allowed to catch its quota, but would not change the overall effort), are expected to have neutral to minor and beneficial cumulative socio-economic impacts. These alternatives are expected to allow NMFS greater flexibility in management, and participants more opportunities to maximize socio-economic benefits within the fishery.

Summary

For pelagic longline vessels that have a history of interacting with many bluefin, and continue to interact with bluefin in the future, the cumulative socio-economic impacts would be major and adverse, due to the combined impacts of the Individual Bluefin Quota, the gear restricted areas, and the enhanced reporting measures. For vessels that have a history of avoiding bluefin tuna, and continue to avoid bluefin tuna, the socio-economic impacts would be moderate and adverse, with the principal impact being the costs associated with electronic monitoring and VMS reporting. For the Purse Seine category, the cumulative economic impacts would be minor

adverse due to the potential reallocation of quota and the enhanced reporting requirements. For the General, Harpoon, Charter/Headboat, and Angling categories, the cumulative economic impacts would be neutral or minor adverse due to the reallocation alternatives, modifications to the rules that dictate how the category specific quota is managed, and the enhanced reporting requirements.

Table 6.3 below compares the cumulative impacts of the preferred alternatives.

Symbol Key:

O	Neutral Impacts	Ʊ –	Minor Adverse Impacts
Ʊ +	Minor Beneficial Impacts	Ø –	Moderate Adverse Impacts
Ø +	Moderate Beneficial Impacts	● –	Significant Adverse Impacts
● +	Significant Beneficial Impacts		

Table 6.3 Comparison of the cumulative impacts of preferred alternatives.

Alternative	Ecological	Protected Resources and EFH	Socio-economic
Alternative A 2a – Codified Reallocation; to Longline Category based on Historical 68 mt Dead Discard Allowance	O / Ʊ +	O / Ʊ +	Ø + / Ʊ –
Alternative A 3a – Annual reallocation of Bluefin Quota from Purse Seine Category	Ʊ +	O	Ʊ –
Alternative A 4b – Modify Reserve Category	Ʊ +	O	Ø +
Alternative B 1c – Cape Hatteras Gear Restricted Area; Access Based on Performance	Ø +	o	Ø –
Alternative B 1d – Cape Hatteras Gear Restricted Area; Allow Pelagic Longline Vessels to Fish Under General Category Rules	o	Ʊ +	Ʊ +
Alternative B 1f – Small Gulf of Mexico Gear Restricted Area	Ø +	Ʊ +	Ø –
Alternative B 1i – Pelagic and Bottom Longline Transiting Closed Areas	o	o	Ʊ +
Alternative B 2a – Gear Measures (No Action)	o	o	o

Alternative	**Ecological**	**Protected Resources and EFH**	**Socio-economic**
Alternative B 3b – Limited Conditional Access to Closed Areas	o	o	Θ +
Sub-Alternative B 3b – Performance Criteria for Access to Closed Areas	o	o	Θ +
Alternative C 2 – Individual Bluefin Quotas (IBQ) Assumes all preferred sub-alternatives (see Table 2.13 for a complete list)	Ø +	Ø +	Ø –
Alternative C 4b – NMFS Closure of the Pelagic Longline Fishery	O if open ● +, if closed	O if open ● +, if closed	O if open ● – if closed
Alternative D 1b – Enhanced Reporting Measures; VMS Requirements for Purse Seine and Longline Categories	Θ +	o	O / Θ –
Alternative D 2b – Enhanced Reporting Measures; Electronic Monitoring Requirement for Atlantic Tunas Longline Permit Holders	Ø +	o	Ø –
Alternative D 3b - Enhanced Reporting Measures; Automated Catch Reporting	Ø +	o	Θ –
Alternative D 4a- Deployment of Observers (No Action)	o	o	o
Alternative D 5a- Enhanced Reporting Measures; Logbook Requirements (No Action)	o	o	o
Alternative D 6a- Enhanced Reporting Measures; Expand Scope of Large Pelagics Survey (No Action)	o	o	o

Alternative	Ecological	Protected Resources and EFH	Socio-economic
Alternative E 1c- Flexibility for General Category Quota Adjustment	o	o	O/ Θ +/ Θ -
Alternative E 2a – NMFS Authority to Adjust Harpoon Category Retention Limits Inseason (No Action)	o	o	Θ +/ Θ -
Alternative E 3b - Angling Category Trophy Subquota Distribution; Allocate a Portion to the Gulf of Mexico	o	o	o
Alternative E 4a – Change Start Date of Purse Seine Category to June 1	o	o	O / Θ +
Alternative E 5b – Rules Regarding Permit Category Changes	o	o	o
Alternative E 6b – Northern Atlantic Albacore Tuna Quotas; Implement U.S. Quota	Θ +	Θ +	Θ +
Alternative E 7 – Minor Regulatory Changes	o	o	o

6.3 Mitigation and Unavoidable Impacts

Mitigation is an important mechanism that Federal agencies can use to minimize, prevent, or eliminate damage to the human and natural environment associated with their actions. As described in the Center for Environmental Quality regulations, agencies can use mitigation to reduce environmental impact in several ways. Mitigation may include one or more of the following: avoiding the impact by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and compensating for the impact by replacing or providing substitute resources or environments. The mitigation measures discussed in an EIS must cover the range of impacts of the proposal and must be considered even for impacts that by themselves would not be considered "significant." If a proposed action is considered as a whole to have significant effects, all of its specific effects on the environment must be considered, and mitigation measures must be developed where it is feasible to do so. NMFS may consider mitigation provided that the mitigation efforts do not circumvent the goals and objectives of the rulemaking or the mandate to rebuild fisheries under the Magnuson-Stevens Act.

The preferred alternatives are explained in detail in Chapters 2, 4, 5, and in the first part of this Chapter. Alternatives and methods that mitigate adverse impacts on the human environment are discussed below.

6.3.1 Mitigation Measures

The range of alternatives, including the preferred alternatives, would result in a range of ecological and socio-economic impacts. The individual alternatives were identified as preferred because they individually, or in concert with the other preferred alternatives, achieve the objectives, including optimizing fishing opportunity in a balanced manner. Because the cumulative ecological impacts are expected to be moderate beneficial for bluefin and neutral to minor beneficial for other HMS and protected resources, 0ptimization of fishing opportunity is the objective which explicitly relates to consideration of the potential fishing effort, revenue, etc., and mitigating adverse socio-economic impacts. The manner in which the preferred alternatives mitigate adverse socio-economic impacts is discussed below.

The preferred codified reallocation alternative "Reallocation to Longline Category Reflecting the Historical 68 mt Dead Discard Allowance," would mitigate impacts by utilizing a strategy that relies on all quota categories to fully account for landings and dead discards instead of a single quota category to derive quota (i.e., "Reallocation from Purse Seine Category"). Additionally, the preferred alternative would not result in very large changes to the quota category allocations, unlike the alternative "Reallocation Incorporating Recent Catch Data." The annual reallocation alternative mitigates impacts by the flexibility to either reallocate from the Purse Seine category to other quota categories, or not, depending upon the previous year's Purse Seine catch. A combined strategy relying on both permanent and annual reallocation alternatives mitigates impacts by providing a predictable quota system, in contrast to the No Action alternative, which is less predictable. The "Modification to the Reserve Category" alternative would provide additional flexibility and authority to ensure continued availability of quota to all categories, and mitigate potential adverse effects that result from the permanent or annual reallocation alternatives.

The preferred Gear Restricted Area alternatives mitigate impacts because they have less adverse socio-economic impacts than the non-preferred alternatives. The preferred alternatives "Access to Closed Areas Using Pelagic Longline Gear" and "Allow Pelagic Longline Vessels to Fish under General Category Rules" were designed in part, to mitigate impacts of the other preferred alternatives with adverse socio-economic impacts, by providing fishing opportunity that would otherwise be prohibited.

The preferred Bluefin Tuna Quota Control alternative, the IBQ, reduces the likelihood that an individual vessel would be negatively impacted by the fishing behavior of another vessel, and provides flexibility for a vessel to obtain additional quota allocation via leasing. This point is best illustrated by contrasting the non-preferred alternatives: Under a regional or group quota, an individual vessel subject to a regional or group quota would be subject to a prohibition on the use of pelagic longline gear when that quota is attained, regardless of whether the particular vessel had caught any bluefin or not. Under an IBQ, it is less likely an individual vessel would be subject to a broad prohibition on the use of pelagic longline gear, if it had not attained its

individual quota (that situation could occur if there was high uncertainty regarding the status of the overall Longline category quota). The opportunity to lease additional quota allocation mitigates the impact of a situation where a vessel, despite its best intention, catches more bluefin than it can account for (with its quota), and provides an opportunity for additional revenue for vessels in a position to lease the quota allocation. The specific alternatives that set out the rules for the IBQ alternative, such as the "Vessels Eligible to Receive Bluefin Quota Share" and "Bluefin Quota Share Formula," were selected as preferred, in consideration of both their ecological impacts, but also their impacts on individual vessels in order to mitigate potential adverse socio-economic impacts.

The scope of the reporting requirements, including the VMS requirements for Longline and Purse Seine category vessels, electronic monitoring for Longline category vessels, and automated catch reporting for the other commercial categories, was limited in order to mitigate adverse economic impacts while still providing timely data for management purposes. For example, the VMS reporting requirement does not include all species caught and size information, but focuses narrowly on bluefin landings and discards. The electronic monitoring program would be an audit program, designed to work in conjunction with other data sources, instead of as a stand-alone census of all fishing activity, in part to mitigate the costs associated with catch data interpretation.

The "Other Alternatives," including "Provide Additional Flexibility for General Category Quota Adjustment," "Angling Category Trophy Subquota Distribution," and "Change Start Date of Purse Seine Category to June 1" would mitigate some of the potential adverse economic impacts of the other preferred alternatives by providing additional flexibility with the rules applicable to the General, Angling, and Purse Seine categories, respectively.

6.3.2 Unavoidable Adverse Impacts

While there are adverse socio-economic impacts, these impacts are not avoidable, given the need to achieve all the objectives of Amendment 7, the requirements of the Magnuson-Stevens Act, and ICCAT recommendations.

6.3.3 Irreversible and Irretrievable Commitment of Resources

The management measures in many of the preferred alternatives would not result in any irreversible and irretrievable commitment of resources. There are expected to be positive ecological impacts because of the establishment of new management tools and reporting requirements. NMFS has already codified a framework for flexible bluefin management that allows the Agency to open and close the fishery, make in-season adjustment transfers, adjust quotas, etc.

The principal commitment of new resources would be related to implementation of the IBQ program (tracking and monitoring and trading), electronic monitoring (administration, oversight, maintenance, on-going analysis), the VMS requirements (program development and on-going monitoring), and automated catch reporting (program development and on-going monitoring).

Other existing programs such as quota monitoring, and enforcement of closed areas, and the observer program protocols would require less substantial modifications or resources.

7.0 REGULATORY IMPACT REVIEW

The Regulatory Impact Review (RIR) is conducted to comply with Executive Order 12866 (E.O. 12866) and provides analyses of the economic benefits and costs of each alternative to the nation and the fishery as a whole. Certain elements required in an RIR are also required as part of this draft environmental impact statement (DEIS). This RIR builds upon the data and analysis presented in Chapters 4, 5, and 6 of this DEIS. The information contained in Chapter 7, taken together with the data and analysis incorporated by reference, comprise the complete RIR.

The requirements for all regulatory actions specified in EO 12866 are summarized in the following statement from the order:

> *In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits should be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.*

E.O. 12866 further requires Office of Management and Budget review of proposed regulations that are considered to be "significant." A significant regulatory action is one that is likely to:

- 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, local or tribal governments of communities;
- Create serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the president's priorities, or the principles set forth in this Executive Order.

7.1 Description of the Management Objectives

Please see Chapter 1 for a full description of the objectives of Draft Amendment 7 to the 2006 Consolidated HMS FMP and implementing regulations, including proposed fishery management actions. Based on the recent history of the bluefin fishery, NMFS is proposing to amend the 2006 Consolidated HMS FMP in conformance with applicable requirements under the Magnuson-Stevens Act to prevent overfishing, achieve optimal yield, and minimize bycatch to the extent practicable.

NMFS identified the following objectives with regard to the proposed fishery management actions:

- Prevent overfishing and rebuild bluefin tuna, achieve on a continuing basis optimum yield, and minimize bluefin bycatch to the extent practicable by ensuring that domestic bluefin tuna fisheries continue to operate within the overall TAC set by ICCAT consistent with the existing rebuilding plan;
- Optimize the ability for all permit categories to harvest their full bluefin quota allocations; account for mortality associated with discarded bluefin in all categories; maintain flexibility of the regulations to account for the highly variable nature of the bluefin fisheries; and maintain fairness among permit/quota categories;
- Reduce dead discards of bluefin tuna and minimize reductions in target catch in both directed and incidental bluefin fisheries, to the extent practicable;
- Improve the scope and quality of catch data through enhanced reporting and monitoring to ensure that landings and dead discards do not exceed the quota and to improve accounting for all sources of fishing mortality;
- Adjust other aspects of the 2006 Consolidated HMS FMP as necessary and appropriate.

7.2 Description of the Fishery

Please see Chapter 3 for a description of the fisheries that could be affected by these management actions.

7.3 Statement of the Problem

Please see Chapter 1 for a full discussion of the purpose and need for these management actions.

An amendment to the 2006 Consolidated HMS FMP is needed to address bluefin management due to the recent trends and characteristics of the bluefin fisheries and the need to continue to comply with both domestic and international management objectives and obligations. Annual implementation of the existing domestic allocation quota system has become more difficult due to a change in methodology that resulted in increases in estimated bluefin dead discards, a larger percentage of the adjusted quota being landed within certain segments of the fisheries, and changed ICCAT requirements regarding accounting for dead discards and allowable carryforward of unused quota. Public comment has supported the need for substantive changes to the 2006 Consolidated HMS FMP, and it is important to rebuild bluefin, end overfishing, ensure long-term sustainability, and optimize fishing opportunity for all categories in an equitable manner. To achieve the above purpose, NMFS is considering a range of actions designed to reduce and account for dead discards in the pelagic longline fishery, enhance monitoring in all categories, and optimize fishing opportunity in all categories.

7.4 Description of Each Alternative

Please see Chapter 2 for a summary of each alternative and Chapters 4 and 5 for a complete description of each alternative and its expected ecological, social, and economic impacts. Chapter 8 provides additional information related to the economic impacts of the alternatives.

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

Table 7.1 Net Economic Benefits and Costs of Each Alternative

Alternative	Net Economic Benefits	Net Economic Cost
	Allocation	
A 1 - No changes to the current percentages that each quota category is allocated (No Action)	No change in economic benefits.	Insufficient quota to support Longline category operations. Long-term, there could be additional minor to moderate direct adverse economic impacts if other quota categories are closed early in the fishing year.
A 2a - Codified Reallocation to Longline Category Based on Historical 68 mt Dead Discard Allowance (Preferred)	Increased annual revenue potential for the Longline category quota of +$1,036,171.	Reduced annual revenue potential for the following quota categories: General: -$530,520 Harpoon: -$44,763 Purse Seine: -$210,550 Reserve: -$28,184 Angling: -7.36%
A 2b – Codified Reallocation Incorporating Recent Catch Data	Increased annual revenue potential for the following quota categories: Longline: +$1,039,487 Angling: +47.14%	Reduced annual revenue *potential* for the following quota categories: General: -$782,517 Harpoon: -$92,841

Alternative	Net Economic Benefits	Net Economic Cost
		Purse Seine: -$1,395,930 Trap: -$8,289
A 2c – Codified Reallocation from Purse Seine to Longline Category	Increased annual revenue potential for the Longline category quota of +$1,138,960.	Reduced annual revenue potential for the Purse Seine category quota of -$1,138,960.
A 3a - Annual Reallocation of Bluefin Quota from Purse Seine Category (Preferred)	Potentially increase the amount of quota available to other categories if Purse Seine category continues current levels of bluefin landings. Bluefin revenues for other categories could increase by $2.1 million.	Short-term minor economic impacts to the Purse Seine category could occur if a sudden change in effort happened within a year.
A 3b – Annual Purse Seine Allocation Commensurate with the Number of Purse Seine Vessels	Potentially increase the amount of quota available to other categories if Purse Seine category continues current levels of bluefin landings. Bluefin revenues for other categories could increase by $2.3 million.	Similar to A 3a, short-term minor economic impacts to the Purse Seine category could occur if a sudden change in number of purse seine vessels changed within a year.
A 4a - Modifications to Reserve Category (No Action)	No change in economic benefits.	No change in economic costs.
A 4b - Modify Reserve Category (Preferred)	Could result in moderate beneficial economic impacts if unused quota from a previous year could be reallocated to the Reserve category to potentially offset any over-harvests or provide additional opportunities in another category.	No change in economic costs.
Area Based Measures		
B 1a - Gear Restricted Areas (No Action)	No change in economic benefits.	Could result in moderate long-term economic costs if the Longline category exceeds its quota earlier in the fishing year because of dead discards and is required to shut down.
B 1b – Cape Hatteras Gear Restricted Area	Would reduce dead discards and help to extend the fishing year for the Longline category.	Would reduce annual revenue from fishing in the Cape Hatteras Gear Restricted Area by

Alternative	Net Economic Benefits	Net Economic Cost
		$781,000 to $1.18 million depending on the amount of effort redistribution that occurs.
B 1c – Cape Hatteras Gear Restricted Area with Access based on Performance (Preferred)	Would reduce dead discards and help to extend the fishing year for the Longline category.	Would reduce annual revenue from fishing in the Cape Hatteras Gear Restricted Area by $419,000 to $292,000 depending on the amount of effort redistribution that occurs.
B 1d - Allow Pelagic Longline Vessels to Fish under General Category Rules (Preferred)	Could provide increased opportunities for pelagic longline vessels to earn revenues even during a gear restricted area period.	Could result in economic impacts to the General category participants if the General category subquota is met earlier than it would be otherwise.
B 1e – Gulf of Mexico Exclusive Economic Zone (EEZ) Gear Restricted Area	Would reduce dead discards and help to extend the fishing year for the Longline category.	Would reduce annual revenue from fishing in the Gulf of Mexico EEZ Gear Restricted Area by $1.48 million.
B 1f – Small Gulf of Mexico Gear Restricted Area (Preferred)	Would reduce dead discards and help to extend the fishing year for the Longline category.	Would reduce annual revenue from fishing in the Small Gulf of Mexico Gear Restricted Area by $92,000 to $249,000 depending on the amount of effort redistribution that occurs.
B 1g – Gulf of Mexico Gear Restricted Area (year-round)	Would reduce dead discards and help to extend the fishing year for the Longline category in other areas.	Would reduce annual revenue from fishing in the Gulf of Mexico by $6.8 million.
B 2a - Gear Measures *(No Action)*	No change in economic benefits.	No change in economic costs.
B 2b – Authorization of Vessels with a Swordfish Incidental Permit to Use Buoy Gear	Would result in beneficial economic impacts by providing greater flexibility in the gear type that can be used and also by reducing the need to acquire a different permit to use buoy gear.	No change in economic costs.
B 2c – Allow Vessels with a Swordfish Directed or Incidental Permit and an Atlantic Tunas Longline Permit to Retain BAYS and Bluefin when Fishing with	Would result in beneficial economic impacts by increase the potential revenue opportunities by allowing additional species to be landed when using buoy gear, reducing costs associated with discarding, and reducing the	No change in economic costs.

Alternative	Net Economic Benefits	Net Economic Cost
Buoy Gear	costs associated with the potential need to acquire different permits while fishing with buoy gear.	
B 3a – No Action regarding Access to Closed Areas Using Pelagic Longline Gear	No change in economic benefits.	No change in economic costs.
B 3b – Limited Conditional Access to Closed Areas (Preferred)	There would be beneficial economic impacts associated with the added option for vessels to potentially fish in these areas, which could potentially increase landings revenues and decrease fishing costs by providing access to closer and/or more productive fishing areas. The estimated potential increase in annual revenue for pelagic longline vessels could be as high as $1.9 million.	No change in economic costs.
Sub B 3b – Performance Criteria for Access to Closed Areas (preferred)	The benefits would be similar to B 3b but lower given the performance criteria would reduce the number of eligible vessels.	No change in economic costs.
Quota Controls		
C 1 – Bluefin Quota Controls (No Action)	No change in economic benefits.	No change in economic costs.
C 2 - Individual Bluefin Quotas (Preferred)	Vessels that do not often interact with bluefin would likely benefit from the reduced risk of a Longline category closure resulting from the higher bluefin interactions of other vessels in the fleet.	Some vessels would be constrained by the amount of individual quota they are allocated and this could reduce their revenues.
C 2a – Vessels Eligible to Receive Bluefin Allocation		
C 2a.1 - Any Permitted Atlantic Tunas Longline Vessel	More inclusive of all members of the fishery.	There would be economic impacts associated with reduced initial allocation of IBQs to the most active participants in the fishery. The initial allocations would likely be insufficient for many vessel to maintain their current levels

Alternative	Net Economic Benefits	Net Economic Cost
		of fishing activity and they may not be able to find IBQs to lease or have sufficient capital to lease a sufficient amount of IBQs.
C 2a.2 - Active Permitted Atlantic Tunas Longline Vessels (Preferred)	Some inactive Longline category permit holders would not receive an initial allocation.	Allocation of quota shares to a smaller number of active vessels would increase the likelihood that available quota will be sufficient for active vessels.
C 2b – Bluefin Quota Allocations		
C 2b.1 - Equal Quota Shares of Bluefin	Same as C 2.	Would result in reductions in annual landings revenue (without trading) for each of the quota scenarios as follows: 74.8 mt: -$17,756,874 137 mt: -$8,226,602 216.7 mt: -$4,781,027
C 2b.2 - Based on Designated Species Landings	Same as C 2.	Would result in reductions in annual landings revenue (without trading) for each of the quota scenarios as follows: 74.8 mt: -$14,603,622 137 mt: -$9,830,575 216.7 mt: -$6,372,079
C 2 b.3 - Based on Designated Species Landings and the Ratio of Bluefin Catch to Designated Species Landings (Preferred)	Same as C 2.	Would result in reductions in annual landings revenue (without trading) for each of the quota scenarios as follows: 74.8 mt: -$12,704,704

Alternative	Net Economic Benefits	Net Economic Cost
		137 mt: -$8,969,751 216.7 mt: -$5,989,430
C 2b.4 - Regional Designations and Restrictions (Preferred)	This would allow for a lower minimum quota of bluefin to fish in the Atlantic and allow for more fishing activity and thus more fishing revenues per mt of IBQ.	The economic impact of creating these two regional designations would primarily be associated with the larger minimum quota required to fish in the Gulf of Mexico and the restriction from transferring or using Atlantic quota in the Gulf of Mexico. This would reduce the number of potential trading partners for IBQs in the Gulf of Mexico region, thus potentially leading to less available IBQs that could be leased and potentially making it more difficult to find potential trading partners and therefore increasing transaction costs for conducting a lease.
C 2c – Defining the Scope of Trading		
C 2c.1 - Transfer of Quota among Pelagic Longline Vessels Only	Would have short-term minor beneficial economic impacts; those beneficial impacts would be lower than those under sub-alternative C 2c.2.	Costs would be associated with lease costs and other transaction costs.
C 2c.2 - Transfer among Pelagic Longline and Purse Seine Vessels (Preferred)	Would have short-term direct moderate beneficial economic impacts.	Costs would be associated with lease costs and other transaction costs.
C 2d – Duration of Quota Trades		
C 2d.1 - Transferable Quota Allocation (Annual Leasing of Quota) (Preferred)	The ability to lease quota would have beneficial impacts to participants in the fishery by allowing them to increase their quota or sell their unneeded quota.	In the long-term, the annual transaction costs associated with matching lessors and lessees, the costs associated with drafting agreements, and the uncertainty vessel owners would face regarding quota availability would reduce some of the economic benefits associated with leasing.

Alternative	Net Economic Benefits	Net Economic Cost
C 2d.2 - Transferable Quota Share (Sale of Quota)	This alternative would have the same benefits as C 2d.1. In addition, sale of quota share provides a means for vessel owners to plan their business and manage their quota according to a longer time scale than a single year.	In the short-term, there could be issues associated with the price discovery with these new IBQs. This could result in relative adverse economic impacts in the fishing community if participants sell out of the IBQ market in the early years for less than the long-term value of the IBQs.
C 2d.3 - Future Development of Transferable Quota Share *(Sale of Quota)* *(Preferred)*	Similar benefits to alternative C 2d.2 in the long-term.	The uncertainty regarding the implementation timeline may make business planning for vessel owners and IBQ holders more difficult and result in some minor adverse economic impacts.
C 2e – Trade Execution and Tracking		
C 2e.1 - Vessel Owner Executed Trades (Preferred)	Would result in short- and long-term minor beneficial economic impacts resulting from reduced transactions costs.	No change in economic costs.
C 2e.2 - NMFS-Executed trades	No change in economic benefits.	This alternative could result in some minor adverse economic impacts if needed time for additional step of NMFS' review of applications results in increased transactions costs and fewer trades.
C 2f – Vessel and Category Limits on Trading		
C 2f.1 - No Vessel Limits on Quota Allocation Transfers (Preferred)	Would provide flexibility for vessels to purchase quota in a manner that could accommodate various levels of unintended catch of bluefin, and enable the development of a largely unrestricted market.	No change in economic costs.
C 2f.2 - No Category Limits on	Would provide flexibility for vessels to	No change in economic costs.

Alternative	Net Economic Benefits	Net Economic Cost
Quota Allocation Transfers (Preferred)	purchase quota in a manner that could accommodate various levels of unintended catch of bluefin, and enable the development of a largely unrestricted market.	
C 2f.3 - Future Development of Limits on Quota Allocation Transfers (Preferred)	Would reduce the potential for any particular IBQ owner from gaining market power that could distort prices.	Could result in long-term minor adverse economic impacts if the limits cause some vessel owners to not be able to acquire sufficient IBQs for their fishing activity needs.
C 2g – Monitoring and Enforcement of IBQs		
C 2g.1 - VMS Reporting (Preferred)	Would support the implementation of a pelagic longline IBQ. [economic benefit?]	Would result in increased costs associated with VMS reporting.
C 2g.2 - Electronic Monitoring (EM) of Longline Category (Preferred)	Would support the implementation of a pelagic longline IBQ.	Would result in increased costs associated with electronic monitoring. See D 2b.
C 2g.3 - NMFS Extrapolation of Observer Data (Preferred)	This alternative would potentially have short-term minor or neutral indirect beneficial economic impacts by addressing the potential for fishery disruptions if there are issues in the transition to an IBQ monitoring system.	No change in economic costs.
C 2h – Program Evaluation		
C 2h.1 - Program Evaluation after 3 years (Preferred)	No change in economic benefits.	No change in economic costs.
C 2h.2 - Program Evaluation after 5 years	No change in economic benefits.	No change in economic costs.
C 2i – Cost Recovery (Preferred)	No change in economic benefits.	The cost recovery amount would reduce net profits of participants in the IBQ program.
C 2j –Administrative Procedure for Appeals of Quota Shares (preferred)	No change in economic benefits.	No change in economic costs.
C 2k - Implementation of a Control Date in Conjunction with the IBQ Program	May result in short-term economic benefits if it actually discouraged speculative fishing behavior that may have occurred without the	No change in economic costs.

Alternative	Net Economic Benefits	Net Economic Cost
(preferred)	control date.	
C 2l – Measures associated with Quota Controls		
C 2l.1 - *Elimination of Target Catch Requirement (Preferred)*	Would allow increased revenues from bluefin that would have previously been discarded due to the target catch requirement.	No change in economic costs.
C 2l.1b - Mandatory Retention of Legal-Sized Bluefin (dead) *(Preferred)*	Because these fish would be required to be retained, regulatory discards and the waste of fish would be decreased, and it would be more likely that such fish are accurately accounted for, and result in a positive use (marketed, used for scientific information, etc.) resulting in greater economic benefits.	Given that current behavior may be to discard some bluefin in order to optimize landings value of other bluefin, there could be minor adverse economic impacts associated with this alternative since vessel operators would no longer have the option to discard legal-sized bluefin.
C 3a – Regional Quotas	There would be more accountability for those fishing in a particular region, because there would be limits in each region rather than a single limit for the entire category, with no restriction on the relative number of bluefin that could be landed or discarded dead in a particular region. This could allow for longer fishing seasons and greater revenues in regions that are able to stay within their quotas.	Some regions may face chronic shortages of bluefin quota if that region experiences increased fishing effort or bluefin interaction rates. There would likely be less fishing effort under the Regional Quota Control alternative (compared with the No Action alternative) because a few vessels could catch a large number of bluefin, and could cause the closure of the entire area to the use of pelagic longline gear.
C 3b – Group Quotas	The high and medium avoider groups are likely to have adequate quota without risk of an early closure and thus generate greater revenues.	The low avoider group would likely have inadequate quota if the future interaction rate of the vessels is similar to historic levels. The inadequate quota would result in reduced revenues.
C 4a – NMFS Closure of the Pelagic Longline Fishery (No Action)	No change in economic benefits.	No change in economic costs.
C 4b – NMFS Closure of the Pelagic Longline Fishery	No change in economic benefits.	Would result in moderate to major reductions in pelagic longline vessel revenues if closures

Alternative	Net Economic Benefits	Net Economic Cost
(Preferred)		occur early in the year. See Tables 5.23-25.
Enhanced Reporting		
D 1a – VMS Requirements (No Action)	No change in economic benefits.	No change in economic costs.
D 1b – VMS Requirements for the Purse Seine and Longline Categories (Preferred)	No change in economic benefits.	All of the three vessels that are currently authorized to deploy purse seine gear for Atlantic tunas have already installed E-MTU VMS units in compliance with regulations for other Council-managed fisheries, including Northeast Multispecies and/or Atlantic scallop.
D2a – Electronic Monitoring of Longline Category (No Action)	No change in economic benefits.	No change in economic costs.
D 2b –Electronic Monitoring of Longline Category (Preferred)	No change in economic benefits.	First year fixed and variable costs total $875,500 for the fleet.
D 3a - Automated Catch Reporting (No Action)	No change in economic benefits.	No change in economic costs.
D 3b - Automated Catch Reporting (Preferred)	No change in economic benefits.	Adjustments to both the online and IVR systems of the ALRS to implement catch reporting for General, Harpoon, and HMS Charter/Headboat category permit holders are estimated to cost NMFS between $15,000 and $35,000. Annual maintenance would likely cost approximately $8,700 per year, which is the current cost for maintaining the ALRS and the call-in system for reports of other recreational HMS landings.
D 4a - Deployment of Observers (No Action)(Preferred)	No change in economic benefits.	No change in economic costs.
D 4b - NMFS-Funded Observers	No change in economic benefits.	There might be some minor costs to vessel operators with the increased chance that they will be selected for observer coverage and will have to accommodate an observer.

Alternative	Net Economic Benefits	Net Economic Cost
D 5a - Logbook Requirement (No Action) (Preferred)	No change in economic benefits.	No change in economic costs.
D 5b - Logbook Requirement	No change in economic benefits.	Would increase reporting costs for General, Harpoon, and Charter/Headboat category permit holders by approximately $8,263 annually for the fleet. NMFS estimates its logbook program costs could increase by $225,082 per year.
D 6a - Expand the Scope of the Large Pelagics Survey (No Action) (Preferred)	No change in economic benefits.	No change in economic costs.
D 6b - Expand the Scope of the Large Pelagics Survey	No change in economic benefits.	Would result in costs to NMFS from potentially a high of $2.2 million to a lower estimate of $165,000, depending whether the estimate is based on the full funding costs of the Large Pelagics Survey or applying the sampling frame ratio factor.
Other Measures		
E 1a - Modify General Category Time-Period Subquota Allocations (No Action)	No change in economic benefits.	No change in economic costs.
E 1b - Establish 12 Equal Monthly Sub-Quotas	Would allow the General category to remain open year-round and would revise subquotas so that they are evenly distributed throughout the year.	Would potentially decrease General category revenues by $106,000 annually.
E 1c - Provide Additional Flexibility for General Category Quota Adjustment (Preferred)	Similar to Alternative E 1b, could result in a shift in the distribution of quota and thus fishing opportunities to the earlier portion of the year. Would be expected to be neutral to minor beneficial impacts for January fishery participants.	Neutral to minor adverse impacts for participants in the June through December General category fishery.
E 2a - NMFS Authority to	No change in economic benefits.	No change in economic costs.

Alternative	Net Economic Benefits	Net Economic Cost
Adjust Harpoon Category Retention Limits Inseason (No Action)		
E 2b - NMFS Authority to Adjust Harpoon Category Retention Limits Inseason (Preferred)	Potential beneficial economic impacts are possible if a lower limit at the beginning of the season results in the Harpoon category quota lasting longer into the season, as the average price per pound is generally higher in July and August than it is in June.	Would be minor short-term direct adverse economic impacts that would depend on availability of large mediums to Harpoon category vessels on a per trip basis and the actual retention limit that NMFS sets inseason.
E 3a - Angling Category Trophy Subquota Distribution (No Action)	No change in economic benefits.	No change in economic costs.
E 3b - Allocate a Portion of the Trophy South Sub-Quota to the Gulf of Mexico (Preferred)	Would be minor, short-term, direct, beneficial social impacts to a small number of vessels in the Gulf of Mexico given the small amount of fish that would be allowed to be landed (as well as indirect beneficial economic impacts for charter vessels), but the perception of greater fairness among southern area participants may result in indirect, longer-term, beneficial, social impacts.	Would be minor, short-term, direct and indirect adverse social impacts (and economic impacts for charter vessels) for those outside the Gulf of Mexico as the perceived opportunity to land a trophy bluefin may be diminished.
E 4a – Change Start Date of Purse Seine Category to June 1 (No Action)	Would be minor neutral to beneficial for fishermen in other categories due to reduced actual or perceived gear conflict from June 1 through July 14.	Would be minor and neutral to adverse for purse seine fishery participants.
E 4b – Change Start Date of Purse Seine Category to June 1(Preferred)	Economic impacts to purse seine operators would be expected to be direct and neutral to moderate and beneficial depending on availability of schools of bluefin for purse seine operators to decide to make a set on and market conditions.	No change in economic costs.
E 5a - Rules Regarding Permit	No change in economic benefits.	No change in economic costs.

Alternative	Net Economic Benefits	Net Economic Cost
Category Changes (No Action)		
E 5b - Modify Rules Regarding Permit Category Changes (Preferred)	There would be some minor economic benefits by increasing the flexibility associated with permit category changes.	No change in economic costs.
E 6a - Northern Atlantic Albacore Tuna Quota (No Action)	No change in economic benefits.	No change in economic costs.
E 6b - Implement U.S. Northern Atlantic Albacore Tuna Quota (Preferred)	No change in economic benefits.	If either the U.S. quota is reduced as part of a new TAC recommendation or catches increase above the current adjusted U.S. quota, there could be adverse impacts resulting from reduced future fishing opportunities and ex-vessel revenues.
E 7b – Minor Regulatory Changes (Preferred)	No change in economic benefits.	No change in economic costs.
E 8b - Pelagic and Bottom Longline Transiting Closed Areas (Preferred)		

7.6 Conclusions

As noted above 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 legal mandates, the President's priorities, or the principles set forth in the Executive Order; or, (4) raise novel legal or policy issues arising out of legal mandates, the president's priorities, or the principles set forth in this Executive Order. The preferred alternatives described in this document do not meet the above criteria. The preferred alternatives would have an annual effect on the economy less than $100 million and would not adversely affect the aforementioned parameters (see Table 7.1). The preferred alternatives would also not create an inconsistency or interfere with an action taken by another agency. Furthermore, the preferred alternatives would not materially alter the budgetary impact of entitlements, grants, user fees, the President's priorities, or the principles set forth in E.O. 12866. Nor would the proposed regulations raise any unique legal or policy issues. The Secretary, through NMFS, has managed Atlantic HMS since 1990. In addition, NMFS has participated in international efforts to develop management measures for stocks affected by multiple nations. The preferred alternatives and other alternatives do not materially depart from this management approach. Therefore, under E.O. 12866, the preferred alternatives described in this document have been determined to be not significant for the purposes of E.O. 12866. The Office of Management and Budget (OMB) concurred with this determination provided in the listing memo for this proposed rule. A summary of the expected net economic benefits and costs of each alternative, which are based on supporting text in Chapters 4 and 5, can be found in Table 7.1.

8.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS

The Initial Regulatory Flexibility Analysis (IRFA) is conducted to comply with the Regulatory Flexibility Act (5 USC 601 et. seq.) (RFA). The goal of the RFA is to minimize the economic burden of federal regulations on small entities. To that end, the RFA directs federal agencies to assess whether the proposed regulation is likely to result in significant economic impacts to a substantial number of small entities, and identify and analyze any significant alternatives to the proposed rule that accomplish the objectives of applicable statutes and minimizes any significant effects on small entities. Certain data and analysis required in an IRFA are also included in other chapters of this DEIS. Therefore, this IRFA incorporates by reference the economic analyses and impacts in Chapter 6 of this DEIS and the summary information in Chapter 7.

8.1 Description of the Reasons Why Action is Being Considered

Please see Chapter 1 for a description of the need for these proposed management actions. An amendment to the 2006 Consolidated HMS FMP is needed to address bluefin tuna management due to the recent trends and characteristics of the bluefin fishery and the need to continue to comply with both domestic and international management objectives and obligations. Annual implementation of the existing domestic allocation quota system has become more difficult due to a change in calculation methodology that resulted in increases in calculated bluefin dead discards, a larger percentage of the adjusted quota being landed within certain segments of the fishery, and changed ICCAT requirements regarding accounting for dead discards and allowable carryforward of unused quota. Public comment has supported the need for substantive changes to the 2006 Consolidated HMS FMP, and it is important to rebuild the fishery, end overfishing, ensure long-term sustainability, and optimize fishing opportunity for all categories in an equitable manner. To achieve the above objectives, NMFS is considering a range of actions designed to reduce dead discards and account for dead discards in the pelagic longline fishery, enhance reporting and monitoring in all categories, and optimize fishing opportunities in all categories.

Addressing the specific objectives listed below directly supports achievement of the more broad goals of the Consolidated HMS FMP including: To prevent overfishing of Atlantic tunas, rebuild overfished Atlantic HMS stocks, monitor and control all components of fishing mortality so as to ensure long-term sustainability of the stocks and promote Atlantic wide stock recovery, minimize bycatch, manage for continuing optimum yield so as to provide the greatest overall benefit to the Nation, minimize to the extent practicable adverse social and economic impacts, provide a framework to take necessary action under ICCAT recommendations, and simplify HMS management and regulatory requirements to assist the regulated community.

8.2 Statement of the Objectives of, and Legal Basis for, the Proposed Rule

Please see Chapter 1 for a full description of the objectives of the draft amendment to the 2006 Consolidated HMS FMP and implementing regulations, including proposed fishery management actions. The purpose of the proposed action is to manage the Atlantic HMS resources in a manner that maximizes resource sustainability and fishing opportunity, while minimizing, to the greatest extent possible, the socioeconomic impacts on affected fisheries.

NMFS identified the following objectives with regard to the proposed fishery management actions:

- Prevent overfishing and rebuild bluefin tuna fishery, continue to achieve optimal yield;
- Minimize bycatch to the extent practicable;
- Optimize the ability for all permit categories to harvest their full bluefin quota allocations; account for mortality associated with discarded bluefin in all categories; maintain flexibility of the regulations to account for the highly variable nature of the bluefin fishery; and maintain equity among permit/quota categories;
- Reduce dead discards of bluefin and other non-target stocks and minimize reductions in target catch in both directed and incidental bluefin fisheries, to the extent practicable;
- Improve the scope and quality of catch data through enhanced reporting and monitoring to ensure that landings and dead discards do not exceed the quota and to improve accounting for all sources of fishing mortality;
- Adjust other aspects of the 2006 Consolidated HMS FMP as necessary and appropriate.

The legal basis for this proposed rule stems from the dual authority of the Magnuson-Stevens Act and ATCA. Under the Magnuson-Stevens Act, the National Marine Fisheries Service (NMFS) must, consistent with ten National Standards, manage fisheries to maintain optimum yield (OY) by rebuilding overfished fisheries and preventing overfishing. Under ATCA, NMFS is authorized to promulgate regulations, as may be necessary and appropriate to carry out binding recommendations of the International Commission for the Conservation of Atlantic Tunas (ICCAT). Additionally, any management measures must 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).

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

This proposed rule is expected to directly affect commercial and for-hire fishing vessels that possess an Atlantic Tunas permit or Atlantic HMS Charter/Headboat permit. In general, the HMS Charter/Headboat category permit holders can be regarded as small businesses, while HMS Angling category permit holders are typically obtained by individuals who are not considered small entities for purposes of the RFA. The Small Business Administration has established size criteria for all major industry sectors in the U.S. including fish harvesters. A business involved in fish harvesting is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $4.0 million (NAICS code 114111, finfish fishing) for all its affiliated operations worldwide. In addition, the Small Business Administration (SBA) has defined a small charter/party boat entity (NAICS code 713990, recreational industries) as one with average annual receipts of less than $7.0 million.

The average annual revenue per active pelagic longline vessel is estimated to be $181,000 based on the 161 active vessels between 2006 and 2011 that produced an estimated $29.2 million in revenue annually. The maximum annual revenue for any pelagic longline vessel during that time

period was less than $1.4 million, well below the SBA size threshold of $4.0 million. Therefore, NMFS considers all Tuna Longline category permit holders to be small entities. NMFS is unaware of any other Atlantic Tunas category permit holders that potentially could earn more than $4.0 million in revenue annually. Therefore, NMFS considers all Atlantic Tunas permit holders subject to this rulemaking to be considered small entities. NMFS is also unaware of any charter/headboat businesses that could exceed the SBA thresholds for small entities.

The proposed rule would apply to the 4,361 Atlantic Tunas permit holders based on an analysis of permit holders in October 2012 (NMFS 2012). Of these permit holders, 253 have Longline category permits, 13 have Harpoon category permits, 8 have Trap category permits, 3 have Purse Seine category permits, and 4,084 have General category permits.

The recreational and reporting measures would also impact HMS Angling category and HMS Charter/Headboat category permit holders. In 2012, 4,129 vessel owners obtained HMS Charter/Headboat category permits. It is unknown what portion of these permit holders actively participate in Atlantic HMS fishing or market fishing services for recreational anglers.

NMFS has determined that the proposed rule would not likely directly affect any small government jurisdictions. More information regarding the description of the fisheries affected, and the categories and number of permit holders can be found in Chapter 3.

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

Several of the preferred alternatives in Draft Amendment 7 would result in reporting, record-keeping, and compliance requirements that require a new Paperwork Reduction Act filing and some of the preferred alternatives would modify existing reporting and record-keeping requirements, and add compliance requirements. NMFS estimates that the number small entities that would be subject to these requirements would include the Longline category (253), Charter/Headboat category (4,129), General category (4,084), Harpoon category (13) and Purse Seine category (3), based on the number of permit holders in commercial bluefin tuna fishing categories in 2012.

Area-Based Alternatives

Currently, pelagic longline vessels must have agency approved E-MTU VMS units installed and must use them to hail in and out of port prior to and at the end of a fishing trip. The Area-based preferred alternatives that include conditional access (i.e., based on performance metric criteria) to certain pelagic longline closed areas (Alternative B3b) or the Cape Hatteras Gear Restricted Area (Alternative B1c) would require that pelagic longline vessels authorized to fish in the areas also submit daily reports to NMFS via E-MTU VMS summarizing their fishing effort, and bluefin tuna catch and harvest. The additional reporting burden is expected to take five minutes per report/day at a cost of $0.12 per report. This data will allow NMFS to determine whether continued access to the areas is warranted based on bluefin tuna interaction rates, among other

things. Pelagic longline vessels granted conditional access to certain currently closed areas would also be required to have an observer onboard for any trips into the closed areas. Such observer coverage would be consistent with the current selection criteria and policies, and would not be an additional compliance burden.

Pelagic longline vessels that are not granted conditional access to the Cape Hatteras Gear Restricted Area would be prohibited from fishing in the area with pelagic longline gear, which is an additional compliance burden. They could choose to fish in the area with other authorized gear under General category rules, and would be required to declare their intent to fish in this way, hail in and out of port, and report their daily catch of bluefin tuna via E-MTU VMS. This reporting burden is expected to be approximately 5 minutes per report at a cost of $0.12 per report.

NMFS would calculate performance metrics for each pelagic longline vessel to determine whether they qualify to gain access to closed or gear restricted areas. These metrics would be based on the vessel's historical catch and reporting compliance. Pelagic longline permit holders would be permitted to appeal their performance metrics by submitting a written request, indicating the reason for the appeal, and providing supporting documentation (e.g., copies of landings records, permit ownership, etc.). Each request is expected to take approximately two hours to compile.

Quota Control Alternatives

The preferred alternatives for bluefin tuna quota controls would include several new reporting requirements necessary to implement individual bluefin quotas for pelagic longline vessels. Some of these new requirements are also addressed under the alternatives in other sections of this document.

The alternatives in this section include options for assigning individual quota shares. Preferred alternative C2j would implement a process for individuals to appeal their quota share. Individuals would be required to submit a written request for an appeal, and include the reason for appeal and supporting documentation. The reporting burden associated with each appeal is expected to be approximately two hours.

Preferred alternative C2c2 would authorize transfer of quota among pelagic longline and purse seine vessels. To support tracking of quota transfers among vessels and establish a tracking system for purchase of bluefin tuna under the IBQ system, preferred alternative C2e1 would require vessel owners to track and execute transfers via an online electronic system supported by NMFS. By the very nature of the reporting system, participants would be required to have access to computers and the Internet. If a participant does not have current access to computers and the Internet, he/she may have to expend approximately $1,500 for computer equipment (one-time cost) and $300 annual cost for Internet access. Participants would need some basic computer and Internet skills to input information for bluefin tuna trade into the IBQ electronic reporting system. The record-keeping and reporting burden for vessel owners is expected to be approximately 15 minutes per trade. The electronic system would also require interaction with federal bluefin tuna dealer permit holders that purchase IBQ bluefin; however, electronic dealer

reporting for bluefin tuna purchases was previously analyzed and approved by NMFS in the 2006 Consolidated HMS FMP rulemaking (71 FR 58058, October 2, 2006).

An IBQ system for bluefin demands a high degree of accountability for providing accurate data on catch and harvest. Preferred alternative C2g2 (same as D2b) would require pelagic longline vessels to install an electronic monitoring system, including video cameras and associated recording and monitoring equipment in order to record all longline catch and relevant data regarding pelagic longline gear deployment and retrieval. Data collected during each fishing trip would be required to be provided to NMFS, and stored and available to NMFS for at least 120 days after each trip. This alternative would require both fixed and variable costs over the service life of each camera installed onboard. The cost of an electronic system bought in 2010, over its five year projected lifespan, is about $3,565 a year. This includes 4% of the purchase price for maintenance costs and a 7% interest rate on the loan to buy a system (National Observer Program, 2013). The variable costs for vessel owners include data retrieval ($45/hour; 2 hr per trip; technician travel ($0.5/mile; 100 miles for each trip); fishing activity interpretation ($47/hour; 0.25 hr/trip); and catch data interpretation ($47/hour; 1.5 hr/trip). The estimated total variable costs would be approximately $ 225 per trip and the annual fixed costs would be $ $ 3,835 for the purchase and installation of the equipment, and six services per year; $45/hour; 1 hr six times per year).

Preferred alternative C2g1(same as D1b) would require pelagic longline vessels to use their E-MTU VMS to submit daily reports of bluefin tuna catch and harvest and fishing effort. Purse seine vessels would be required to purchase and install E-MTU VMS units, and submit daily reports of catch, harvest, and effort as well. This alternative would provide more timely data as required by the IBQ system than the current pelagic longline logbook program and dealer reporting requirements. As noted above, the additional reporting burden for the VMS reports is 5 minutes per report/day and $0.12 per report. The cost of installing E-MTU VMS is $3300 per vessel and daily position reports cost approximately $1.44 per day.

Several alternatives include additional compliance requirements without additional reporting. Preferred alternative C21.2b would require mandatory retention of all legal-sized dead bluefin tuna caught on pelagic longline gear. Preferred alternative C4b would allow NMFS to prohibit fishing using pelagic longline gear once the bluefin tuna quota is reached. Conversely, preferred alternative C21.1b would decrease compliance by repealing target catch requirements for pelagic longline vessels.

After 3 years of IBQ program implementation, preferred alternative C2h1 would require NMFS to prepare a report summarizing and evaluating the experiences of the program to date.

Lastly, this action also proposes two preferred alternative that would have additional reporting requirements, one of which would be implemented under separate rulemaking. The first alternative would change the participation of Charter/Headboat and General category permit holders in the observer program from voluntary to mandatory. Observer-related reporting for Charter/Headboat and General category participants would likely be limited to notification of intent to fish or providing a projected schedule of possible future trips. The second preferred alternative, which would be implemented via future rulemaking is a cost recovery program for

management and enforcement costs associated with the proposed IBQ program (Preferred alternative C2i). Once this issue is addressed via a subsequent regulatory action, NMFS would update/ modify current record-keeping, and compliance requirements that could require new Paperwork Reduction Act filings, but will not do so in this rulemaking.

Enhance Reporting Measures

Several preferred alternatives are identified as measures to enhance reporting for bluefin tuna. Three of these include the VMS requirements (C2g1 and D1b), and electronic monitoring of the Longline category (C2g2 and D2b), discussed above. The last is the preferred alternative to require automated catch reporting for General, Harpoon, and Charter/Headboat permit categories (D3b). This alternative would require individuals with those vessel permits to report their catch (i.e. landings and discards) after each trip using an automated system such as a website or phone recording system. NMFS estimates that each report will take approximately 5 minutes. Based on previous years' landings, NMFS estimates that the total annual reporting burden will be approximately 607 hours and could affect approximately 8,226 permit holders.

Other Measures

The other preferred alternatives which are outlined in Chapter 2 would change quota allocations, timeframes for General category subquota allocations, permit category changes, and Purse seine start date, authorized gear types, and other management measures, but would not increase reporting or compliance requirements.

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

Fishermen, dealers, and managers in these fisheries must comply with a number of provisions in international agreements as implemented, domestic laws, and other FMPs. These include, but are not limited to, the Magnuson-Stevens Act, ATCA, the High Seas Fishing Compliance Act, the Marine Mammal Protection Act, Endangered Species Act, the National Environmental Policy Act, the Paperwork Reduction Act, and the Coastal Zone Management Act. The proposed rule would not conflict with any relevant regulations, federal or otherwise.

8.6 Description of Any Significant Alternatives to the Proposed Rule That Accomplish the Stated Objectives of the Applicable Statutes and That Minimize Any Significant Economic Impact of the Proposed Rule on Small Entities

One of the requirements of an IRFA is to describe any alternatives to the proposed rule which accomplish the stated objectives and which minimize any significant economic impacts. These impacts are discussed below and in Chapters 4 and 5 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:

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

In order to meet the objectives of this proposed rule, consistent with all legal requirements, NMFS cannot exempt small entities or change the reporting requirements only for small entities because all the entities affected are considered small entities. Thus, there are no alternatives discussed that fall under the first and fourth categories described above. Under the third category, "use of performance rather than design standards," NMFS considers Alternative B 1c "Cape Hatteras Gear Restricted Area with Access based on Performance", Alternative C 2 "IBQs Based on Designated Species Landings and the Ratio of Bluefin Catch to Designated Species Landings", and B 3b "Limited Conditional Access to Closed Areas using Pelagic Longline Gear Based on Performance Criteria" to all be alternatives that use performance standards. As described below, NMFS analyzed several different alternatives in this proposed rulemaking and provides the rationale for identifying the preferred alternatives to achieve the desired objective.

In this rulemaking, NMFS considered five different categories of bluefin management measures, each with its own range of alternatives that would meet the objectives of the Magnuson-Stevens Act and the 2006 Consolidated HMS FMP. The first category, allocation alternatives, covers four main alternatives that address various quota reallocation strategies. The second category of alternatives, area based alternatives, explores various gear restricted areas, gear measures, and access to closed areas using pelagic longline gear. The third category of alternatives, bluefin tuna quota controls, covers four main alternatives, which include IBQs, regional and group quotas, and closure of the pelagic longline fishery. The fourth category of alternatives, enhanced reporting measures, covers six main alternatives, which include VMS requirements, electronic monitoring of the Longline category, automated catch reporting, deployment of observers, logbook requirements, and expanding the scope of the Large Pelagics Survey. The fifth category of alternatives, other measures, covers seven main alternatives that address other Tunas permit categories besides Longline and other tuna quotas. The expected economic impacts of the different alternatives considered and analyzed are discussed below.

The potential impacts that these alternatives may have on small entities have been analyzed and are discussed in the following sections. The economic impacts that would occur under these preferred alternatives were compared with the other alternatives to determine if economic impacts to small entities could be minimized while still accomplishing the stated objectives of this rule.

8.6.1 Allocation Alternatives

The allocation alternatives would modify the current base allocations for bluefin quota categories (i.e., percentages of the U.S. quota), either permanently or on an annual basis.

Alternative A 1 – No Action

The No Action alternative would make no changes to the current percentages that each quota category is allocated (General: 47.1 percent; Harpoon: 3.9 percent; Purse Seine: 18.6 percent; Longline: 8.1 percent; Trap: 0.1 percent; Angling: 19.7 percent; Reserve: 2.5 percent). Dead discards would continue to be accounted for separately from the quota allocations through the annual specification process.

In the short-term, minor to moderate direct adverse economic impacts are likely to be limited to the Longline category due to quota shortages. In 2012, NMFS projected that the Longline category was likely to fully harvest their allocated quota before the end of the fishing year, and closed the southern area on May 29, 2012 (77 FR 31546) and the northern area on June 30, 2012 (77 FR 38011, June 26, 2012). In 2013, the Longline category northern and southern areas were closed on June 25 (78 FR 36685) because the adjusted quota had been reached. In the long-term, there could be additional minor to moderate direct adverse economic impacts if other quota categories are closed early in the fishing year.

Alternative A 2 – Permanent Reallocation

The permanent reallocation alternatives would reallocate quota and result in increased bluefin quota for the Longline category, and would therefore alleviate some of the current challenges associated with the domestic quota system.

A permanent reallocation of the 68 mt based on the historical dead discard allowance under preferred Alternative A 2a, would result in 83.56% increase in the Longline category quota and a decrease of a bit over 7% for the following categories: General, Harpoon, Purse Seine, Angling, and Reserve. The permanent reallocation of 68 mt based on the historical dead discard allowance would increase the potential revenue from bluefin for the Longline category by approximately $11,263 per permit holder per year. The General category would face a potential reduction in the maximum revenue from bluefin of approximately $896 per permit holder per year. The Harpoon category would face a potential reduction in the maximum revenue from bluefin of approximately $2,355 per permit holder per year. The Purse Seine category could face a potential reduction in the maximum revenue from bluefin of approximately $105,275 per permit holder per year. Although the magnitude of revenue loss appears to be high for the Purse Seine category, this alternative would likely have minor adverse economic impacts on Purse Seine fishermen since landings in this category have recently been very low.

Alternative A 2b would permanently revise the quota allocations for all categories to reflect recent catch. Reallocating the quota based on recent catch data would result in 83.56% increase in the Longline category quota and an increase in Angling category of 47.1%. However, this reallocation alternative would result in a decrease in the quotas of the General, Harpoon, Purse Seine, Trap, and Reserve categories of 10.85%, 15.56%, 49.01%, 55.56%, and 48.05%, respectively. Revising the quota allocations for all categories to reflect recent catch would increase the potential revenue from bluefin for the Longline category by approximately $11,299 per permit holder per year. The General category could face a potential reduction in the maximum revenue from bluefin of approximately $1,321 per permit holder per year. The Harpoon category could face a potential reduction in the maximum revenue from bluefin of approximately $4,886 per permit holder per year. The Purse Seine category could face a

potential reduction in the maximum revenue from bluefin of approximately $697,965 per permit holder per year.

Alternative A 2c would permanently reallocate two-fifths of the Purse Seine category to the Longline category and would result in 91.84% increase in the Longline category quota and a decrease the Purse Seine quota by 39.99%. The permanent reallocation of two-fifths of the Purse Seine category to the Longline category would increase the potential revenue from bluefin for the Longline category by approximately $12,380 per permit holder per year. The Purse Seine category could face a potential reduction in the maximum revenue from bluefin of an equivalent $569,480 per permit holder per year. The other bluefin quota categories would not be impacted by this alternative.

Alternative A 3 – Annual Reallocation

Annual reallocation Alternatives A 3a and A 3b would reallocate anticipated unused quota from the Purse Seine category to other quota categories or would allocate to the Purse Seine category in proportion to the number of permitted vessels (respectively).

Under alternative A 3a, the preferred alternative, NMFS would reallocate the Purse Seine category bluefin quota that is projected to be unused (based on the previous year's landings and dead discards), from the Purse Seine category to other quota categories, including the Reserve category, on an annual basis. In recent years, little of the Purse Seine category quota has been landed. If that continues into the future, under alternative A 3a, the Purse Seine quota could be reduced by 75 percent. The 128.8 mt associated with that reduction would reduce the maximum revenue from bluefin that the purse seine vessel could land by $700,000 annually. However, given the recent bluefin landings history of the purse seine fleet, it is unlikely that future bluefin landings would be constrained substantially by this reduction and allocations would be re-evaluated on an annual basis. Therefore, alternative A 3a would likely only result in minor direct adverse short-term economic impacts to the Purse Seine category. Other categories would benefit from the potential of increased revenue, and this alternative may provide a better business planning environment for NMFS and fishermen by alleviating the large reservoir of unused Purse Seine quota and distributing it prior to the start of the fishing and management season.

Under alternative A 3b, NMFS would allocate annual quota to the Purse Seine category commensurate with the number of permitted Purse Seine vessels. The economic impacts of this alternative would be similar to those under alternative A 3a. Alternative A 3b would also likely only result in minor direct adverse short-term economic impacts resulting from the loss of potential revenue if current bluefin fishing levels remain the same.

Alternative A 4 – Modifications to Reserve Category

Under the alternative A 4a, the No Action alternative, there would be no changes to the allocation to the Reserve category or the determination criteria that are considered prior to making any adjustments to/from this category. This alternative would not impact small entities.

Alternative A 4b, the preferred alternative, would increase the amount of quota that may be put into the Reserve category and increase the potential uses of Reserve category quota. Specifically, it would potentially increase the Reserve category quota beyond the current baseline allocation of 2.5 percent and broaden the determination criteria considered in making adjustments to/from the Reserve category. This could result in moderate beneficial economic impacts if unused quota from a previous year could be reallocated to the Reserve category to potentially offset any overharvests in another category, consistent with ICCAT recommendations on carry-forward of unharvested quota.

8.6.2 Area Based Alternatives

Alternative B2 – Gear Restricted Areas

Under alternative B 1, NMFS considered a range of gear restricted area alternatives from maintaining existing pelagic longline closures (the no action alternative) to a year- round gear restricted area of the entire Gulf of Mexico EEZ (west of 82º longitude) in order to reduce interactions with bluefin tuna.

Alternative B 1a, the No Action Alternative, would result in the status quo regarding gear restricted areas. Although the current pelagic longline closed areas would remain effective, the data indicate that large numbers of interactions of pelagic longline gear with bluefin occur in consistent areas during predictable time periods, which are outside of the current closed areas. The No Action alternative would not reduce dead discards. The magnitude of the discards in the pelagic longline fishery is more likely to stay the same or increase under the No Action alternative, without implementation of a new gear restricted area. This could result in moderate long-term adverse economic impacts when the Longline category exceeds its quota earlier in the fishing year because of dead discards and is required to shut down.

Alternative B 1b would define a modified rectangular area in the Atlantic and would prohibit the use of pelagic longline gear during a five-month period from December through April. The specific time and area of the Cape Hatteras Gear Restricted Area represents a time and area combination likely to result in reduced bluefin interactions based on past patterns of interactions. NMFS tailored the Cape Hatteras Gear Restricted Area to maximize the reductions in bluefin interactions while minimizing the area restricted to pelagic longline gear. This alternative is expected to have moderate short and long-term direct adverse economic impacts on 43 vessels that have historically fished in the Cape Hatteras Gear Restricted Area during the months of December through April. The average annual revenue per vessel made in the gear restricted area is approximately $27,400 annually during the restricted months assuming that fishing effort does not move to other areas. However, it is likely that some of the vessels that would be impacted by this gear restricted area would be able to redistribute their effort to other fishing areas. NMFS estimated that if a vessel historically made less than 40% of their sets in the gear restricted area, it would likely redistribute all of its effort. If a vessel made more than 40%, but less than 75% of its sets in the gear restricted area, it would likely redistribute 50% of its effort impacted by the gear restricted area to other areas. Finally, if a vessel made more than 75% of its sets solely within the gear restricted area, NMFS assumed it would not likely shift its effort to other areas.

Based on these redistribution assumptions, the net impact of the Cape Hatteras Gear Restricted Area on fishing revenues after redistribution of effort is estimated to be $18,000 per year.

Alternative B 1c, a preferred alternative, would use the same area off Cape Hatteras, North Carolina as in Alternative B 1b, and would define criteria for access by HMS permitted vessels fishing with pelagic longline gear during the five-month period from December through April. Vessels that are determined by NMFS to have relatively low rate of interactions with bluefin based on past performance, and that are compliant with reporting and monitoring requirements, would be allowed to fish in the area using pelagic longline gear. Vessels that have demonstrated an inability to avoid bluefin would not be allowed to fish with pelagic longline gear in this area; or if a vessel can avoid bluefin, but has poor compliance with logbook reporting and POP observer requirements, it would not be allowed to fish with pelagic longline gear in this area, from December through April. Individual vessel data would be evaluated annually for the purpose of determining access, in order to provide future opportunities and accommodate changes in fishing behavior, both positively and negatively, based on performance. Based on the proposed performance criteria, NMFS determined that, of 161 active vessels in the entire pelagic longline fleet, 43 vessels fished in the Cape Hatteras Gear Restricted Area or buffer region. Of these 43 active vessels, 18 vessels that fished in the Cape Hatteras Gear Restricted Area or buffer region did not meet the criteria for access based on their inability to avoid bluefin tuna, and/or compliance with POP observer and logbook reporting requirements. The average annual revenue made in the gear restricted area by these 18 vessels is approximately $23,000 per vessel during the restricted months. However, it is likely that some of the vessels that would be impacted by this gear restricted area would be able to redistribute their effort to other fishing areas. The net impact of Alternative B 1c on fishing revenues after redistribution of effort is estimated to be $16,000 per vessel per year for those 18 vessels.

Alternative B 1d, a preferred alternative, would allow vessels with an Atlantic Tunas Longline permit to fish under the rules/regulations applicable to the General category as they pertain to targeting bluefin using non pelagic longline-gear (gear authorized under the General category, including rod and reel, handline, harpoon, etc.), in the area defined as the Cape Hatteras Gear Restricted Area, during the time of the restriction (December through April), when the General category fishery is open. The bluefin landed with authorized handgear would be counted against the General category quota. The amount of bluefin landings allowed under this alternative would be limited by the available General category subquotas for December and for January. Alternative B 1d would result in short-term, direct, minor, beneficial economic impacts for Longline category fishermen that otherwise would not be able to fish for bluefin in the Cape Hatteras Gear Restricted Area. It would result in short-term, direct, minor, adverse economic impacts for General category participants to the extent that any Longline category vessel landings of bluefin under General category rules results in the available subquota being met earlier than it would otherwise. A loss or gain of one fish is approximately $3,500. If a Longline category vessel chooses to fish with General category gear in the Cape Hatteras Gear Restricted Area versus outside the area with pelagic longline gear, the ability to land and sell bigeye, albacore, yellowfin, and skipjack from that area would result in short-term, direct, minor, beneficial economic impacts, although substantially less so than continuing to use longline gear, which accounts for a much larger proportion of catch of bigeye, albacore, and yellowfin tuna than does handgear. If other alternatives, such as annual reallocation from the Purse Seine

category (A3a) or provide additional flexibility for General category quota adjustment (E1c) are implemented, adverse economic impacts for General category participants may be reduced.

Alternative B 1e would prohibit the use of pelagic longline gears in the Gulf of Mexico (GOM) for 3 months each year. This alternative is expected to have moderate short and long-term direct adverse economic impacts on 66 vessels that have historically fished in the Gulf of Mexico EEZ during the months of March through May. The average annual revenue from fishing sets made in the gear restricted area is approximately $22,000 per vessel during the closure months. Based on historical fishing patterns of vessels that fish in the Gulf of Mexico, it is unlikely that effort will be redistributed into areas outside of this region.

Alternative B 1f, a preferred alternative, would define a rectangular area in the Gulf of Mexico and prohibit the use of pelagic longline gear during the two-month period from April through May. NMFS tailored the Small Gulf of Mexico Gear Restricted Area to maximize the reductions in bluefin interactions while minimizing the area where pelagic longline gear use is restricted. This alternative is expected to have moderate short and long-term direct adverse economic impacts on 34 vessels that have historically fished in the Small Gulf of Mexico Gear Restricted Area during the months of April and May. The average annual revenue from fishing sets made in the gear restricted area is approximately $7,000 per vessel during the restricted months. However, it is likely that some of the vessels that would be impacted by this gear restricted area would be able to redistribute their effort to other fishing areas within the Gulf of Mexico. The net impact of the Small Gulf of Mexico Gear Restricted Area on fishing revenues after redistribution of effort is estimated to be $2,700 per vessel per year.

Alternative B 1g would prohibit the use of pelagic longlines in the same area as in the Gulf of Mexico EEZ Gear Restricted Area (i.e., anywhere in the Gulf of Mexico), year-round. This alternative is expected to have moderate short and long-term direct adverse economic impacts on 69 vessels that have historically fished in the Gulf of Mexico EEZ. The average annual revenue from fishing in the gear restricted area is approximately $98,000 per vessel.

Under alternative B 1h, the No Action alternative, those HMS permitted vessels that possess longline gear, inclusive of both pelagic longline and bottom longline, would not be allowed to enter the existing longline closed areas, even for purposes of transiting the area. This measure would also apply to the Gear Restricted Area areas if finalized, as warranted. Instead, the vessels must go around these closed areas to remain in compliance with the current regulations. As there are a number of time/area closures for vessels possessing pelagic and bottom longline gear and the current regulations do not provide longline vessels the ability to stow their gear and transit the areas, this alternative would result in direct minor adverse economic impacts by potentially requiring vessels to use more fuel and time in taking indirect routes to and from the fishing grounds. This restriction has also raised safety-at-sea concerns due to the increased and indirect transit times.

Alternative B 1i, a preferred alternative, would allow HMS vessels that possess bottom or pelagic longline gear on board to transit the closed areas and Gear Restricted Areas, if finalized, if they remove and stow the gangions, hooks, and buoys from the mainline and drum. The hooks could not be baited. Allowing pelagic and bottom longline vessels to transit closed and gear

restricted areas after removing and stowing gear would result in direct short- and long-term beneficial economic impacts by potentially reducing fuel costs and time at sea for vessels that need to transit the closed or restricted areas. Allowing transit through these areas could also potentially improve safety at sea by allowing more direct transit routes and reducing transit time, particularly during inclement weather.

Alternative B 2 – Gear Measures

Alternative B 2a, the preferred No Action alternative, would not change current authorized gear requirements (with respect to the use of buoy gear and associated restrictions on possession of bigeye, albacore, yellowfin, and skipjack tunas (BAYS) and bluefin) applicable to those vessels with an Atlantic Tunas Longline category permit and either a Swordfish Directed or Swordfish Incidental permit. Currently, vessels with an Atlantic Tunas Longline category permit must also have both a Swordfish Directed or Incidental permit, and a Shark Directed or Incidental permit. There are no economic impacts associated with this "no action" alternative.

Alternative B 2b would authorize vessels with a Swordfish Incidental permit to fish with buoy gear, except vessels fishing in the East Florida Coast Pelagic Longline Closed Area. Under this alternative, vessels would still be limited to 35 buoys. The rationale for this alternative is to provide increased flexibility and encouragement for pelagic longline vessels to utilize gears other than pelagic longline to maintain and enhance fishing opportunities. This would result in short- and long-term direct beneficial economic impacts by providing greater flexibility in the gear type that can be used and also by reducing the need to acquire a different permit to use buoy gear.

Alternative B 2c would allow vessels with an Atlantic Tunas Longline category permit and the Swordfish Directed or Incidental permit to retain BAYS and bluefin when fishing with buoy gear. The rationale for this alternative is the same as for Alternative B 2b: to provide increased flexibility and encouragement for pelagic longline vessels to utilize gears other than pelagic longline to maintain and enhance fishing opportunities in the context of new restrictions that may be implemented by Amendment 7. This would result in short- and long-term direct beneficial economic impacts by increase the potential revenue opportunities by allowing additional species to be landed when using buoy gear, reducing costs associated with discarding, and reducing the costs associated with the potential need to acquire different permits while fishing with buoy gear. This alternative would have no effect on vessels with a Swordfish Incidental permit, unless Alternative B 2b is adopted. Without Alternative B 2b, this alternative would provide additional flexibility for vessels with a Swordfish Directed permit and an Atlantic Tunas Longline permit.

Alternative B 3 – Access to Closed Areas Using Pelagic Longline Gear

Alternative B 3a, the No Action alternative, would maintain the current regulations that do not allow vessels to enter a closed area with pelagic longline gear during the time of the closure, unless issued an Exempted Fishing Permit. It would not result in any further costs to small entities.

Alternative B 3b, a preferred alternative, would allow restricted and conditional access to the following closed areas: Charleston Bump closed area (February through April), a portion of the

East Florida Coast closed area (year-round), the DeSoto Canyon closed area (year-round), and the Northeastern U.S. closed area (June). All trips into any of the eligible pelagic longline closed areas would be required to be observed. Current NMFS Pelagic Observer Program vessel selection procedures would be used to select vessels using the current strata (i.e., the procedures that select vessels to obtain observer coverage each calendar quarter, and deploy in each of various geographic (statistical) areas). If selected, a vessel would be informed of the statistical area for which the vessel was selected, and the vessel would be allowed to fish within the eligible pelagic longline closed area provided it is within that particular statistical area and that an observer is onboard. The scope of the alternative and its effects would depend upon the level of observer coverage. Currently, eight percent of fishing effort is covered and funded wholly by NMFS. Due to the limits on the level of observers, observer coverage would serve as the principal constraint to the amount of access. Participating vessels would be required to "declare into" the area via their VMS unit and report species caught and effort daily via VMS. There would be minor short- and long-term direct beneficial economic and social impacts associated with the added option for vessels to potentially fish in these areas, which could potentially increase landings revenues and decrease fishing costs by providing access to closer and/or more productive fishing areas.

In addition to the requirement to carry an observer and declare and report catch via VMS, subalternative B 3b would further require that permitted pelagic longline vessels meet various performance criteria to be authorized to fish in a closed area. Vessels that are determined by NMFS to have a relatively low rate of interactions with bluefin based on past performance, and are compliant with reporting and monitoring requirements would be allowed to fish in the area using pelagic longline gear. Those vessels that have not demonstrated their ability to avoid bluefin and/or comply with reporting and monitoring requirements would not be allowed to fish with pelagic longline gear in the area. The rationale underlying this requirement is that the commercial data from within the closed areas may be utilized in the future as part of the information used to evaluate the effectiveness and/or impacts of closed areas as well as for stock assessments or other management measures. Confidence in the data may be enhanced if the vessels allowed to fish in the closed areas have consistently demonstrated compliance with relevant regulations and are among the vessels that have demonstrated the ability to avoid bluefin at the level exhibited by the majority of the fleet. The performance criteria may lead to beneficial economic incentives for fishery participants to better comply with reporting and monitoring requirements and reduce bluefin interaction rates. Potential revenue would be gained if this alternative were implemented. The maximum number of potential observed trips into the closed areas was estimated based on historical rates of observer coverage (per quarter) in various statistical areas, and the fact that observer coverage would be a condition of a trip into a closed area. NMFS estimated the maximum number of trips into the pelagic longline closed areas would be 20 trips into the East Florida Coast closed area at an average revenue of $17,575 per trip, 80 trips into the DeSoto Canyons at an average revenue of $17,692 per trip, 2 trips into the Northeast closure at an average revenue of $40,726 per trip, and 5 trip into the Charleston Bump at an average revenue of $17,575 per trip. It is import to note that these revenue estimates are an overestimate, with a large amount of uncertainty. The estimates are high because it is very unlikely that all observed trips in a particular statistical area would fish in a closed area. The estimates are uncertain because the average revenue per trip data is from locations outside the closed areas, and may not represent the potential revenue from inside the closed areas.

8.6.3 Bluefin Tuna Quota Controls

Alternative C1 – No Action

Under this alternative, there would be no change to the current regulations that restrict pelagic longline vessel retention of bluefin once the Longline category quota has been reached; hence, the total amount of dead discards would not be restricted. There are no short-term economic impacts to vessel owners associated with this alternative, but in the long-term, if dead discards are not curtailed, the pelagic longline fishery could face reduced allocations and earnings.

Alternative C 2 – Individual Bluefin Quotas (IBQs)

This preferred alternative would implement IBQs for vessels permitted in the Atlantic tunas Longline category (provided they also hold necessary limited access swordfish and shark permits) that would result in prohibiting the use of pelagic longline gear when the vessel's annual pelagic longline IBQ has been caught. The allocation of an IBQ share to individual vessels/permits as well as a provision for transferability of IBQs would reduce bluefin dead discards by capping the amount of catch (landings and dead discards); provide strong incentives to reduce interactions and flexibility for vessels to continue to operate profitably; accommodate different fishing practices within the pelagic longline fleet; and create new potential for revenue (from a market for transferrable IBQs).

NMFS considered two alternatives for vessel eligibility to receive bluefin quota shares. The first alternative would be to consider any permitted Atlantic Tunas Longline category vessel (sub-alternative C 2a.1) as being eligible to receive an initial allocation of IBQs. Based on the most recent number of Atlantic Tuna longline limited access permit holders, NMFS estimates that 253 vessels would be eligible to receive IBQs under this alternative. While this alternative might be more inclusive of all members of the fishery, it would reduce the amount of IBQs allocated to each vessel. There would also likely be negative short-term and potentially long-term direct adverse economic impacts associated with reduced initial allocation of IBQs to the most active participants in the fishery. Their initial allocations would likely be insufficient to be able to maintain their current levels of fishing activity and they may not be able to find IBQs to lease or have sufficient capital to lease a sufficient amount of IBQs.

The second alternative, sub-alternative C 2a.2 is the preferred alternative and would be to consider only active permitted Atlantic Tunas longline vessels. Based on HMS Logbook records from 2006-2011, there were 161 active pelagic longline vessels during that period, with active defined as having reported in the HMS Logbook successfully setting pelagic longline gear at least once between 2006 and 2011. Allocation of quota shares to a smaller number of vessels may reduce the likelihood that a permitted vessel without quota shares would fish and increase the likelihood that available quota would be sufficient for active vessels. The drawback to this alternative is that some inactive vessels may have been planning to be active in the future, invested in the preparing to become active in the fishery, but either became active after the period of eligibility or had not yet completed preparations for entering the fishery.

In addition to determining who is eligible to receive IBQs, NMFS also considered four alternatives for how IBQs should be initially allocated to those eligible vessel owners. Under Alternative C 2b.1, NMFS would base the initial allocation of IBQs based on an equal share of the quota to eligible vessels. To estimate the potential landings each vessel could make given its initial IBQ under this alternative, NMFS analyzed the ratio of bluefin tuna landings and dead discards to designated species weight. These estimated potential landings were then compared to average annual historical landings to estimate the reduction in designated species landings. Under the 74.8 mt Longline category quota scenario, NMFS estimates that there could be a reduction of 4.3 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 51 percent and result in a reduction in annual revenues of approximately $110,000 per vessel. Under the 137 mt Longline category quota scenario, NMFS estimates that there could be a reduction of 2.4 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 24 percent and result in a reduction in annual revenues of approximately $51,000 per vessel. Under the 216.7 mt Longline category quota scenario, NMFS estimates that there could be a reduction of 1.2 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 14 percent and result in a reduction in annual revenues of approximately $30,000 per vessel.

Under Alternative C 2b.2, NMFS would base the initial allocation of IBQs based on the historical landings of designated species from 2006 through 2011. The designated species include swordfish, yellowfin tuna, bigeye tuna, albacore tuna, skipjack tuna, dolphin, wahoo, blue shark, porbeagle, shortfin mako, and thresher shark. These are the main marketable pelagic species landed by pelagic longline vessels in addition to bluefin. Under the 74.8 mt s Longline category quota scenario, NMFS estimates that there could be a reduction of 3.5 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 42 percent and result in a reduction in annual revenues of approximately $91,000 per vessel. Under the 137 mt Longline category quota scenario, NMFS estimates that there could be a reduction of 2.4 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 28 percent and result in a reduction in annual revenues of approximately $61,000 per vessel. Under the 216.7 mt Longline category quota scenario, NMFS estimates that there could be a reduction of 1.6 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 18 percent and result in a reduction in annual revenues of approximately $40,000 per vessel.

Under Alternative C 2b.3, a preferred alternative, NMFS would base the initial allocation of IBQs based on the historical landings of designated species from 2006 through 2011 and the ratio of bluefin catch to designated species landings. Using the ratio of bluefin tuna landings and dead discards to designated species weight, NMFS estimated the potential landings each vessel

could make given its initial IBQ. These estimated potential landings were then compared to average annual historical landings to estimate the reduction in designated species. Under the 74.8 mt Longline category quota scenario, NMFS estimates that there could be a reduction of 3.1 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 36 percent and result in a reduction in annual revenues or approximately $79,000 per vessel. Under the 137 mt Longline category quota scenario, NMFS estimates that there could be a reduction of 2.2 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 26 percent and result in a reduction in annual revenues or approximately $56,000 per vessel. Under the 216.7 mt Longline category quota scenario, NMFS estimates that there could be a reduction of 1.5 million pounds of designated species landing per year if an IBQ allocation based on designated species landings is used and no trading of IBQs occurs. This would be a reduction of annual landings of approximately 17 percent and result in a reduction in annual revenues or approximately $37,000 per vessel.

After allocating quota shares based upon the allocation formula, subalternative C 2b.4 would then designate all pelagic longline quota shares and allocations as either “Gulf of Mexico” or “Atlantic” based upon the geographic location of sets (associated with the vessels fishing history used to determine the vessel’s quota share). Gulf of Mexico quota allocation could be used in either the Gulf of Mexico or the Atlantic, but Atlantic quota allocation could only be used in the Atlantic (and not the Gulf of Mexico). For a vessel to fish in the Gulf of Mexico, the vessel would be required to have the minimum amount of bluefin quota to depart on a trip to fish with pelagic longline gear, but the quota would have to be Gulf of Mexico quota. The minimum IBQ amount required to fish in the Gulf of Mexico would be 0.25 mt based on the larger average size of bluefin in the Gulf of Mexico. The minimum IBQ amount required to fish in the Atlantic would be 0.125 mt based on the smaller average size of bluefin tuna encountered in the Atlantic. The economic impact of creating these two regional designations would primarily be associated with the larger minimum quota required to fish in the Gulf of Mexico and the restriction from transferring or using Atlantic quota in the Gulf of Mexico. This would reduce the number of potential trading partners for IBQs in the Gulf of Mexico region, thus potentially leading to less available IBQs that could be leased and potentially making it more difficult to find potential trading partners and therefore increasing transaction costs for conducting a lease.

In defining the scope of IBQ transfer for alternative C 2c, NMFS considered two subalternatives because only two Tuna permit categories are under limited access systems. Sub-alternative C 2c.1 would allow transfer of bluefin quota shares or quota allocation among permitted Atlantic Tunas Longline category vessels only, and would not include transferring with other limited access quota categories such as the Atlantic Tunas Purse Seine category. The rationale for this sub-alternative is to provide flexibility for pelagic longline vessels to obtain or sell quota as necessary, so that allocations may be aligned with catch (i.e., vessels that catch bluefin may be able to obtain quota from those that do not interact with bluefin, or have not used their full allocation of bluefin). This sub-alternative would constrain the amount of bluefin quota available to the Longline category vessels to the Longline category quota, and not make additional quota available. Quota transfers would be allowed among all Longline category

vessels with a valid limited access permit, regardless of whether they have been allocated quota under Alternative C 2b. If a vessel catches bluefin using quota that has been leased from another vessel, the fishing history associated with the catch of bluefin tuna would be associated with the vessel that catches the bluefin (the lessee, not the lessor vessel). In other words, the lessee (vessel catching the fish) gets the 'credit' for the landings and dead discards, and not the lessor (the vessel that transferred the quota allocation to the catching vessel). While this alternative would have short-term direct minor beneficial economic impacts, those beneficial impacts would be lower than those under sub-alternative C 2c.2.

Sub-alternative C 2c.2, the preferred alternative, would allow transfer of bluefin quota shares or quota allocation between those permitted in the limited access Atlantic Tunas Longline and Purse Seine categories. This sub-alternative would provide flexibility for pelagic longline vessels to obtain, lease, or sell quota as necessary, so that allocations may be aligned with catch (i.e., vessels that catch bluefin may be able to obtain quota from those that do not interact with bluefin, or have not used their full allocation of bluefin). This sub-alternative would not constrain the amount of bluefin quota available to pelagic longline vessels (i.e., through the Longline category quota), but would make additional quota available if purse seine vessels are willing to lease quota. This alternative would also modify the Purse Seine category regulations which currently restrict the transfer of Purse Seine quota to vessels with Purse Seine category permits. Purse Seine quota would be transferable to vessels with an Atlantic tunas longline permit. Similarly, Purse Seine vessels would be able to lease quota allocation from pelagic longline vessels. Quota transfer would be allowed among all Longline category vessels with a valid limited access permit, regardless of whether they have been allocated quota under Alternative C 2b. If a vessel catches bluefin using quota that has been leased from another vessel, the fishing history associated with the catch of bluefin tuna would be associated with the vessel that catches the bluefin (the lessee, not the lessor vessel). In other words, the lessee (vessel catching the fish) gets the 'credit' for the landings and dead discards, and not the lessor (the vessel that transferred the quota allocation to the catching vessel). This alternative would have short-term direct moderate beneficial economic impacts.

NMFS considered both annual leasing and permanent sale of IBQs under alternative C 2d. Sub-alternative C 2d.1, a preferred alternative, would allow temporary leasing of bluefin quota among eligible vessels on an annual basis. Temporary quota transfer would give vessels flexibility to lease quota, but as a separate and distinct type of transaction from the permanent sale of quota share. Vessel owners would be able to obtain quota on an annual basis to facilitate their harvest of target species. Sub-leasing of quota would be allowed (i.e., quota leased from vessel A to vessel B, then to vessel C). This sub-alternative may be combined Sub-Alternative C 2d.2 (permanent sale of quota share), if implemented. IBQ allocation leases of one year duration would coincide with the time period of annual quota allocation for the fishery as a whole. For a particular calendar year, an individual lease transaction would be valid from the time of the lease until December 31. This alternative would have short-term direct moderate beneficial economic impacts to participants in the fishery. However, in the long-term, the annual transaction costs associated with matching lessors and lessees, the costs associated with drafting agreements, and the uncertainty vessel owners would face regarding quota availability would reduce some of the economic benefits associated with leasing.

Sub-alternative C 2d.2 would allow permanent sale of quota share among eligible vessels. Through this sub-alternative, vessel owners would be able to purchase (or sell) quota share and permanently increase (or decrease) their quota share percentage. Permanent sale of quota share provides a means for vessel owners to plan their business and manage their quota according to a longer time scale than a single year. Vessel owners may be able to save money through a single quota share transaction instead of reoccurring annual quota allocation transactions. This sub-alternative may be combined with the temporary transfer of quota (i.e., annual leasing of quota, Sub-Alternative C 2d.2), but is a separate and distinct type of transaction. (Note, that elsewhere in this document NMFS considers measures for permanent quota reallocation alternatives unrelated to an IBQ program; See Alternative A 2). To enable effective accounting and reduce program complexity, permanent quota share transfers would become effective in the subsequent year, and would have to be executed prior to the annual allocation of quota to quota shareholders. Annual allocation of quota needs to occur at one time, based on a fixed pool of quota share owners. Transferable quota shares would be limited to the amount of quota an individual entity could permanently transfer in order to prevent the accumulation of an excessive share of quota. This alternative would have long-term direct moderate beneficial economic impacts to participants in the fishery by allowing the ownership of IBQs to shift to where they provide the best economic benefit in the long-term. However, in the short-term, there could be issues associated with the IBQ market. For example the process of the buyers and sellers arriving at a price for IBQ shares may be difficult or highly variable due to uncertainties such as how to value IBQ shares, information availability, and associated risks. Experiences in other catch share programs have shown that fishermen may not know how to effectively value the IBQs initially and uncertainty in this new market may cause IBQs to be undervalued in the first few years. This could result in both adverse social and economic impacts in the fishing community if participants sell out of the IBQ market in the early years for less than the long-term value of the IBQs.

Sub-alternative C 2d.3, a preferred alternative, would allow permanent sale of quota shares among eligible vessel owners, in the future, after NMFS and fishery participants have multiple years of experience with the IBQ program. Until NMFS develops and implements a permanent IBQ transfer program, vessel owners would only be able to conduct temporary (annual) leasing of quota allocation, and therefore, vessel owners would not be able to purchase (or sell) quota share in order to permanently increase (or decrease) their quota share percentage. A phased-in approach would reduce risks for vessel owners during the initial stages of the IBQ program, when the market for bluefin quota shares would be new and uncertain. During the first years of the IBQ program, price volatility may be reduced, as well as undesirable outcomes of selling or buying quota shares at the “wrong” time or price. NMFS intends to develop a program to allow the permanent sale of quota share in the future because it would provide a means for vessel owners to plan their business and manage their quota according to a longer time scale than a single year, in a manner that would be informed by several years of the temporary leasing market. NMFS may wait until a formal evaluation of the IBQ program before developing this alternative (see IBQ Program Evaluation Alternatives C 2h.1 and C 2h.2). This sub-alternative may be combined with the temporary transfer of quota allocation (i.e., annual leasing of quota, Sub-Alternative C 2d.1), but is a separate and distinct type of transaction. While this alternative may result in long-term moderate beneficial economic impacts, the uncertainty regarding the

timeline may make business planning for vessel owners and IBQ holders more difficult and result in some minor adverse economic impacts.

Under sub-alternative C 2e.1, a preferred alternative, quota allocation and/or quota share transfers would be executed by the eligible vessel owners, or their representatives. For example, the two vessel owners involved in a lease of quota or sale of quota share could log into a password protected web-based computer system (i.e., a NMFS database), and execute the quota allocation or quota share transfer. Owner-executed transfers would provide the quickest execution of a transfer because any eligibility criteria would be verified automatically via the user log-in and password, and not involve the submission or review of a paper application for a transfer to/by NMFS. This would result in short- and long-term minor beneficial economic impacts resulting from reduced transactions costs.

Under sub-alternative C 2e.2, quota and quota share transfers would be executed by NMFS. For example, a paper application for a sale of quota share could be submitted by the two vessel owners involved in the quota share transaction, and NMFS would review and approve the transaction based on eligibility criteria (and enter data into a computer database that would track the transfers of quota). This method would not include the use of a web-based system, but would rely upon mail or facsimile submission of applications by the vessel owners to NMFS. In comparison to sub-alternative C 2e.1, this alternative may result in some minor adverse economic impacts if delays in NMFS' review of applications results in increased transactions costs and fewer trades.

Under sub-alternative C 2f.1, there would be no limit on the amount of quota allocation an individual vessel (Longline or Purse Seine) could lease annually. This alternative would provide flexibility for vessels to purchase quota in a manner that could accommodate various levels of unintended catch of bluefin, and enable the development of an unrestricted market. Because the duration of a temporary lease would be limited to a single year, the impacts on an unrestricted market for bluefin quota would be limited in duration. Information on this unrestricted market could be used to develop future restrictions if necessary. This alternative would result in short- and long-term minor beneficial economic impacts by accommodating the various needs of vessel owners for IBQ trades.

Under sub-alternative C 2f.2, there would be no limit set on the total amount of quota that either the Longline or Purse Seine category (in its entirety) could lease annually. This alternative would provide flexibility for vessels to purchase quota in a manner that could accommodate various levels of unintended catch of bluefin, and enable the development of an unrestricted market. Because the duration of a temporary lease would be limited to a single year, the impacts on an unrestricted market for bluefin quota would be limited in duration. Information on this unrestricted market could be used to develop future restrictions (through proposed and final rulemaking) if necessary. This alternative would result in short- and long-term minor beneficial economic impacts by accommodating the various needs of vessel owners for IBQ trades.

Under this sub-alternative C 2f.3, a preferred alternative, NMFS would consider the development of limits on the amount of quota allocation an individual vessel (Longline or Purse Seine), or the Longline or Purse Seine category (in its entirety), could lease annually. Although at the

initiation of the IBQ program, NMFS does not believe there is justification for a limitation, it is possible that a limit may be deemed necessary in the future to reduce the likelihood of excessive allocation, or other potential problems such as the number of active vessels or the distribution of fishing effort. Such a restriction would be developed through proposed and final rulemaking. This alternative could result in long-term minor adverse economic impacts if the limits cause some vessel owners to not be able to acquire sufficient IBQs for their fishing activity needs.

The measures under alternative C 2g are based on the premise that the success of an IBQ program rests upon the ability to track ownership of quota shares and quota allocation holders; allocate the appropriate amount of annual harvest privileges (quota allocation); reconcile landings and dead discards against those privileges; and then balance the amounts against the total allowable quota. The current pelagic longline reporting requirements and the monitoring program that provide data on pelagic longline bluefin landings and dead discards were not designed to support inseason accounting of dead discards. More timely information on catch would be necessary in order to monitor a pelagic longline IBQ, inclusive of dead discards.

VMS reporting Sub-alternative C 2g.1, a preferred alternative, is the same management alternative described in Alternative D 1b. This alternative is intended to support the implementation of a pelagic longline IBQ. The economic impacts are detailed in the section below discussing Alternative D 1b.

Electronic monitoring sub-alternative C 2g.2, a preferred alternative, is the same management alternative described in Alternative D 2b of this document. This alternative is intended to support the implementation of a pelagic longline IBQ. The economic impacts are detailed in the section below discussing Alternative D 2b.

Under sub-alternative C 2g.3, a preferred alternative, in order to conduct inseason quota monitoring and estimate total bluefin dead discards and landings, NMFS may extrapolate observer-generated data (in-season) regarding bluefin discards (rate, number, location, etc.) by pelagic longline vessels, based on reasonable statistical methods, and available observer data. This alternative would not require a regulatory change, but would inform the public that NMFS would use this management practice if warranted. NMFS would use this observer information in conjunction with, or in place of, vessel-generated estimates of bluefin discards in order to develop inseason estimates of total bluefin landings and dead discards. NMFS may use this method to estimate dead discard rates of bluefin for individual vessels in the context of an IBQ program. This sub-alternative would address the potential for uncertain dead discard data from the pelagic longline fleet that may result from challenges in the implementation of new regulations, technical problems relating to the reporting and monitoring system, or time lags in the availability of data. This alternative would potentially have short-term minor or neutral indirect beneficial economic impacts by addressing the potential for fishery disruptions if there are issues in the transition to an IBQ monitoring system.

Under sub-alternative C 2h.1, a preferred alternative, NMFS would formally evaluate the program after three years of operation and provide the HMS Advisory Panel with a publicly-available written document with its findings. NMFS would utilize its standardized economic

performance indicators as part of its review. This would result in neutral economic impacts because it is administrative in nature.

Under sub-alternative C 2h.2, NMFS would conduct a formal evaluation of the IBQ program after five years of operation and provide the HMS Advisory Panel with a written document with its findings. As described above, NMFS would utilize its standardized economic performance indicators (and associated standardized definitions) as part of its review. This alternative would result in neutral economic and social impacts because it is administrative in nature.

Under alternative C 2i, a preferred alternative, NMFS would develop and implement a cost recovery program of up to 3 percent of the ex-vessel value of fish harvested under the program, for costs associated with the costs of management, data collection and analysis, and enforcement activities, could result in direct long-term moderate adverse economic impacts to the industry.

The Magnuson-Stevens Act provides NMFS the authority for cost recovery under § 303A(e). A cost recovery program would not be implemented until after the IBQ program evaluation described in Alternative C 2h. Immediate implementation of a cost recovery program without the information obtained from the operation of the fishery under an IBQ program would be very difficult, and increase costs and uncertainty for fishing vessels during a time period when the fishery would be bearing other new costs and sources of uncertainty. This alternative could result in direct long-term moderate adverse economic impacts to the industry.

Alternative C 2j, a preferred alternative, would implement an appeals process for administrative review of NMFS' decisions regarding initial allocation of quota shares for the IBQ program. The appeals process for administrative review of NMFS's decisions regarding initial allocation of quota shares for the IBQ program would result in neutral economic impacts because it would utilize the National Appeals Office procedures and ensure a standardized and centralized appeals process, that would provide procedural certainty to the participants.

If an IBQ program is implemented, preferred alternative C 2k would implement a control date in conjunction with the implementation (effective date) of the IBQ program. The control date would serve as a reference date that may be utilized with future management measures. The implementation of a control date by itself would have no effect, but would provide NMFS with a potential management tool that may be utilized if necessary as part of a future management measure. A control date is typically used to discourage speculative fishing behavior or speculative entry into a fishery and notifies the public that a date may be used in conjunction with future management measures. This alternative would likely have neutral economic impacts and would only result in beneficial short-term economic impacts if it actually discouraged speculative fishing behavior that may have occurred without the control date.

Sub-alternative C 2l.1, the elimination of target catch requirements is a preferred alternative. Current target catch requirement acts at the level of an individual trip to limit bluefin retention, but does not prevent interactions potentially resulting in discarding bluefin dead (although it is intended to dis-incentivize interactions with bluefin by reducing any financial incentive for such interactions by limiting retention). The target catch requirement therefore contributes to the

discarding of bluefin if the amount of target catch species is insufficient to retain the numbers of bluefin caught.

Under this sub-alternative C 2l.1a, the current target catch requirements would remain in effect. This would have neutral economic impacts since it would not change what is currently in place.

Sub-alternative C 2l.1b, preferred alternative, would eliminate the current target catch requirements for pelagic longline vessels. This alternative is intended to work in conjunction with an IBQ. The objective of this alternative is to reduce bluefin dead discards and optimize fishing opportunity for target species. If an IBQ program is implemented, elimination of the target catch requirement could reduce dead discards, and enable vessels to fish for target species in a more flexible manner. A vessel that has caught some bluefin but has insufficient target species to meet the target catch requirement would no longer have to choose between discarding bluefin or fishing for more target species; rather, the vessel would use the annual individual bluefin quota (IBQ). Thus, the IBQ would replace the target catch requirement as the means of limiting the amount of bluefin landed and discarded dead per vessel on an annual basis, instead of on a per trip basis. This alternative would likely have direct short- and long-term minor beneficial economic impacts.

Sub-alternative C 2l.2a would maintain the status quo regarding retention of bluefin by pelagic longline vessels. There would be no requirement to retain commercial legal-sized bluefin that are dead. Vessels would continue to be able to discard bluefin even if they are of commercial legal-size (i.e., 73” or greater) and dead. If the IBQ program is implemented, all dead discards would be accounted for under that program. This alternative would have neutral economic impacts since it does not change what is currently occurring.

Under sub-alternative C 2l.2b, a preferred alternative, pelagic longline vessels would be required to retain all legal-sized commercial bluefin tuna that are dead at haul-back. Because these fish would be required to be retained, legal discards and the waste of fish would be decreased, and it would be more likely that such fish are accurately accounted for, and result in a positive use (marketed, used for scientific information, etc.). However, given that current behavior may be to discard some fish in order to optimize landings value of bluefin, there could be minor adverse economic impacts associated with this alternative since vessel operators would no longer have the option to discard legal-sized bluefin.

Alternative C 3 – Regional and Group Quotas

Alternative C 3a would implement annual bluefin quotas by region for vessels possessing the Atlantic Tunas Longline category permit (combined with the required shark and swordfish limited access permits) that would result in prohibiting the use of pelagic longline gear when a particular region’s annual bluefin quota has been caught. Both bluefin landings and dead discards would count toward the regional quota. Annual bluefin quotas would be associated with defined geographic regions. While regional quotas may be simpler than an IBQ system and have advantages over a single quota allocated for the entire Longline category, some regions may face chronic shortages of bluefin quota if that region experiences increased fishing effort or bluefin interaction rates. It is difficult to predict the total amount of fishing effort that would occur

under regional quotas, and the amount of bluefin quota that would be caught. There is likely to be less fishing effort under the Regional quota control alternative (compared with the No Action alternative) because a few vessels could catch a large number of bluefin, and because the closure of the entire area to the use of pelagic longline gear. The historical data indicate that the majority of bluefin have been caught by relatively few vessels. The amount of target species catch such as swordfish and yellowfin tuna would depend primarily upon the amount of fishing effort and whether the regional quotas or IBQs become constraining. If the regional quotas reduce pelagic longline fishing effort, there may be some minor adverse economic and social impacts on regional fishing communities where effort is reduced.

Alternative C 3b would implement a quota system for vessels possessing the Atlantic Tunas Longline category permit (combined with the required shark and swordfish limited access permits) that would define three bluefin quota groups and assign vessels with a valid permit to one of the three groups. Both bluefin landings and dead discards would count toward the group quotas. Each active vessel would be assigned to a quota group based upon the associated permit's historical bluefin interactions to "designated species" landings ratio. Active vessels with relatively high numbers of bluefin interactions would be assigned to one quota group, active vessels with a moderate level of bluefin interactions would be assigned to a second group, and the active vessels with a low level of bluefin interactions would be assigned to a third quota group. Under the current quota allocation (8.1%) and the 2012 Longline category quota (74.8 mt) to illustrate, the low avoider quota group would be allocated 24.1 mt and the medium and high avoider quota groups would be allocated 25.1 mt. Although the three quota groups have almost the identical number of vessels assigned to them (53, 54, 54, respectively), as well as similar quota, the average amount of bluefin that they caught historically varies from group to group. The number of bluefin tuna interactions from 2006 to 2011 for the low, medium, and high avoiders was 8,050, 1,348, and 95, respectively. Converted to averages, the average number of bluefin interactions would be 1,342, 225, and 16. Utilizing a rough conversion factor of a .125 mt per fish, 225 fish is equivalent to 28 mt. The high and medium avoider groups are likely to have adequate quota, whereas the low avoider group would have inadequate quota if the future interaction rate of the vessels is similar. The average number of interactions associated with the low avoider group equates to approximately 168 mt. It is likely that the group quota associated with vessels with the highest historical rate of bluefin interactions would be attained first. This indicates that there would be potentially significant direct short- and long-term adverse economic impacts to the low avoider group. However, there could be moderate to minor positive economic impacts to the high and medium avoider groups.

Alternative C 4 – NMFS Authority to Close the Pelagic Longline Fishery

Under alternative C 4a, No Action, the current regulatory situation would continue, in which NMFS does not have the authority to prohibit the use of pelagic longline gear when the bluefin quota is attained. When the quota is projected to be reached, pelagic longline vessels may no longer retain bluefin tuna, but may continue to fish for their target species, and must discard any bluefin caught. The economic impacts of this alternative would lead to short- and long-term direct minor economic and social impacts due the loss of revenue from bluefin tuna.

Under alternative C 4b, a preferred alternative, NMFS would close the pelagic longline fishery (i.e., prohibit the use of pelagic longline gear) when the total Longline category bluefin quota is reached; projected to be reached; is exceeded; or, in order to prevent over-harvest of the Longline category bluefin quota and prevent further discarding of bluefin; or when there is high uncertainty regarding the estimated or documented levels of bluefin catch. The economic impacts of this alternative would depend upon when the closure occurred, ranging from January through December. The time the pelagic longline fishery would be closed would depend upon many factors, including the size of the Longline category quota, the type of quota control alternative and other alternatives implemented by Amendment 7, and non-regulatory factors. The range of quotas that would be available to the Longline category would depend upon the combination of alternatives implemented. Table 5.23 shows the number of reported pelagic longline trips by month, and the average number of trips per month. Table 5.24 shows average revenue by month based all the pelagic longline sets made in that month based on logbook reports, weighout slips, and ex-vessel prices from dealer reports.

Based on the Longline category being closed in late spring and early summer over the past few years and the 2013 closure occurring in June, NMFS estimates that a June closure is a plausible example to examine. Table 5.25 lists the potential revenue loss by month of closure. A June closure of the pelagic longline fishery would result in a potential loss of revenue of approximately $19.8 million, or $123,000 per vessel per year. This would result in a major short-term adverse direct economic impact to the pelagic longline fishery and this economic impact would continue into the long-term if landings and dead discard rates continue along the current trend.

8.6.4 Enhance Reporting Measures

Alternative D 1 – VMS Requirements

Alternative D 1a, the No Action alternative, there would be no requirement under HMS regulations for an Atlantic Tunas Purse Seine category vessel to obtain a VMS unit and there would be no change to the reporting requirements applicable to purse seine vessels. There would also be no additional VMS requirements under HMS regulations for a vessel using pelagic longline gear.

<u>E-MTU VMS installation and operation</u>

Alternative D 1b, a preferred alternative, would require the three vessels with an Atlantic Tunas Purse Seine category permit to have an E-MTU VMS unit installed by a qualified marine electrician in order to remain eligible for the Purse Seine permit. Purse seine vessel owners would be required to provide a hail-out declaration using their E-MTU VMS units, indicating target species and gear possessed onboard the vessel before leaving port on every trip. Purse seine vessel owners would also be required to provide a hail-in declaration, using their E-MTU VMS units, providing information on the timing and location of landing before returning to port. The units would be required to send position information to NMFS every hour.

All of the three vessels that are currently authorized to deploy purse seine gear for Atlantic tunas have already installed E-MTU VMS units in compliance with regulations for other Council-managed fisheries, including Northeast Multispecies and/or Atlantic scallop. If vessels have not already had a type-approved E-MTU VMS unit installed, or if permits were transferred to vessels that have not yet installed E-MTU VMS, they may be eligible for reimbursement (up to $3,100) to offset the costs of procuring a type-approved unit subject to availability of funds. This reimbursement would only cover the cost of the E-MTU VMS and could not be applied to offset installation costs by a qualified marine electrician ($400) or monthly communication costs ($44). Initial costs, per vessel, for compliance with E-MTU VMS requirements included in this alternative would be $3,500 if no reimbursement were received and $400 if a reimbursement were received. On a monthly basis, vessels would be required to establish a communication service plan corresponding to the type-approved E-MTU VMS selected. Costs vary based on the E-MTU VMS unit and communication service provider selected, however, these costs are $44/month and include hourly transmission reporting and a limited amount of hail in and hail out declarations. Charges vary by communication service provider for additional messaging or transmission of data in excess of what is required by the Agency. Furthermore, costs will also vary depending on how many trips a vessel makes on a monthly basis as the number of declarations (hail in/hail out) increase proportionately.

If a vessel has already installed a type-approved E-MTU VMS unit, this alternative would have neutral direct and indirect socioeconomic impacts in the short and long-term as the only expense would be monthly communication service fees which they are already paying for participation in a Council-managed fishery. If vessels do not have an E-MTU VMS unit installed or an Atlantic tunas purse seine permit is transferred to another vessel lacking VMS, direct, adverse, short-term socioeconomic impacts are expected as a result of having to pay for the E-MTU VMS unit and a qualified marine electrician to install the unit. In the long-term, direct economic impacts would become minor, because monthly communication service provider costs ($44) would be the only expense. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected.

Pelagic longline vessels are already required to use an E-MTU VMS that has been installed by a qualified marine electrician to provide hourly position reports and hail in/out declarations to provide information on target species, gear possessed, and expected time/location of landing. Therefore, this alternative would result in neutral economic impacts in the short and long term. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected.

<u>Reporting Bluefin tuna interactions using E-MTU VMS</u>

Preferred alternative D 1b would also require vessels fishing for Atlantic tunas with pelagic longline or purse seine gear to report daily the number of bluefin retained, discarded (dead and alive), fish disposition, and fishing effort (number of sets, number of hooks, respectively). This alternative is intended to support the inseason monitoring of the purse seine and pelagic longline fisheries. Although NMFS currently has the authority to require logbook reporting for the purse seine fishery, NMFS has not exercised this authority (see Section 2.3.7). Current information on the catch of the purse seine fishery is limited to dealer data on sold fish, and does not include

information of discarded bluefin or other species caught and/or discarded. Inseason information on catch, including dead discards, would enhance NMFS' ability to monitor and manage all quota categories.

Purse Seine

The characteristics of the purse seine fishery are unique. Many bluefin may be caught in a relatively short period of time, and the proportion of discarded to retained fish may be high in some instances. More timely information on retained and discarded bluefin would improve the current monitoring of bluefin landings and dead discards. This alternative would provide timely information on purse seine fishing effort, and improve NMFS' ability to interpret and utilize the bluefin data in the context of the fishery as a whole. Recently, there has been very limited effort in the Atlantic tunas purse seine fishery for a variety of reasons, including availability and quantity of commercial size bluefin and/or current permit holders are participating in Council-managed fisheries. This alternative would require vessel operators to use their E-MTU VMS to submit electronic reports describing the number and size of bluefin that were landed and discarded dead.

Vessel operators fishing for Atlantic tunas with purse seine gear would already be required to have an E-MTU VMS unit installed and capable of submitting hourly position reports while fishing in addition to hail out/in declarations before and after fishing. This alternative would, however, increase the amount of information that vessel operators provide using their E-MTU VMS units. Typically, fishermen would make a single declaration for each trip that details the quantity and size of bluefin retained. This alternative would result in neutral economic impacts in the short and long-term because of the fact that the vessel owners would already be paying, on average, $44 per month to cover the costs of a communication service provider. The number of additional transmissions necessary to report bluefin retained and discarded dead are not expected to exceed the typical monthly allowance for data sent using the E-MTU VMS. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected.

Pelagic Longline

With respect to pelagic longline vessels, this alternative is intended to support the implementation of a pelagic longline IBQ program, whether individual or regional, described under Section 2.3. For example, under an IBQ program, each vessel must not harvest more than is permitted by the total of his/her quota share. The IBQ program would require the ability to track quota shares and quota allocations, reconcile landings against quota allocations, and then balance the amounts against the total allowable quota. Although the current pelagic longline reporting requirements and the monitoring program provide data on pelagic longline discards and landings, and enable inseason monitoring and management based upon landings, the reporting requirements and monitoring program were not designed to support inseason monitoring of dead discards. More timely information on dead discards would be necessary in order to monitor and enforce a pelagic longline IBQ program. Although the current information on bluefin discards from the pelagic longline fishery, which is obtained through logbook data on effort and catches from the observer program, is sufficient to estimate bluefin dead discards on an annual basis, the

time lag associated with the current information is not useful for "real-time" in-season monitoring of an IBQ program. Specifically, there is a time lag between the time logbooks are submitted or the field information is recorded by the observer during the fishing trip, the time the data are entered into a database, and the time the data are finalized (after a process of quality control) and available for use. A trip declaration requirement could be necessary in order for NMFS to obtain timely information on pelagic longline fishing effort, and interpret and utilize the bluefin data in the context of the fishery as a whole.

HMS logbook data (2006-2011) indicate that, on average, pelagic longline vessels have 1.15 (9,493 interactions/8,250 trips = 1.15 interactions/trip) with a bluefin per vessel per trip. This alternative would require all pelagic longline vessel operators to report all interactions (kept, discarded dead, discarded alive) and estimate fish size (> or < than 73" CFL) using their E-MTU VMS within 12 hours. Furthermore, additional information on fishing effort, including the number of hooks deployed on the set that had a bluefin would also be reported.

This alternative is expected to have neutral to minor adverse economic impacts on pelagic longline vessel operators and owners in the short and long-term. Economic impacts to shore-based businesses, including fish dealers, bait and gear suppliers, and other fishing related industries are not expected. Existing regulations require all pelagic longline vessel operators to provide hail out/in declarations and provide location reports on an hourly basis at all times while they are away from port. In order to comply with these regulations, vessel owners must subscribe to a communication service plan that includes an allowance for sending similar declarations (hail out/in) describing target species, fishing gear possessed, and estimated time/location of landing using their E-MTU VMS. This alternative would require, on average, 1.15 additional reports per trip that describe bluefin interactions and fishing effort. Because of the minimal time (approximately 5 minutes) required to submit these reports and the fact that owners would already be enrolled in a communication service plan that would encompass these additional transmissions, adverse economic impacts are not expected.

Alternative D 2 – Electronic Monitoring of Longline Category

Under alternative D2a, the No Action alternative, NMFS would maintain the status quo and would not pursue any additional measures that would require permitted pelagic longline vessels to install electronic devices such as cameras in order to support the monitoring or verification of bluefin catch under an IBQ quota system. Currently, pelagic longline vessels are required to use E-MTU VMS units to provide hourly position reports while away from port and to provide hail out/in declarations describing target species, fishing gear onboard, and time/location of landing. Under this alternative, these requirements would be maintained, and no additional electronic monitoring requirements would be implemented. This alternative would not result in economic impacts because it would maintain existing requirements.

Alternative D 2b, a preferred alternative, would require the use of electronic monitoring, including video cameras, by all vessels issued an Atlantic Tunas Longline permit that intend to fish for highly migratory species. Specifically, vessels would be required to install and maintain video cameras and associated data recording and monitoring equipment in order to record all longline catch and relevant data regarding pelagic longline gear retrieval and deployment.

More specifically, this alternative would require the installation of NMFS-approved equipment that may include one to four video cameras, a recording device, video monitor, hydraulic pressure transducer, winch rotation sensor, system control box, or other equipment needed to achieve the objectives. Vessel owner/operators would be required to install, maintain, facilitate inspection of the equipment by NMFS, and obtain NMFS approval of the equipment. The vessel owner/operator would be required to store and make the data available to NMFS for at least 120 days, and facilitate the submission of data to NMFS. The vessel operator would be responsible for ensuring that all catch is handled in a manner than enables the electronic monitoring system to record such fish, and must identify a crew person or employee responsible for ensuring that all handling, retention, and sorting of bluefin occurs in accordance with the regulations.

The requirements associated with this alternative would be phased in over a period of time due to the complexity, costs, and logistical constraints associated with the implementation of an electronic monitoring program. NMFS would communicate in writing with the vessel owners during all phases of the program to provide information to assistant vessel owners, and facilitate the provision of technical assistance.

This alternative would require both fixed and variable costs over the service life of each camera installed onboard. Fixed costs for vessel owners would include purchasing the camera ($3,565) and having it installed on the vessel ($500). Variable costs for vessel owners include data retrieval ($45/hour; $4,500/year); service ($45/hour; $270/year); technician travel ($0.5/mile; $1,680/year); fishing activity interpretation ($47/hour; $1,175 year); and catch data interpretation ($1.5 hours per haul at a labor rate of $47/hour, 1 haul per trip and 100 trips; $7,050/year). The estimated total variable costs would by $14,663 and first year fixed costs would be $4,065 for the purchase and installation of the equipment. First year fixed and variable costs total $18,728/vessel for the first year. After the first year, the annual variable costs of operation are estimated to be $14,663/vessel. The estimate provided here for catch data interpretation is likely an overestimate as the Agency is primarily concerned with verification of bluefin reports and no other species (i.e., yellowfin tuna, swordfish, dolphin, wahoo, etc.) being landed on pelagic longline vessels. After purchasing the camera and having it installed, expenses would be limited to the variable costs listed. This alternative would result in direct and indirect adverse economic impacts to pelagic longline vessel owners in the short and long term.

Alternative D 3 – Automated Catch Reporting

The preferred alternative D 3 would require Atlantic Tunas General, Harpoon and HMS Charter/Headboat permit holders to report their bluefin catch (i.e., landings and discards) using an expanded version of the bluefin recreational automated landings reporting system (ALRS). The automated system includes two reporting options, one that is web-based and an interactive voice response telephone system. The “No Action” alternative is not preferred and would have no social or economic impacts.

The primary impacts of the preferred alternative are the amount of time the new reporting requirement would take, and the reporting costs, respectively.

NMFS estimated the potential annual catch for each permit category based on previous years data and multiplied it by the 5 minutes it takes to complete a report (NMFS 2013) for each fish to estimate a total reporting burden of 607 hours affecting a total of potentially 8,226 permit holders as a result of this alternative. Since the data are collected online or via telephone, there are no monetary costs to fishermen or direct economic impacts to fishermen from this alternative.

Adjustments to both the online and IVR systems of the ALRS to implement catch reporting for General, Harpoon, and HMS Charter/Headboat category permit holders are estimated to cost NMFS between $15,000 and $35,000 (B. McHale, pers. comm.) Annual maintenance would likely cost approximately $8,700 per year, which is the current cost for maintaining the ALRS and the call-in system for reports of other recreational HMS landings (NMFS 2013).

Alternative D 4 – Deployment of Observers

Under alternative D 4a, the No Action alternative, and the preferred alternative, there would be no changes to the current observer coverage in the Atlantic Tunas Longline, General, Purse Seine, Harpoon, or HMS Charter/Headboat categories. Therefore, there would be no additional cost to small businesses.

Alternative D 4b would increase the level of NMFS-funded observers on a portion of trips by vessels fishing under the Atlantic Tunas Longline, General, Purse Seine, Harpoon, or HMS Charter/Headboat categories. There might be some minor costs to vessel operators with the increased chance that they will be selected for observer coverage and will have to accommodate an observer.

Alternative D 5 – Logbook Requirement

Alternative D 5, the No Action alternative, is preferred and would make no changes to the current logbook requirements applicable to any of the permit categories. It would have no economic impact on fishing vessel owners.

Alternative D 5b would require the reporting of catch by Atlantic Tunas General, Harpoon, and HMS Charter/Headboat category vessels targeting bluefin through submission of an HMS logbook to NMFS. The direct social and economic impacts of this non-preferred alternative include the amount of time to complete logbook forms and the cost of submission (i.e., mailing) for all fishermen permitted in the affected permit categories. These impacts would be minor, adverse, and long-term. A high-end proxy for the impacts of this alternative is the current reporting burden and cost for the entire HMS logbook program, which have been estimated for all commercial HMS fisheries (28,614 permits, NMFS 2011a). The annual reporting burden for the entire program is estimated at 36,189 hours and costs are $94,779 for postage. A more refined estimate is 6,735, which is the number of fishermen likely to conduct directed fishing trips for bluefin based on the total number of General, Charter/Headboat, and Harpoon category permit holders in the states from Maine through South Carolina. This is likely also an over-estimate, since many General and Charter/Headboat permit holders in these states fish for yellowfin, or other tunas rather than bluefin, or, for Charter/Headboat permit holders, other HMS. NMFS estimates an annual reporting burden of 16,526 hours and a cost of $8,263.

Alternative D 6 – Expand the Scope of the Large Pelagics Survey

"No Action" is the preferred alternative for the scope of the Large Pelagics Survey, and would have no social or economic impacts. The non-preferred alternative would expand the Large Pelagics Survey to include May, November, and December, and add surveys to the states south of Virginia, including the Gulf of Mexico, in order to increase the amount of information available about the recreational bluefin fishery, and further refine recreational bluefin landings estimates.

The direct economic impact of the non-preferred alternative is the amount of time that fishermen would expend participating in the survey. The impacts would be minor, adverse, and long-term. There are no financial costs to fishermen since the survey is conducted in person and over the phone, and there would be no direct economic impacts to fishermen for this alternative. NMFS estimates that the dockside survey takes 5 minutes on average, the phone survey takes 8 minutes, and collection of supplemental biological information takes about 1 minute. Previously, NMFS estimated that annual implementation of the Large Pelagics Survey throughout Atlantic and Gulf coastal states using the current target sample-size of 7,870 for the dockside survey, 10,780 for the phone survey and 1,500 for the biological survey would result in a reporting burden of 656 hours, 924 hours, and 25 hours respectively, for a total reporting burden of 1,730 hours (NMFS 2011b). This estimate could be used as a high-end proxy for the reporting burden associated with this alternative. Another method for estimating the reporting burden associated with this alternative is to use a ratio comparing the sample frame (i.e., number of permits) used in the coastwide estimate with the sample frame for the alternative (i.e., number of permits in states south of VA). Using this method, the reporting burden estimate is 559 hours. Because of the sampling design, adding the months of May, November, and December is not expected to add any reporting burden or cost (Ron Salz, pers. comm.).

8.6.5 Other Measures

Alternative E 1 – Modify General Category Sub-Period Allocations

If no action is taken under Alternative E 1a to modify the General category sub-period allocations, economic impacts would be neutral and largely would vary by geographic area, with continued higher potential revenues during the summer months in the northeast and lower amounts to winter fishery participants off the mid- and south Atlantic states. General category participants that fish in the January bluefin fishery may continue to perceive a disadvantage as the available quota for that period is relatively small (5.3% of the General category quota) and that they do not benefit from the rollover of unused quota either inseason, from one time period to the next, nor do they benefit from prior-year underharvest because of the timing of the annual final quota specifications (published in the middle of the year).

Alternative E 1b, establish a 12 equal monthly sub-quotas, was considered in the 2011 Environmental Assessment for a Rule to Adjust the Atlantic Bluefin Tuna General and Harpoon Category Regulations. It would allow the General category to remain open year-round and would revise subquotas so that they are evenly distributed throughout the year (i.e., the base quota of 435.1 mt would be divided into monthly subquotas of 8.3 percent of the General

category base quota, or 36.1 mt). NMFS would continue to carry forward unharvested General category quota from one time period to the next time period. This alternative would result in increased harvest in the earlier portions of the General category bluefin season and decreased harvest in the later portions of the season. For early season (January-March) General category participants, an additional 85.2 mt would be available (i.e., 108.3-23.1 mt). At $9.13/lb, this represents potential increased revenue of approximately $1.7 million overall during this time period, nearly five times the current amount. NMFS does not have General category price/lb information for April or May since there is currently no General category fishing during those months, but using $9.13/lb as an estimate, potential revenues for each of those months would be $726,621. Potential revenues for the current June-August and September periods would decrease by approximately $2.2 million (50%) and $1.7 million (69%), given recent average price ($9.13 and $9.61, respectively). For October-November and for December, potential revenues would increase by approximately $317,000 (28%) and $287,000 (60%) at $9.21/lb and $9.65/lb, respectively. Relative to the No Action alternative, under Alternative E 1b, there would generally be substantially increased revenues for January through May and October through December and substantially decreased revenues for June through September, and total annual revenues would decrease by approximately $100,000 (1%).

Alternative E 1c, a preferred alternative, is similar to Alternative E 1b and could result in a shift in the distribution of quota and thus fishing opportunities to the earlier portion of the year. For example, in 2011 and 2012, June through August General category landings totaled 140.3 mt and 192.2 mt, out of an available (base) quota of 217.6 mt. In 2010, June through August General category landings totaled 125.4 mt of an available (adjusted) quota of 269.4 mt. If quota that is anticipated to be unused in the first part of the summer season is made available to January period General category participants and bluefin are landed against the January period subquota, it would potentially result in improved and fuller use of the General category quota. Also, because bluefin price per lb is often higher in the January period than during the summer, shifting quota to this earlier period would result in beneficial impacts to early season General category participants off the mid- and south Atlantic states. It is possible, however, that an increase of bluefin on the market in the January period could reduce the average price for that time of year. Participants in the summer fishery may perceive such quota transfer to be a shift away from historical participants in the traditional General category bluefin fishing areas off New England and thus adverse. However, because unused quota rolls forward within a calendar year from one period to the next, any unused quota from the adjusted January period would return to the June through August period and onward if not used completely during that period. Overall, short-term, direct impacts depend on the amount and timing of quota transferred inseason and would be expected to be neutral to minor, beneficial for January fishery participants and neutral to minor, adverse impacts for participants in the June through December General category fishery.

Alternative E 2 – NMFS Authority to Adjust Harpoon Category Retention Limits Inseason

Under the No Action alternative, alternative E 2a, Harpoon category participants would continue to have the ability to retain and land up to four large medium fish per vessel per day, as well as unlimited giants. The economic impact of the No Action alternative is expected to be direct and neutral to slightly beneficial and short-term as participants would continue to be able to retain

and land a 3rd and 4th large medium bluefin, if available, and would not have to discard these fish if caught while targeting giant bluefin. In 2012, the first year following implementation of the four-fish limit on large mediums, there were only two trips on which three large mediums were landed and two trips on which four large mediums were landed, or 6% total of successful trips. Harpoon quota revenues in 2012 were 24 percent lower than 2011 and 71 percent higher than in 2010.

Under alternative E 2b, a preferred alternative, if NMFS changes the regulations to implement the daily retention limit of large medium bluefin over a range of two to four bluefin, the default large medium limit would be set at two fish. On a per-trip basis, there would be minor short-term direct adverse social and economic impacts that would depend on availability of large mediums to Harpoon category vessels on a per trip basis and the actual retention limit that NMFS sets inseason (or that is in place by default). Looking at successful 2012 trips, NMFS can estimate potential impacts of this change by determining the number of trips on which three or four large mediums were landed in 2012 and assuming that those fish may not be able to be landed under this alternative. Using 2012 successful trip data, if the limit was set at two large mediums, the revenue from up to six large mediums would be foregone for the season, and with a three fish limit, the revenue of up to two large mediums would be foregone. At an average 2012 weight of 296 lbs. and an average price of $9.13/lb for the Harpoon category, a loss of one to six fish would be approximately $2,702 to $16,215 for the Harpoon category as a whole for the year.

Potentially beneficial economic impacts are possible if a lower limit at the beginning of the season results in the Harpoon category quota lasting longer into the season, as the average price/lb is generally higher in July and August than it is in June. NMFS has not needed to close the Harpoon category in recent years (i.e., as a result of the quota being met), but depending on the size of the amount of quota available and the number of Harpoon category participants, this may be a consideration.

Alternative E 3 – Angling Category Subquota Distribution

Under alternative E 3a, the No Action alternative, Angling category participants fishing south of 39°18’ N. lat. (approximately, Great Egg Inlet, NJ) would continue to have their landings of trophy bluefin count toward a shared 66.7% of the Angling category large medium and giant bluefin subquota. The social impact of the No Action alternative is expected to vary by geographic area and be dependent of availability of trophy-sized bluefin on the fishing grounds. If the pattern of high activity off Virginia and North Carolina continues, fishermen in the mid-Atlantic may have greater opportunities to land a bluefin and participants in the Gulf of Mexico may have no opportunity to land a bluefin when the fish are in their area as the southern trophy fishery may already be closed for the year. For Angling and Charter/Headboat fishermen, based on the last two years, there would be direct, beneficial, short-term social impacts in the mid-Atlantic and direct, adverse, short-term impacts for participants south of that area, including the Gulf of Mexico. The issue of economic costs for Angling category participants is not relevant as there is no sale of tunas by Angling category participants. For charter vessels, which sell fishing trips to recreational fishermen, economic impacts are expected to be neutral to beneficial for those in the mid-Atlantic and neutral to adverse for those south of that area, including the Gulf of

Mexico, as the perceived opportunity to land a trophy bluefin may be diminished. This should be tempered in the Gulf of Mexico, where there is no directed fishing for bluefin allowed. Given that the current southern trophy bluefin subquota of 2.8 mt represents approximately 17-30 individual fish, impacts are expected to be minor.

Under Alternative E 3b, the preferred alternative, a portion of the trophy south subquota would be allocated specifically for the Gulf of Mexico. Specifically, the trophy subquota would be divided as 33% each to the northern area, the southern area outside the Gulf of Mexico, and the Gulf of Mexico. At the current average trophy fish weight, this would allow annually up to 8 trophy bluefin to be landed in each of the three areas.

There would be minor, short-term, direct, beneficial social impacts to a small number of vessels in the Gulf of Mexico given the small amount of fish that would be allowed to be landed (as well as indirect beneficial economic impacts for charter vessels), but the perception of greater fairness among southern area participants may result in indirect, longer-term, beneficial, social impacts. There would be minor, short-term, direct and indirect adverse social impacts (and economic impacts for charter vessels) for those outside the Gulf of Mexico as the perceived opportunity to land a trophy bluefin may be diminished.

Alternative E 4 – Change Start Date of Purse Seine Category to June 1

Under Alternative E 4a, the No Action alternative, there would be no change to the start date of the Purse Seine category fishery, which is currently set at July 15. Economic impacts would be expected to be direct and neutral to adverse depending on availability of schools of bluefin for purse seine operators to decide to make a set on. That is, currently, if conditions would warrant making a set (e.g., based on information from spotter pilots) before July 15, purse seine operators would not be able to fish and would miss the economic opportunity to land and sell bluefin while the other commercial bluefin fisheries are open. Social impacts would be minor and neutral to adverse for purse seine fishery participants and would be minor and neutral to beneficial for fishermen in other categories due to reduced actual or perceived gear conflict from June 1 through July 14.

Under the preferred alternative, E 4b, beginning fishing on June 1 would allow more flexibility for purse seine operators to choose when to fish, based on availability of schools of appropriate-sized bluefin and market price. Economic impacts would be expected to be direct and neutral to moderate and beneficial depending on availability of schools of bluefin for purse seine operators to decide to make a set on and market conditions. Social impacts would be minor and neutral to beneficial for purse seine fishery participants and would be minor and neutral to adverse for fishermen in other categories due to increased actual or perceived gear conflict from June 1 through July 14. In 2012, the average price per pound was $12.46, although the price likely reflects the relatively small amount of purse seine-caught bluefin on the market that year. In 2009, the last year in which there were Atlantic purse seine bluefin landings, the average price per pound was $5.96.

Alternative E 5 – Rule Regarding Permit Category Changes

Under the No Action alternative, E 5a, there would be no changes made to current regulations regarding the ability of an applicant to make a correction to their open-access HMS permit category. The current regulations prohibit a vessel issued an open-access Atlantic Tunas or an HMS permit from changing the category of the permit after 10 calendar days from the date of issuance. This No Action alternative is administrative in nature, and therefore the social and economic impacts associated with it would be neutral for most applicants. However, for those applicants who discover their permit category may not allow the vessel to fish in a manner as intended, they may experience moderate adverse social and economic impacts at an individual level. For example, if a commercial fishermen obtained an Angling category permit (recreational) versus a General category permit (commercial) and did not discover the error until after the 10 calendar day window, their vessel would not be allowed to fish commercially for Atlantic tunas for the remainder of that year. Likewise, if recreational fishermen obtained a General category permit (commercial) versus an Angling category permit (commercial) and did not discover the error until after the 10 calendar window, their vessel would not be allowed to fish under the recreational rules and regulations for the remainder of the year. These two examples demonstrate the potential in lost fishing opportunities as a result of the No Action alternative.

Under the preferred alternative, E 5b, NMFS would allow category changes to an open-access HMS permit issued for a time period greater than 10 calendar days (e.g., 30, 45, or 60 days), provided the vessel has not fished as verified via landings data. This alternative would result in neutral social and economic impacts for most applicants as there are approximately 20 requests annually that would fall outside the 10 calendar day window. However, for those applicants who discover their permit category may not allow the vessel to fish in a manner as intended (~20 per year), they would experience moderate beneficial social and economic impacts provided they discover the error in the liberalize window (e.g., 30, 45, or 60 days). Using the two examples illustrated above and assuming no bluefin were caught in either case, each applicant would be allowed to correct their open-access HMS permit category to match their intended fishing practices for the remainder of that year, thereby mitigating the potential of lost fishing opportunities, as well as potential income.

Alternative E 6 – Northern Albacore Tuna Quota

Alternative E 6a, the No Action alternative, maintains the current northern albacore tuna quota. In the last 10 years, U.S. catches reached or exceeded the current U.S. initial quota (527 mt for 2013) in 2004 with 646 mt and in 2007 with 532 mt. However, catches have been less than the adjusted U.S. quotas (currently about 659 mt) for the last several years. Under the No Action alternative, there is no domestic mechanism to limit annual catches of northern albacore beyond the current requirements for Atlantic tunas or HMS vessel permits, authorized gear, observers/logbooks, and time/area closures. Therefore, expected short-term, direct economic impacts and social impacts under the No Action alternative would be neutral. If future overharvests result in the United States being out of compliance with the ICCAT recommendation, the United States would need to put control measures in place and neutral to adverse longer-term direct economic and social impacts could occur if the resulting annual quota needs to be reduced by the amount of the overharvest.

If, under preferred alternative, E 6b, NMFS implements a domestic quota for northern albacore and recent catch levels continue, and the U.S. quota (including the adjusted quota) recommended by ICCAT is maintained at the current amount, economic and social impacts would not be expected. However, if either the U.S. quota is reduced as part of a new TAC recommendation or catches increase above the current adjusted U.S. quota, there could be adverse impacts resulting from reduced future fishing opportunities and ex-vessel revenues. At an average price of $1.29/lb for commercially-landed albacore in 2011, a reduction of one mt would represent approximately $2,800 under a full quota use situation. Actual impacts would largely depend on the availability of northern albacore and the ability of fishery participants to harvest the quota. In addition, any adverse social and economic impacts of exceeding the TAC, which was adopted as part of the overall ICCAT northern albacore rebuilding program, would be reduced and, in the long term, may be beneficial for fishermen as the stock grows. There may be slight differences in the level of economic and social impacts experienced by the specific individuals of the northern albacore fishery, as well as by participants within a particular fishery sector.

Chapter 8 References

NMFS. 2012. 2012 Stock assessment and fishery evaluation (SAFE) report for Atlantic highly migratory species. NOAA Fisheries, Atlantic Highly Migratory Species Management Division, Silver Spring, MD.

9.0 APPLICABLE LAW

9.1 Magnuson-Stevens Fishery Conservation and Management Act

9.1.1 Consistency with National Standards

Section 301 of the Magnuson-Stevens Act requires that fishery management plans and their implementing regulations be consistent with the 10 national standards listed below. The following paragraphs summarize how the preferred alternatives are consistent with the national standards. The detailed information in the previous chapters supports these conclusions. Congress also directed NMFS in the Atlantic Tunas Convention Act (ATCA) to manage the bluefin tuna fishery to ensure that NMFS provides U.S. fishing vessels "with a reasonable opportunity to harvest such allocation, quota, or at such fishing mortality level. . . ." 16 U.S.C. § 1854(g)(1)(D).

The proposed rule builds upon an extensive regulatory framework for management of the domestic bluefin tuna fishery pursuant to a rebuilding program adopted in the 1999 FMP and continued under the 2006 Consolidated HMS FMP. The proposed rule is based on the best available science and on certain scientific assumptions underlying the bluefin tuna rebuilding program. This rebuilding program was reviewed and upheld in Nat'l Audubon Soc'y v. Evans, No. 99-cv-1707(RWR), 2003 WL 23147552, at *5 (D.D.C. July 3, 2003) (holding that the ICCAT Rebuilding Program adopted in the 1999 FMP complied with MSA requirements to prevent overfishing).

The existing rebuilding program and ICCAT total allowable catch take into account uncertainties in the scientific information regarding the status of the bluefin tuna stock. ICCAT's SCRS has analyzed stock status and projection information based on two stock recruitment scenarios (i.e., the "high recruitment" and "low recruitment" scenarios) and indicated there is no strong evidence to choose one scenario over the other. Under the high recruitment scenario, the SCRS has concluded that rebuilding is not likely to occur by 2019, even with no (U.S. or foreign) harvests. However, this scenario does not preclude growth of bluefin tuna stocks if harvests are restricted to the ICCAT-recommended quota during the rebuilding period. In 2012, for example, the SCRS determined that maintaining the western bluefin tuna total allowable catch at 1,800 metric tons would allow stock growth under both recruitment scenarios. The United States supported, and ICCAT adopted, a reduction in the total allowable catch to 1,750 metric tons, as an additional cautionary step given the uncertainty in the scientific advice. The 2012 SCRS stock assessment remains the best available scientific information with respect to the current stock status and the prospects for future bluefin tuna population growth and rebuilding.

The conservation and management measures in this draft FMP amendment and proposed rule were designed to allow fishers to fully harvest, but not exceed, the U.S. bluefin tuna quota by refining the management tools in the 2006 Consolidated HMS FMP. In this draft amendment, NMFS proposes a detailed, multi-level approach to resolving challenges in administering and carrying out the current quota system, which, if left unaddressed, could result in overharvests of the United States' quota in the future. To avoid this outcome while ensuring that the quota is fairly distributed among user groups, the proposed rule focuses primarily on ensuring that the Atlantic bluefin tuna fisheries continue to operate within the TAC set by ICCAT consistent with

the existing rebuilding plan. The proposed rule does *not* increase or decrease the overall authorized bluefin tuna harvest levels by bluefin tuna fisheries. Rather, the proposed management measures will affect the time, place, and manner in which U.S. fisheries may harvest the U.S. quota and the relative volumes of fish that may be caught by the domestic fisheries.

The preferred alternatives would reduce dead discards of bluefin by restricting pelagic longline gear use in defined areas (gear restricted areas) and by creating an individual quota system in the pelagic longline fishery. They will also improve quota accounting, decrease management uncertainty by increasing accountability, and enhance reporting and monitoring to provide more timely and accurate data for science and management purposes. These alternatives would directly support the goals of reducing overfishing, rebuilding the western stock of Atlantic bluefin tuna, and achieving optimum yield by ensuring that the bluefin tuna fishery continues to be managed within the ICCAT-approved total allowable catch, and thus is consistent with National Standard 1's requirements.

National Standard 1:

Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The Magnuson-Stevens Act defines optimum yield as the amount of fish which provides for rebuilding to a level consistent with producing the maximum sustainable yield from the fishery. The preferred alternatives would reduce dead discards of bluefin through gear restricted areas and an individual quota system in the pelagic longline fishery; improve quota accounting; decrease management uncertainty by increasing accountability; and enhance reporting and monitoring to provide more timely and accurate data for science and management purposes. These alternatives would directly support the goals of reducing overfishing, rebuilding the western stock of Atlantic bluefin tuna, and achieving optimum yield.

National Standard 2:

Conservation and management measures shall be based on the best scientific information available.

Amendment 7 is based on the best available fishery-dependent and fishery-independent data, and the most recent stock assessment for western Atlantic bluefin and northern albacore tuna. The economic information in this document is based upon logbook reports, weighout slips, and dealer reports. Average revenues are based on all pelagic longline sets made in that month from logbook reports, weighout slips, and ex-vessel prices from dealer reports (January 2006 through December 2011). Bycatch information is based upon vessel logbooks, and observer reports. The western Atlantic bluefin tuna stock was last assessed in 2012 by ICCAT's SCRS (SCRS, 2012), and included information through 2011. The northern albacore stock was last assessed in 2009 by ICCAT's SCRS (SCRS, 2009), and included information through 2007. ICCAT is assessing northern albacore in 2013 and that information will be incorporated into the final Amendment. The list of references in Amendment 7 reflects a range of sources of scientific information,

including the 2012 Stock Assessment and Fishery Evaluation Report. Development of alternatives was informed by public input including hearings, written comments, and the Highly Migratory Species Advisory Panel.

National Standard 3:

To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The management alternatives reflect management of the western Atlantic stock of bluefin as a unit, throughout its range in the U.S. Exclusive Economic Zone (EEZ). The importance of specific geographic regions to the life history of bluefin is reflected in the management alternatives, which include management tools applicable to particular geographic regions (i.e., Gulf of Mexico and the Atlantic). Atlantic bluefin tuna are highly migratory pelagic fish that range across most of the North Atlantic and its adjacent seas, particularly the Mediterranean Sea (Atlantic Bluefin Tuna Status Review Team, 2011). The fact that the range of the western Atlantic stock of bluefin extends beyond the U.S. EEZ and is interrelated to the eastern Atlantic stock of bluefin is reflected in the close coordination of management with other nations though ICCAT (as described in Chapter 3). The preferred alternatives provide additional flexibility for the quota management of bluefin tuna to adapt to the evolving understanding of the complex stock structure and dynamics of Atlantic bluefin tuna.

National Standard 4:

Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The preferred management alternatives would not discriminate between residents of different states. They would be applied equally to all permit holders, regardless of homeport. While the alternatives would not discriminate between permit holders, they would have different impacts on different fishery participants, depending upon quota category, historical fishing behavior and catch, dependence upon the fishery, future fishing location, and other criteria as described below.

One of the reasons for different impacts is the variable distribution of bluefin. Bluefin are concentrated seasonally in different locations including the Cape Hatteras continental shelf break, and the Gulf of Mexico. Therefore, bluefin are more vulnerable to interactions with the fishery than at other times of year when they are more widely dispersed. For example, the alternative designed to reduce discards in an area off North Carolina would impact vessels fishing in that area. These distributive impacts are difficult to avoid, given the need to reduce

dead discards. Amendment 7 contains the following alternatives to mitigate distributive impacts: “Cape Hatteras Gear Restricted Area with Access Based on Performance”; “Allow Pelagic

Longline Vessels to Fish under General Category Rules"; "Pelagic and Bottom Longline Transiting Closed Areas"; and "Provide Additional Flexibility for General Category Retention Limits Inseason." The use of performance metrics in association with the Cape Hatteras Gear Restricted Area would provide vessels a means to modify future behavior and avoid potential impacts; fishing under General category rules would provide alternative means to obtain revenue; and transiting would save time and fuel costs for vessels fishing near a gear restricted area or closed area. The alternative that would provide additional flexibility for General category quota adjustment would enhance NMFS' ability to make inseason quota adjustments to respond to regional differences in quota and/or fish availability.

A second reason for different impacts is the assignment of fishing privileges to permitted pelagic longline vessels based on various factors, including the fishing history of such vessels. The preferred reallocation alternatives and the IBQ alternatives that would confer fishing privileges are consistent with the required Magnuson-Stevens Act considerations to be fair and equitable. Specifically, fishing privileges that would be assigned among U.S. fishermen would take into consideration the requirements of § 303A(5)(c)(5), including for example, current and historical harvests; investments in and dependence upon the fishery; continued participation in the fishery by active vessels; entry into the fishery of new vessels; promotion of the sustained participation of fishing communities that depend on the fisheries; and, ensuring the limited access privilege holders do not acquire an excessive share of the total limited access privileges in the program.

National Standard 5:

Conservation and management measures shall, where practicable consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

Some preferred alternatives would either reduce or increase economic efficiency, but such changes in efficiency are not the objective of the alternatives, which are designed to meet the Amendment 7 management objectives. For example, the Gulf of Mexico or Cape Hatteras Gear Restricted Areas may reduce a vessel's efficiency if it causes a vessel to fish in a location further from its port of departure, or if the catch per unit effort of a target species is reduced outside of the area. These potential reductions in efficiency are warranted by the important reductions in bluefin discards likely to result from the gear restricted areas, consistent with National Standard 1. Pelagic longline vessels may gain economic efficiencies from the elimination of the target catch requirements, and the ability to obtain additional Individual Bluefin Quota via a lease.

National Standard 6:

Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The preferred alternatives allow for the use of different gear and fishing practices, and accommodate the diversity of the fishery reflected in the various quota categories and vessel sizes. The preferred alternatives were designed to address the Amendment 7 objectives in a manner that considers the unique characteristics of each quota category. The principal

determining factors in many alternatives is the unique fishing practices and the specific history of fishing, reporting, and quota accounting of each quota category. For example, the Longline category is unique in its importance as a domestic commercial fishery that targets non-bluefin species, with a responsibility for logbook reporting and observed trips, a documented history of dead discards, a history of accounting for a portion of such discards, and a unique gear type with diverse bycatch. A second example is the Purse Seine category, which is a unique gear type that played an important historical role in the development of the U.S. bluefin fishery, with recent low levels of fishing activity. The number and complexity of the management alternatives reflects the diversity of the fishery, and the need to both accommodate that diversity as well as the need for flexible, robust quota system that can adapt to change.

National Standard 7:

Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

NMFS considered the costs and benefits of a range of alternatives to achieve the objectives of this Amendment. NMFS considered the costs to the different categories of taking no action as well as alternatives that would be more costly than the preferred alternatives. The costs in general would enhance the ability of the categories to continue operate in the long-term by ensuring the sustainability of the bluefin stock. The preferred alternatives would minimize the costs associated with potential quota reductions and accounting for dead discards by providing additional flexibility to optimize fishing opportunity among quota categories. Although the vessel monitoring system (VMS) requirement for the Longline category would duplicate some of the information provided by the current logbook system, the VMS data would be unique in its timeliness and value in monitoring the Longline bluefin quota.

National Standard 8:

Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse impacts on such communities.

The preferred alternatives include a range of strategies, which were explicitly developed to consider different methods to achieve Amendment 7 objectives. NMFS has preliminarily determined that the preferred alternatives achieve the best balance to satisfy these objectives. For example, the “Cape Hatteras Gear Restricted Area with Access based on Performance” alternative would provide important reductions in bluefin dead discards, yet allow continued access to the area by the majority of the pelagic longline vessels. The “Individual Bluefin Quota” and the preferred reallocation alternatives would fundamentally alter the pelagic longline fishery by prohibiting the use of pelagic longline gear when the bluefin quota is reached and establish individual accountability, and but also provide for additional quota for the Longline category in order to minimize adverse impacts on the Longline category and pelagic longline fishery communities.

The “Reallocation to the Longline Category based on 68 mt Historical Dead Discard Allowance” and the “Annual Reallocation of Bluefin Quota from the Purse Seine Category” alternatives would provide methods of providing additional quota to the Longline category that would also minimize adverse impacts on the other quota categories, supporting those communities through sustained participation. The electronic monitoring requirement would provide an important tool to monitor the IBQ, which NMFS determined to be more feasible in the short term than other potential means of independent verification such as increased observer coverage. The requirement for enhanced reporting for the General, Harpoon, and Charter/Headboat categories would improve data, but would represent a low adverse impact.

National Standard 9:

Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

Amendment 7 preferred alternatives would minimize bycatch in a variety of ways. Among the preferred alternatives (fully discussed in Chapter 4) are gear restricted areas that would prohibit or restrict the use of pelagic longline gear in times and areas of high bluefin interactions; individual bluefin quotas in the pelagic longline fishery; and the closure of the pelagic longline fishery when the total Longline category quota is reached/projected to be reached.

The preferred alternatives would reduce dead discards of bluefin; provide strict limits on the catch of bluefin by pelagic longline gear; increase bluefin catch accountability of the Longline category and the accountability of individual vessels; provide incentives for vessels to avoid bluefin, provide incentives to use non-pelagic longline gear (which has lower bycatch of bluefin and protected species); provide incentives to comply with reporting and monitoring requirements, including reporting of bycatch; enhance inseason reporting and monitoring of bluefin discards in all categories; and provide tools such as electronic monitoring that could enhance monitoring of all bycatch species.

National Standard 10:

Conservation and management measures shall, to the extent practicable, promote safety of human life at sea.

No impact to safety of life at sea is anticipated with the exception of the alternative that would allow vessels fishing with bottom or pelagic longline gear to transit through applicable closed areas with such gear on board. This alternative would enhance safety at sea by minimizing the distance, and therefore the time required to either return to port after fishing, or steam to the fishing location from port. Minimizing the time at sea may slightly reduce the risks inherent in being at sea. To the extent that IBQs may facilitate vessel operators deciding when and how to fish their quotas independently from one another, and therefore reduce somewhat the potential for ‘derby’ fishing behavior, IBQs may contribute to safety at sea relative to the other (i.e., regional and group) quota alternatives.9.1.2 Consideration of Magnuson-Stevens Act Section 304(g) Measures

Section 304(g) of the Magnuson-Stevens Act includes requirements specific to the preparation and implementation of an FMP or FMP amendment for HMS. See 16 U.S.C. 1854(g) for the full text. The summary of the requirements are below. The impacts of the preferred alternatives and how they meet these requirements are described in more detail in Chapters 2, 4, and 5 of this document.

Consult with and consider the view of affected Councils, Commissioners, and advisory groups.

As discussed in detail in Chapter 1, the HMS Advisory Panel discussed bluefin tuna management in many of the years preceding the development of this DEIS, and in 2011 and 2012 began to focus on changes that may be necessary to the 2006 Consolidated HMS FMP. In preparation for the formal scoping process of evaluating potential bluefin fishery management changes, a preliminary version of a Scoping Document ("Preliminary White Paper") was presented by NMFS to the HMS Advisory Panel meeting at its March 2012 meeting (NMFS, March 2012). The HMS Advisory Panel expressed qualified support for further exploring and analyzing the range of measures in the Preliminary White Paper, and suggested several additional measures. Those additional measures were incorporated into a final Scoping Document (NMFS, April 2012). NMFS made the scoping document available to the public, concurrent with the publication of a Notice of Intent (NOI) in the Federal Register (78 FR 24161; April 23, 2012), which announced NMFS' intent to hold public scoping meetings to determine the scope and significance of issues to be analyzed in a DEIS, and a potential amendment to the 2006 Consolidated HMS FMP. Pursuant to the publication of the NOI, NMFS conducted the following scoping hearings and consultations:

Scoping Hearings:

Toms River, New Jersey – May 8, 2012 (Toms River Library);

Gloucester, Massachusetts – May 16, 2012 (National Marine Fisheries Service);

Belle Chasse, Louisiana – May 21, 2012 (Plaquemines Parish Government Community Center);

Manteo, North Carolina – May 23, 2012 (Dare County Administration Building);

Portland, Maine – June 18, 2012 (Holiday Inn by the Bay).

Regional Fishery Management Council Consultations:

Mid-Atlantic Fishery Management Council Meeting – June 14, 2012 (Hilton New York, New York, NY)

New England Fishery Management Council Meeting – June 19, 2012 (Holiday Inn by the Bay, Portland, ME)

South Atlantic Fishery Management Council Meeting – June 15, 2012 (Renaissance Orlando Airport Hotel, Orlando, FL) ,

The scoping document was shared with Gulf of Mexico Fishery Management Council, and

Caribbean Fishery Management Council. NMFS accepted public comment on the scoping document through July 15, 2012. A summary of the public comments are contained in the Appendix of this DEIS. On September 20, 2012, NMFS presented a Predraft document to the HMS Advisory Panel (NMFS, September 2012). A Predraft, which is a precursor to a DEIS, allowed NMFS to obtain additional information and input from Consulting Parties and the public on potential alternatives prior to development of the formal DEIS and proposed rule. As such, NMFS requested comments on the Predraft from the HMS Advisory Panel, and made the document available to the public through the HMS website (http://www.nmfs.noaa.gov/sfa/hms).

Establish an advisory panel for each FMP.

As part of the 2006 Consolidated HMS FMP, NMFS combined the Atlantic Billfish and HMS Advisory Panels into one panel. The combined HMS Advisory Panel provides representation from the commercial and recreational fishing industry, academia, non-governmental organizations, state representatives, representatives from the Regional Fishery Management Councils, and the Atlantic and Gulf States Marine Fisheries Commissions. This amendment will not change the HMS Advisory Panel, and, as described above, NMFS discussed the Amendment 7 scoping document and Predraft with the HMS Advisory Panel. The HMS Advisory Panel will discuss this DEIS and proposed rule in September 2013.

Evaluate the likely effects, if any, of conservation and management measures on participants in the affected fisheries and minimize, to the extent practicable, any disadvantage to U.S. fishermen in relation to foreign competitors.

Chapters 5, 6, 7, and 8 of this document evaluate the quantitative and qualitative economic and social impacts of Amendment 7 management measures on participants in the affected fisheries. Amendment 7 analyses a range of alternatives, including No Action, in order to compare the specific effects of the different measures (alternatives) on participants. With respect to the requirement that NMFS minimize to the extent practicable any disadvantage to U.S. fishermen in relation to foreign competitors, NMFS considered several aspects of the management measures: 1) Impact on the ability of U.S. fishermen to fully harvest (but not exceed) the U.S. bluefin quota; 2) impact on the ability of the U.S. fishermen to harvest swordfish, yellowfin tuna, bigeye tuna, or other target species; 3) impact on the ability of the U.S. fishermen to harvest the northern albacore ; and 4) impact of a potential change in the commercial minimum size.

The specific amount of the U.S. bluefin quota and swordfish quotas recommended by ICCAT are set through international negotiations, based upon many factors. One factor that may be relevant is whether the United States harvests it full quota. Although "underharvest" of a quota (catching less that the full quota), and 'leaving fish in the water' may in certain circumstances have beneficial biological impacts, it may disadvantage the United States in the context of ICCAT. This potential disadvantage is because an underharvest of quota may be used as justification for a

reduced amount of future quota. NMFS minimized such potential disadvantage associated with an underharvest of swordfish (by the Longline category) by developing management alternatives that would provide flexibility to optimize fishing opportunity. The preferred alternatives address the Amendment 7 objectives regarding reducing and accounting for bluefin dead discards, and also minimize the reductions in swordfish, yellowfin tuna, and other target catch. The preferred alternative that would implement a northern albacore quota would not disadvantage U.S. fishermen. Other non-U.S. vessels are also subject to such a quota, and in the short-term the U.S. northern albacore quota would not constrain catch.

With respect to bluefin size, the international context is relevant because ICCAT recommends a minimum size as well as sets restrictions for harvest of particular size ranges. Amendment 7 would make no change to the minimum size restrictions and would therefore not disadvantage U.S. fishermen.

With respect to HMS for which the United States is authorized to harvest an allocation, quota, or fishing mortality level under a relevant international fishery agreement, provide fishing vessels a reasonable opportunity to harvest such allocation, quota, or at such fishing mortality level.

The United States is under an international agreement regarding the harvest of bluefin tuna, swordfish, and northern albacore, the stocks most directly impacted by Amendment 7. The preferred alternatives address the Amendment 7 objectives regarding reducing and accounting for bluefin dead discards, and also minimize the reductions in swordfish, yellowfin tuna, bigeye tuna, or other target catch. The alternative "Cape Hatteras Gear Restricted Area with Access Based on Performance" allows access for the majority of vessels in order to provide a reasonable opportunity to harvest target species, including those species subject to an international agreement. The alternative "Access to Certain Pelagic Longline Closed Areas" would also provide fishing opportunities to harvest quota. The alternative IBQ would enable vessels to continue to fish for target species if they are able to avoid bluefin, or account for bluefin quota caught. The IBQ would provide a more reasonable opportunity to harvest target species than would the regional or group quota alternatives. The reallocation alternatives provide a reasonable opportunity for the non-Longline categories to harvest bluefin quota, especially in consideration of the new restrictions that would apply to the Longline category.

Review on a continuing basis, and revise as appropriate, the conservation and management measures included in the FMP.

NMFS continues to review the need for any revisions to the existing regulations for Atlantic HMS fisheries. Draft Amendment 7 to the 2006 Consolidated HMS FMP is the culmination of one of those reviews.

Diligently pursue, through international entities, comparable international fishery management measures with respect to HMS.

NMFS continues to work with ICCAT and other international entities such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to implement

comparable international fishery management measures. To the extent that some of the management measures in this amendment could enhance fishery management in other countries, NMFS works to provide foreign nations with the techniques and scientific knowledge to implement similar management measures.

Ensure that conservation and management measures under this subsection:

Promote international conservation of the affected fishery;

Take into consideration traditional patterns of fishing vessels of the United States and the operating requirements of the fisheries;

Are fair and equitable in allocating fishing privileges among U.S. fishermen and do not have economic allocation as the sole purpose; and

Promote, to the extent practicable, implementation of scientific research programs that include the tagging and release of Atlantic HMS.

The Amendment 7 management objectives and the preferred alternatives designed to achieve those objectives would promote the sustained international conservation of the bluefin and northern albacore fisheries as well as other HMS fisheries. The bluefin measures would result in a more robust quota system, with reduced management uncertainty.

The traditional patterns of fishing vessels have been taken into consideration through the design of the alternatives, which reflect the unique historical and regulatory circumstances and operating requirement affecting each permit category; and by examining the economic impacts on the different elements of the fishery.

The alternatives that allocate fishing privileges among U.S. fishermen are fair and equitable, as explained above in this section (National Standard 4), and as explained and analyzed in previous chapters of this document.

NMFS has a number of Atlantic HMS scientific research programs in place including tagging and release projects. The preferred alternatives would not directly implement or establish any new scientific programs, but the alternative called Modification of the Reserve Category would facilitate the future use of quota to conduct research.

9.2 Atlantic Tunas Convention Act

Atlantic HMS are managed under the dual authority of the Magnuson-Stevens Act and ATCA, which authorizes the Secretary of Commerce to promulgate regulations, as may be necessary and appropriate to carry out ICCAT recommendations. The authority to issue regulations under the Magnuson-Stevens Act and ATCA has been delegated from the Secretary to the Assistant Administrator for Fisheries, NMFS. Chapter 3 summarizes some of the recent ICCAT recommendations relevant to bluefin. NMFS is required under the Magnuson-Stevens Act and ATCA to provide U.S. fishing vessels with a reasonable opportunity to harvest ICCAT-

recommended quota. As explained under Section 9.1, the preferred alternatives were designed to address the Amendment 7 objectives regarding reducing and accounting for bluefin dead discards, while also minimizing the reductions in swordfish, yellowfin tuna, or other target catch, and providing a reasonable opportunity to harvest ICCAT-recommended quotas. The increased predictability, accountability, and flexibility associated with the Amendment 7 preferred alternatives would contribute toward maintaining fishing opportunities, while achieving the other objectives. The Amendment 7 preferred alternatives would not impact the level of overall quota. Amendment 7 measures also would facilitate compliance ICCAT-recommended quota and provisions regarding accounting for dead discards.

9.3 National Environmental Policy Act

NEPA proved a mechanism for identifying and evaluating the full spectrum of environmental issues associated with federal actions, and for considering a reasonable range of alternatives to avoid or minimize adverse environmental impacts. This document is designed to meet the requirements of both the Magnuson-Stevens Act and NEPA. The Council on Environmental Quality (CEQ) has issued regulations specifying the requirements for NEPA documents. All of the required elements of an Environmental Impact Statement Assessment (EIS) are specified in

40 CFR 1508.9(b) and NAO 216-6 Section 5.04b.1, and are addressed in this document as referenced below.

• The need for this action is described in Chapter 1,

• The alternatives that were considered are described in Chapter 2,

• The environmental impacts of the Proposed Action are described in Chapter 4 and 5,

• The agencies and persons consulted on this action are listed in Chapter 10,

• An Executive Summary can be found at the beginning of this document, before Chapter 1,

• A table of contents can be found in each chapter, as well as at the beginning of this document,

• Background and purpose are described in Chapter 1,

• A brief description of the affected environment is in Chapter 3,

• Cumulative impacts of the alternatives are described in Chapter 6,

• A list of preparers is in Chapter 10, and

• The index is in Chapter 11.

Scoping Summary

NMFS announced its intent to prepare Amendment 7 and an Environmental Impact

Statement (EIS) on April 23, 2012. NMFS published a Notice of Intent (NOI) in the Federal Register (78 FR 24161), which announced our intent to hold public scoping meetings to determine the scope and significance of issues to be analyzed in a Draft Environmental Impact Statement (DEIS), and a potential amendment to the 2006 Consolidated HMS FMP. The scoping period extended from that date until July 15, 2012. A summary of the scoping process is in Chapter 1, and a comment summary is in the Appendix.

9.4 E.O. 12866

The purpose of E.O. 12866 is to enhance planning and coordination with respect to new and existing regulations. This E.O. requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be "significant." E.O. 12866 requires a review of proposed regulations to determine whether or not the expected effects would be significant, where a significant action is any regulatory action that may:

• 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, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

• Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

• Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

• Raise novel legal or policy issues arising out of legal mandates, the President's priorities, of the principles set forth in the Executive Order.

The Regulatory Impact Review (RIR) in Chapter 7.0 fulfills the requirement of E.O. 12866

9.5 Regulatory Flexibility Act

The purpose of the RFA is to reduce the impacts of burdensome regulations and recordkeeping requirements on small businesses. To achieve this goal, the RFA requires Federal agencies to describe and analyze the effects of proposed regulations, and possible alternatives, on small business entities. To this end, this document contains an IRFA, found in Chapter 8.0, which includes an assessment of the effects that the Proposed Action and other alternatives are expected to have on small entities.

9.6 Marine Mammal Protection Act and Endangered Species Act

The fishing activities pursuant to this rule will not affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on this fishery.

In June 2004, NMFS released a BiOp that concluded that the Atlantic pelagic longline fishery was not likely to jeopardize the continued existence of loggerhead, green, hawksbill, Kemp's ridley or olive ridley sea turtles but was likely to jeopardize the continued existence of leatherback sea turtles. NMFS has implemented the Reasonable and Prudent Alternative and Terms and Conditions specified in the BiOp (e.g., hook type, bait type, mandatory workshops). According to an August 9, 2007, memorandum regarding reinitiation of the ESA Section 7 consultation process for the U.S. Atlantic pelagic longline fishery, NMFS determined that the basis and assumptions of the 2004 BiOp, including the expected effects on the species remain the same and that the Terms and Conditions, and the ITS are still appropriate and do not need to be revised. ESA-listed species taken with pelagic longline gear would be considered against the ITS established in the 2004 BiOp.

NMFS has established additional management measures to reduce serious injury and mortality of long-finned and short-finned pilot whales, and Risso's dolphins in the U.S. East Coast Atlantic pelagic longline fishery (74 FR 23349, May 19, 2009). These measures include a requirement to post a marine mammal handling placard, restrict pelagic longline mainline length to 20 nm in the Mid-Atlantic Bight area, and develop observer and research participation requirements to operate in the Cape Hatteras Special Research Area.

The preferred alternatives of Amendment 7 would have a neutral or minor beneficial impact on protected species as a result of potential impacts on fishing effort, especially associated with pelagic longline gear. Although the precise impacts are difficult to predict, several alternatives would establish new restrictions applicable to the Longline category, including those which would provide new incentives to use non-longline gear. The quota reallocation alternatives combined with quota control alternatives would not result in an increase in fishing effort and therefore would have a neutral or minor beneficial effect on protected species. If fishing effort is constrained by alternatives designed to limit bluefin catch, impacts on protected species would also be constrained, resulting in the minor beneficial effort. A complete discussion of the effect of the alternatives applicable to the Longline category on quota allocation and fishing effort is located in Section 4.1.6.1.

9.7 Administrative Procedure Act

This amendment was developed in compliance with the requirements of the Administrative Procedure Act, and these requirements will continue to be followed when the proposed regulation is published. Section 553 of the Administrative Procedure Act establishes procedural requirements applicable to informal rulemaking by Federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process, and to give the public adequate notice and opportunity for comment.

9.8 Paperwork Reduction Act

The purpose of the PRA is to control, and to the extent possible, minimize the paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. The authority to manage information and recordkeeping requirements is vested with the Director of the Office of

Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. Amendment 7 contains collection of information requirements subject to the PRA including the following:

Appeal of vessel performance scores (multiple alternatives)
Appeal of quota shares
Vessel Monitoring System (VMS) declaration requirements (multiple alternatives)
VMS reporting requirements (multiple alternatives)
E-MTU VMS units for Purse Seine vessels and hail in/out requirements
Observer requirement to fish in closed areas
Tracking lease of quota shares
Electronic monitoring of Longline category
Cost recovery reporting
Catch reporting via automated system for General, Harpoon, and Charter/Headboat categories
Industry or Third party funded observers

9.9 Coastal Zone Management Act

Section 307(c)(1) of the Federal CZMA of 1972 (reauthorized in 1996) requires that all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. NMFS determined that this action is consistent to the maximum extent practicable with the enforceable policies of the approved coastal management programs of coastal states on the Atlantic including the Gulf of Mexico and the Caribbean Sea. Pursuant to 15 CFR 930.41(a), NMFS will send letters to the Coastal Zone Management Program of each coastal state, and provide a 60-day period to review the consistency determination and to advise the Agency of their concurrence. NMFS will infer consistency from those states that do not respond within the 60-day time period.

9.10 Information Quality Act

Pursuant to NOAA guidelines implementing section 515 of Public Law 106-554 (the Data Quality Act), all information products released to the public must first undergo a Pre-Dissemination Review to ensure and maximize the quality, objectivity, utility, and integrity of the information (including statistical information) disseminated by or for Federal agencies. The Amendment 7 DEIS has undergone a Pre-Dissemination Review and that analysis is available upon request/

9.11 Environment Justice

Executive Order 12898 requires agencies to identify and address disproportionately high and adverse environmental effects of its regulations on minority and low-income populations. To determine whether environmental justice concerns exist, the demographics of the affected area should be examined to ascertain whether minority populations and low-income populations are present. If so, a determination must be made as to whether implementation of the alternatives

may cause disproportionately high and adverse human health or environmental effects on these populations.

The community profile information found in the 2012 SAFE Report includes updated community profiles and new social impacts assessments for HMS fishing communities along the Atlantic and Gulf of Mexico coasts (NMFS 2011). The communities of Dulac, Louisiana and Fort Pierce, Florida have significant populations of Native Americans and African-Americans, respectively. Data from the 2010 Census indicates that Native Americans made up 42 percent of the Dulac population, and that African-Americans made up approximately 41 percent of the population in Fort Pierce. These two communities also have significant populations of low-income residents according to the 2010 Census. About 37 percent of the Dulac population was living below poverty level and about 31 percent of the entire Fort Pierce population was living below the poverty line. In addition to Dulac and Fort Pierce, there is a dispersed low-income, minority Vietnamese-American population in Louisiana that actively participates in the pelagic longline fishery, and commutes to fishing ports, but does not live in "fishing communities" as defined by the Magnuson-Stevens Act and identified in Chapter 3 of this document. Each of the management alternatives in Chapter 5 includes an assessment of the potential social and economic impacts associated with the preferred alternatives. The preferred alternatives were selected to minimize economic impacts and provide for the sustained participation of fishing communities, while taking the necessary actions to achieve the objectives of Amendment 7 and rebuild overfished fisheries as required by the Magnuson-Stevens Act. Demographic data indicate that coastal counties with fishing communities are variable in terms of social indicators like income, employment, and race and ethnic composition.

Considering all the above socioeconomic impacts of the preferred alternatives, Amendment 7 would likely have minor adverse socioeconomic impacts for most vessels and moderate adverse socioeconomic impacts for a few vessels. These impacts would mostly affect vessels fishing with pelagic longline gear with a history of interacting with many bluefin tuna; and may impact the future level of Purse Seine vessel activity in the short term. Other quota categories (i.e., General, Harpoon, Angling, and Charter/Headboat categories) would have minor adverse socioeconomic impacts due to reallocation alternatives. NMFS does not anticipate that these effects would fall disproportionately on minority or low-income populations in the affected communities discussed above. The preferred alternatives were designed to reduce dead discards and account for dead discards, while concurrently providing flexibility and predictability to the quota system, and maintaining fishing opportunities.

9.12 E.O. 13132

Amendment 7 would not have federalism implications sufficient to warrant preparation of a Federalism Assessment under E.O. 13132.

10.0 LIST OF PREPARERS

The development of this DEIS/RIR/IRFA involved input from many people within NMFS, NMFS contractors, and input from the public, constituent groups, and the HMS Advisory Panel. Staff and contractors from the HMS Management Division, in alphabetical order, who worked on this document include:

Randy Blankinship, Supervisory Fishery Management Specialist

Karyl Brewster-Geisz, Supervisory Fishery Management Specialist

Michael Clark, Fishery Management Specialist

Craig Cockrell, Fishery Biologist

Peter Cooper, Fishery Management Specialist

Jennifer Cudney, Fishery Management Specialist

Katie Davis, Fishery Biologist

Joseph Desfosse, Fishery Management Specialist

Brad McHale, Supervisory Fishery Management Specialist

Sarah McLaughlin, Fishery Management Specialist

Margo Schulze-Haugen, Division Chief

George Silva, Fishery Economist

Dianne Stephan, Fishery Management Specialist

Thomas Warren, Fishery Management Specialist

The development of this document also involved considerable input from other staff members and Offices throughout NOAA including, but not limited to:

Office of Sustainable Fisheries (Alan Risenhoover, Emily Menashes)

Office of the Assistant Administrator (Samuel Rauch, III)

Office of Science and Technology (Dr. Ronald Salz, Dr. Rebecca Ahrnsbrak)

Southeast Fisheries Science Center (Dr. Guillermo Diaz, Dr. Craig Brown, Dr. Steve Turner, Larry Beerkircher, Ken Keene, Matt Maiello, Sascha Cushner)

Northeast Fisheries Science Center (Amy Van Atten)

Southeast Regional Office (Andy Strelcheck)

Northeast Regional Office (Peter Christopher, Emily Gilbert)

Office of Law Enforcement (Patrick O'Shaughnessy, Bill Semrau)

NOAA General Counsel (Megan Walline, Meggan Engelke-Ross)

NMFS NEPA coordinator (Steve Leathery, Cristi Reid)

NOAA Program, Planning, and Integration (Steve Kokkinakis)

10.1 List of Agencies, Organizations, and Persons Consulted and to Whom Copies of the Environmental Impact Statement Will Be Sent

Under section 304(g)(1)(A) of the Magnuson-Stevens Act, NMFS is required to consult and consider the comments and views of affected Fishery Management Councils, ICCAT Commissioners and advisory groups, and advisory panels established under section 302(g) of the Magnuson-Stevens Act regarding amendments to an Atlantic HMS FMP. As described below, NMFS provided documents and/or consulted with the Atlantic, Gulf, and Caribbean Fishery Management Councils, Gulf and Atlantic States Marine Fisheries Commissions, and the HMS Advisory Panel at various stages throughout the process. The electronic version was available on the HMS Management Division website and on regulations.gov, and hard copies and/or CDs of these documents were provided to anyone who requested copies.

NMFS began to formally address some of the bluefin quota accounting issues described in Section 1.1 at the September 2011 meeting of the HMS Advisory Panel by presenting a summary of recent issues and a white paper on bluefin bycatch in the HMS fisheries. In preparation for the formal process of evaluating potential amendments to the fishery management plan, NMFS presented a preliminary version of a scoping document ("Preliminary White Paper") to the HMS Advisory Panel meeting at its March 2012 meeting for its consideration (NMFS, March 2012).

On April 23, 2012, NMFS published a Notice of Intent in the Federal Register (78 FR 24161), which announced our intent to hold public scoping meetings to determine the scope and significance of issues to be analyzed in a DEIS, and a potential amendment to the Consolidated HMS FMP. During May and June of 2012, NMFS conducted public meetings to present the scoping document and receive public comments in Toms River, New Jersey; Gloucester, Massachusetts; Belle Chasse, Louisiana; Manteo, North Carolina; and Portland, Maine. During June 2012, NMFS consulted with the Mid-Atlantic Fishery Management Council, the New England Fishery Management Council, and the South Atlantic Fishery Management Council, while the scoping document was shared with the Gulf of Mexico Fishery Management Council and the Caribbean Fishery Management Council.

On September 20, 2012, NMFS presented a Predraft document to the HMS Advisory Panel (NMFS, September 2012). A Predraft, which is a precursor to a DEIS, allowed NMFS to obtain additional information and input from Consulting Parties and the public on potential alternatives prior to development of the formal DEIS and proposed rule. As such, NMFS requested comments on the Predraft from the HMS Advisory Panel, and made the document available to the public through the HMS website (http://www.nmfs.noaa.gov/sfa/hms).

Comments on the proposed rule and the DEIS will be accepted for at least 60 days from the date of publication of the proposed rule in the Federal Register. An HMS Advisory Panel meeting and numerous public hearings will be held along the Atlantic Coast, including the Caribbean and the Gulf of Mexico. The hearings have not yet been scheduled and will be announced separately from the proposed rule. Additionally, NMFS will request the opportunity to present the proposed rule and DEIS for Amendment 7 to the five Atlantic and Gulf Regional Fishery Management Councils and two Interstate Marine Fisheries Commissions.

The Federal Register notice and the DEIS, notice of upcoming hearings (with location, dates and times), and any necessary addenda will also be made available to the public via the HMS website (http://www.nmfs.noaa.gov/sfa/hms).

11.0 APPENDIX

11.1 Summary of Scoping Comments

Number of Comments Received: Approximately 200

Scoping Hearings:

Toms River, New Jersey – May 8, 2012 (Tom's River Library);

Gloucester, Massachusetts – May 16, 2012 (National Marine Fisheries Service);

Belle Chasse, Louisiana – May 21, 2012 (Plaquemines Parish Government Community Center);

Manteo, North Carolina – May 23, 2012 (Dare County Administration Building);

Portland, Maine – June 18, 2012 (Holiday Inn by the Bay).

Regional Fishery Management Council Consultations:

Mid-Atlantic Fishery Management Council Meeting–June 14, 2012 (Hilton New York, New York, NY)

New England Fishery Management Council Meeting – June 19, 2012 (Holiday Inn by the Bay, Portland, ME)

South Atlantic Fishery Management Council Meeting – June 15, 2012 (Renaissance Orlando Airport Hotel, Orlando, FL) ,

Scoping document was shared with Gulf of Mexico Fishery Management Council, and

Caribbean Fishery Management Council.

Common Elements (The following opinions were expressed in the majority of the detailed letters; *or was the opinion of the few letters that addressed the particular issue):

- Promote transition from pelagic longline gear to more selective gear; use oil spill funds
- Close the Gulf of Mexico to the use of pelagic longline gear year-round
- Support catch cap for the Atlantic, with landings and discards limited to 8.1%
- Increased level of observer coverage (industry funded)
- Improve reporting: VMS transmission of information to achieve real time reporting
- Mandatory retention of legal-sized fish
- Eliminate pelagic longline target catch requirements
- Support Atlantic closures for pelagic longline gear

- *Don't reduce minimum sizes
- *Don't support reallocation

- *Don’t support limiting catch of angling category
- *Don’t support use of weak hooks in the Atlantic

Focus of Form Letters from Public

- Prohibit use of PLL in GOM year-round
- Encourage more selective gear
- Bycatch cap in the Atlantic (8.1%)

More unique comments by selected Organizations/Individuals

Center for Biological Diversity

- Protect the 2003 year class

North Carolina Department of Marine Resources

- Allow PLL category to hold general category permits

Coastal Conservation Association

- Closed areas are the only effective means to reduce BFT discards

Tag-A-Giant

- Prohibit use of PLL in GOM from Dec to June, or during peak CPUE periods (March to May or June)

Andre Boustany

- Avoid quota redistribution from fisheries that target mixed BFT stocks (E and W) to fisheries that target primarily western fish (due to poorer status of western stock)

Blue Water Fisherman’s Association and Boston SWO and Tuna

- Allocate to the PLL category 28.12%, but not less than 291 mt
- Divide the PLL quota into 2 semi-annual quotas
- Open parts of existing closed areas – offshore edges of Charleston Bump and FEC
- Enhance reporting of discards; focus on top 1 to 3 % (“top producers”) of commercial permit holders; e.g., logbook, observers, VMS

The Billfish Foundation

- Create a separate GOM angling category allocation (in addition to N and S)
- Support a landings allocation for each category to account for dead discards

Atlantic Bluefin Tuna Association

- Catch cap is best way to reduce PLL discards
- If individual catch caps, suggests control date of 2003

National Coalition for Marine Conservation

- PLL closure in GOM in HAPC from April to June (or GOM closure year-round)
- GOM catch cap; set closure trigger at 75% of recent 5 year average to provide incentives

11.2 Definitions for Tier I Performance Indicators for Catch Share Programs

Performance Measure	Indicator	Definition
Catch and Landings	**Quota allocated to catch share program**	Annual quota of combined catch share program species, in terms of weight (must be consistent as defined above).
	Aggregate landings	Annual total weight (must be consistent as defined above) of combined catch share program species generated by vessels that fish quota.
	ACL exceeded (Y/N)*	Was the ACL exceeded for any species/stock within the catch share program? **(Y/N)** *If Yes, please list the appropriate species/stock where the ACL was exceeded.*
Effort	**Entities holding share**	Annual total number of entities/individuals/vessel owners/permit holders (depending on allocation in catch share program) receiving quota share at the beginning of the year.
	Active vessels	Annual number of vessels that fish quota and landing one or more pounds of any catch share program species.
	Season length	Number of days per calendar year or fishing year, as defined above, that the catch share program fishery is open.
	Trips	Annual total number of trips taken by vessels fishing quota on which one or more pounds of any catch share program species were landed.
	Days at sea	Annual total number of days absent on trips taken by vessels fishing quota on which one or more pounds of any catch share program species were landed.
Revenues	**Aggregate revenue from catch share species**	Annual total ex-vessel revenue of combined catch share program species generated by vessels that fish quota.
	Aggregate revenue from non-catch share species	Aggregate revenue from non-catch share species caught on catch share program trips (see trip definition above). NOTE: Contact Ayeisha Brinson if data are not available.
	Non-CS Species Revenue2	**Annual total revenue for active vessels in *this* catch share program on trips not included in *this* catch share program. (*This* catch share program refers to the specific program for which performance measures are reported.)**
	Gini Coefficient	**(Sum $(2*i-n-1)x_i)/n^2u$ where Sum denotes the sum from i = 1 to n; i is the entities' rank order in ascending order; x is annual catch share species revenue for entity i; n is the number of entities; and u is mean revenue.**
Share Accumulation	**Share cap in place (Y/N)**	An ownership share and/or allocation cap is any measure consistent with the MSA LAPP purpose and intent whether or not the catch share program is required to have an excessive share cap. **Y/N**

Cost Recovery	**Cost recovery fee**	Amount collected for cost recovery

Derived indicators		
Prices	**Average price**	Aggregate revenues/aggregate landings (catch share species)
Revenues	**Total revenue**	Aggregate revenue (catch share species + non-catch share species + Non CS Species Revenue2)
	Revenue per active vessel*	Aggregate revenue from catch share species/active vessels
	Revenue per trip	Aggregate revenue from catch share species/Trips
	Revenue per day at sea	Aggregate revenue from catch share species/day at sea
Catch and Landings	**% Utilization***	Portion of target species TAC that is caught and retained within a fishing year. Aggregate Landings/Quota allocated to catch share program
***OMB Performance Measure**		

Annual data = Calendar or fishing year (measured as a 365/366 day time period) but all subsequent reporting must adhere to a single definition for each program.

Time period = All years in catch share program.

Baseline = Average of 3 years prior to catch share program implementation.

Nominal USD = Inflation adjustment will be done consistently at HQ.

Weight unit = Quota, landings, and, if applicable, discard weight should be reported in a single weight unit, preferably whole weight, but consistent with the catch share program allocation and monitoring standards, e.g., whole or gutted weight for finfish, live weight for crabs, etc.

11.3 Spatial Distribution of Set Revenue in the HMS Pelagic Longline Fishery.

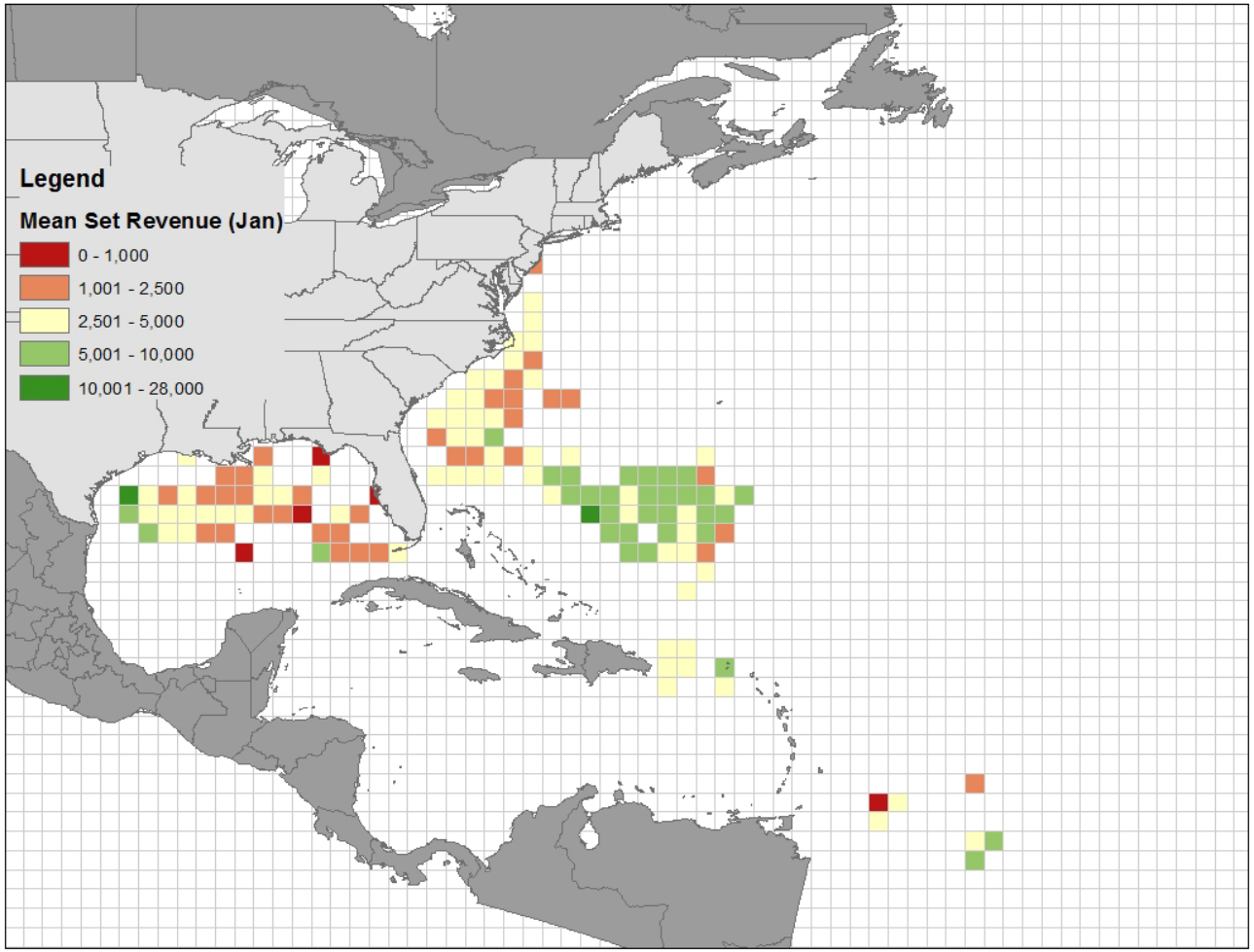


Figure 11.1 Spatial distribution of January (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

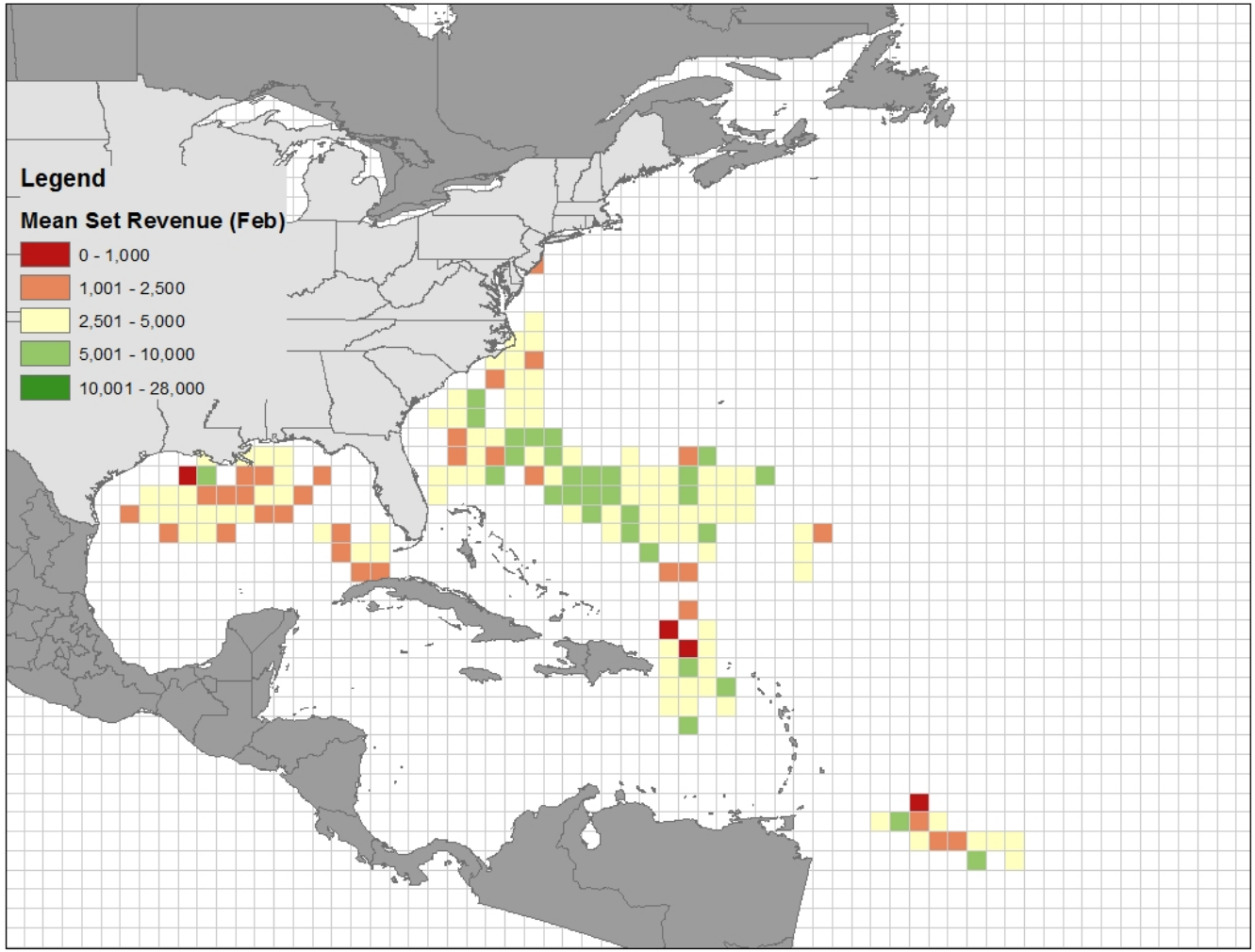


Figure 11.2 Spatial distribution of February (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

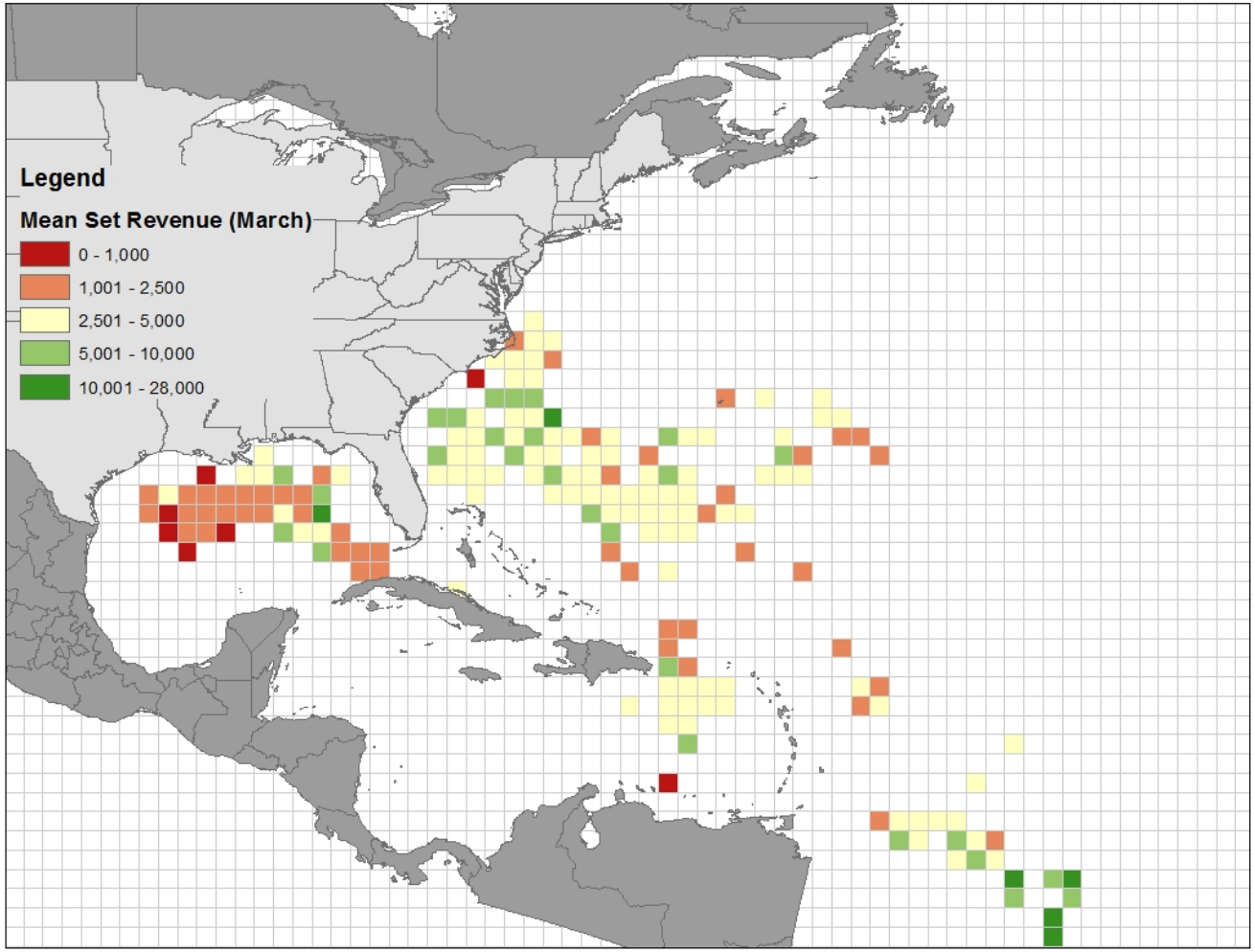


Figure 11.3 Spatial distribution of March (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

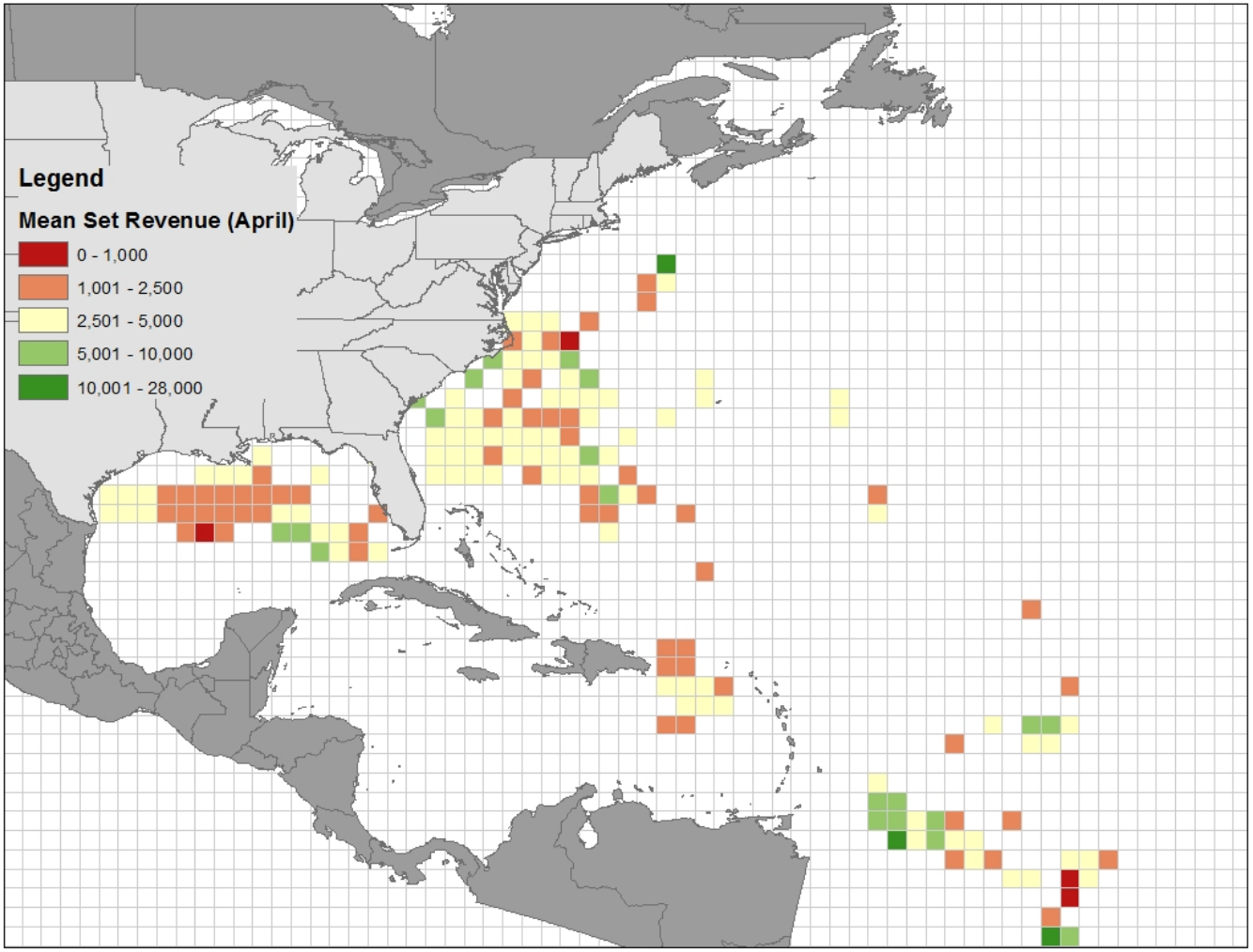


Figure 11.4 Spatial distribution of April (2006 – 2011) set revenue reported by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

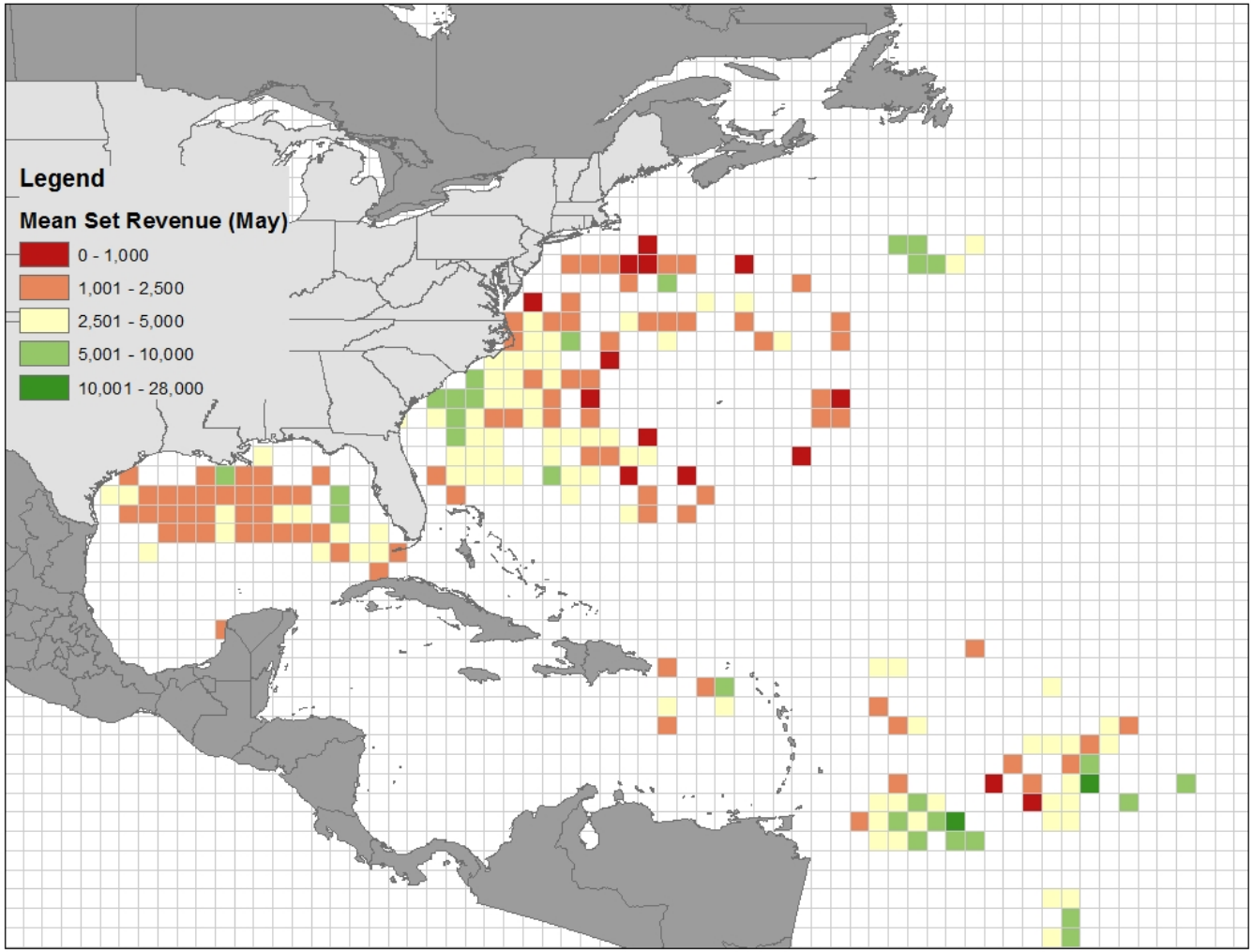


Figure 11.5 Spatial distribution of May (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

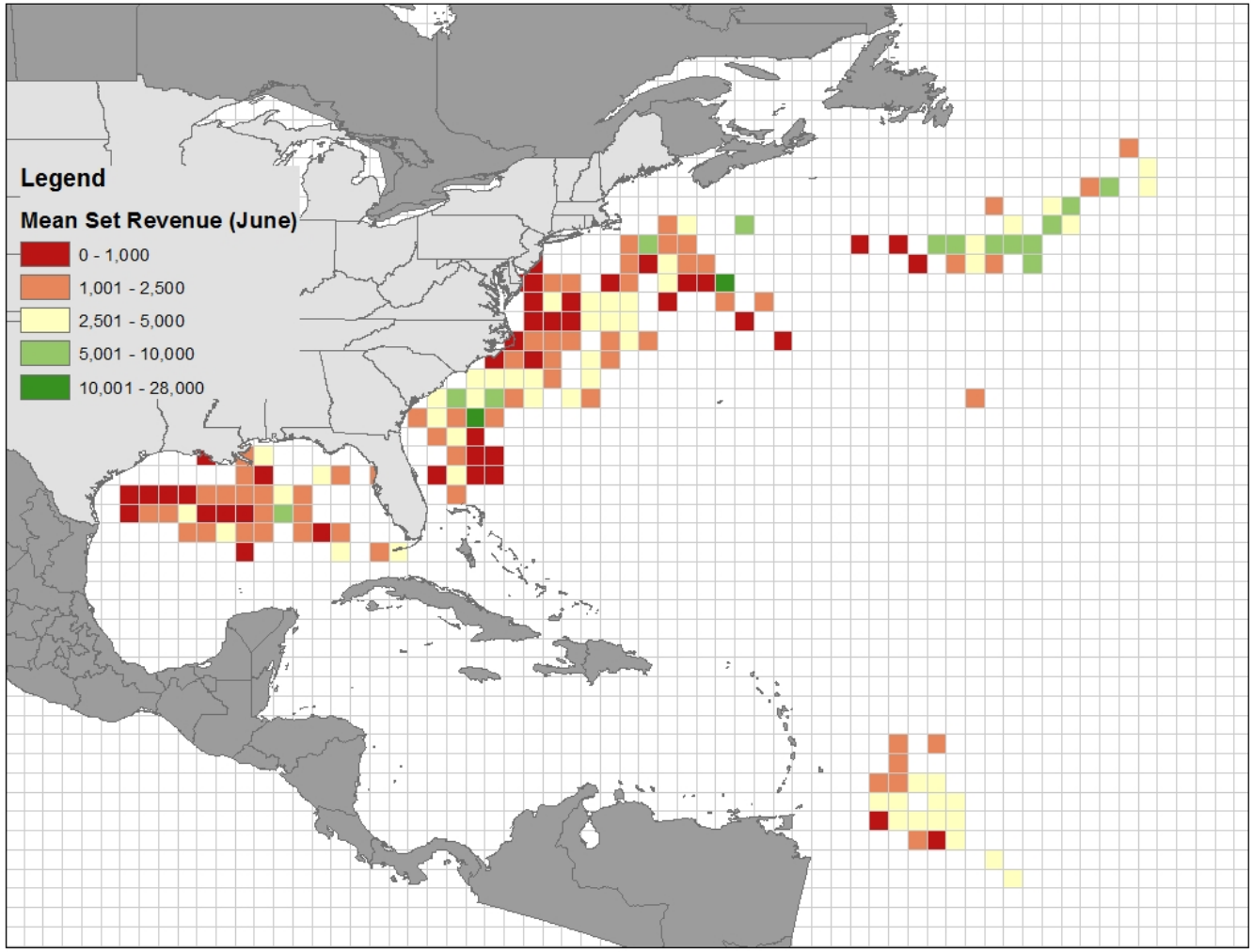


Figure 11.6 Spatial distribution of June (2006 – 2011) set revenue reported by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

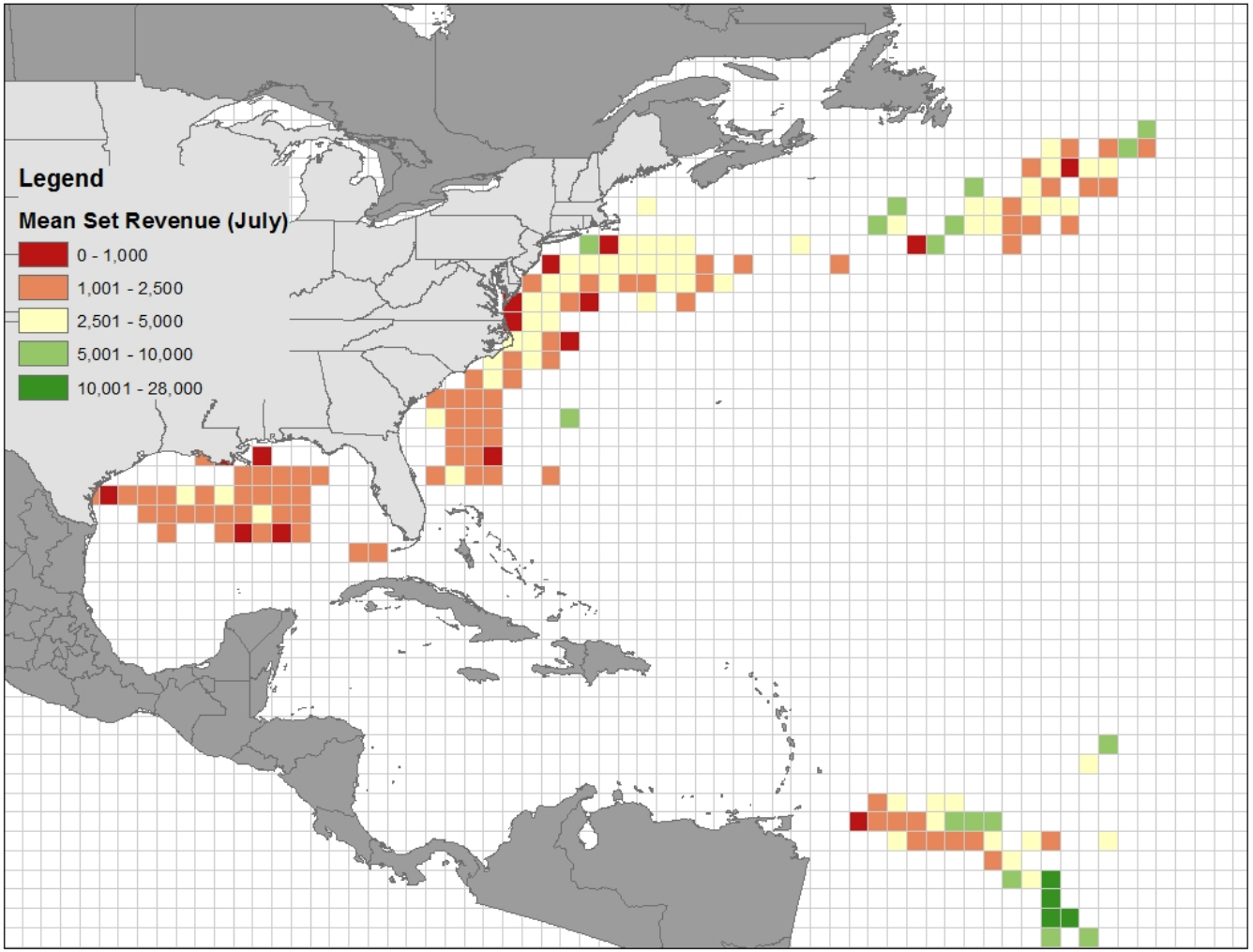


Figure 11.7 Spatial distribution of July (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

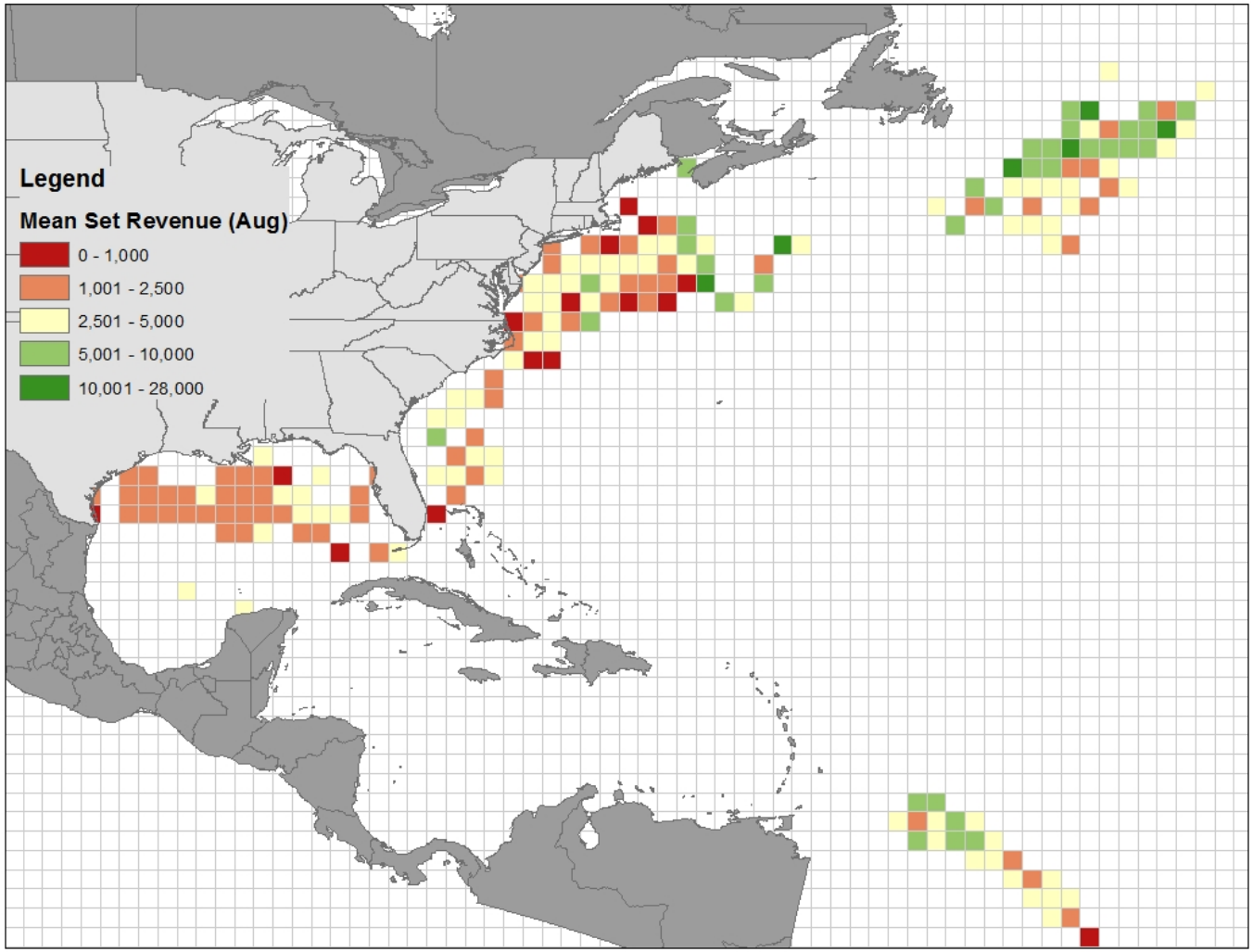


Figure 11.8 Spatial distribution of August (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

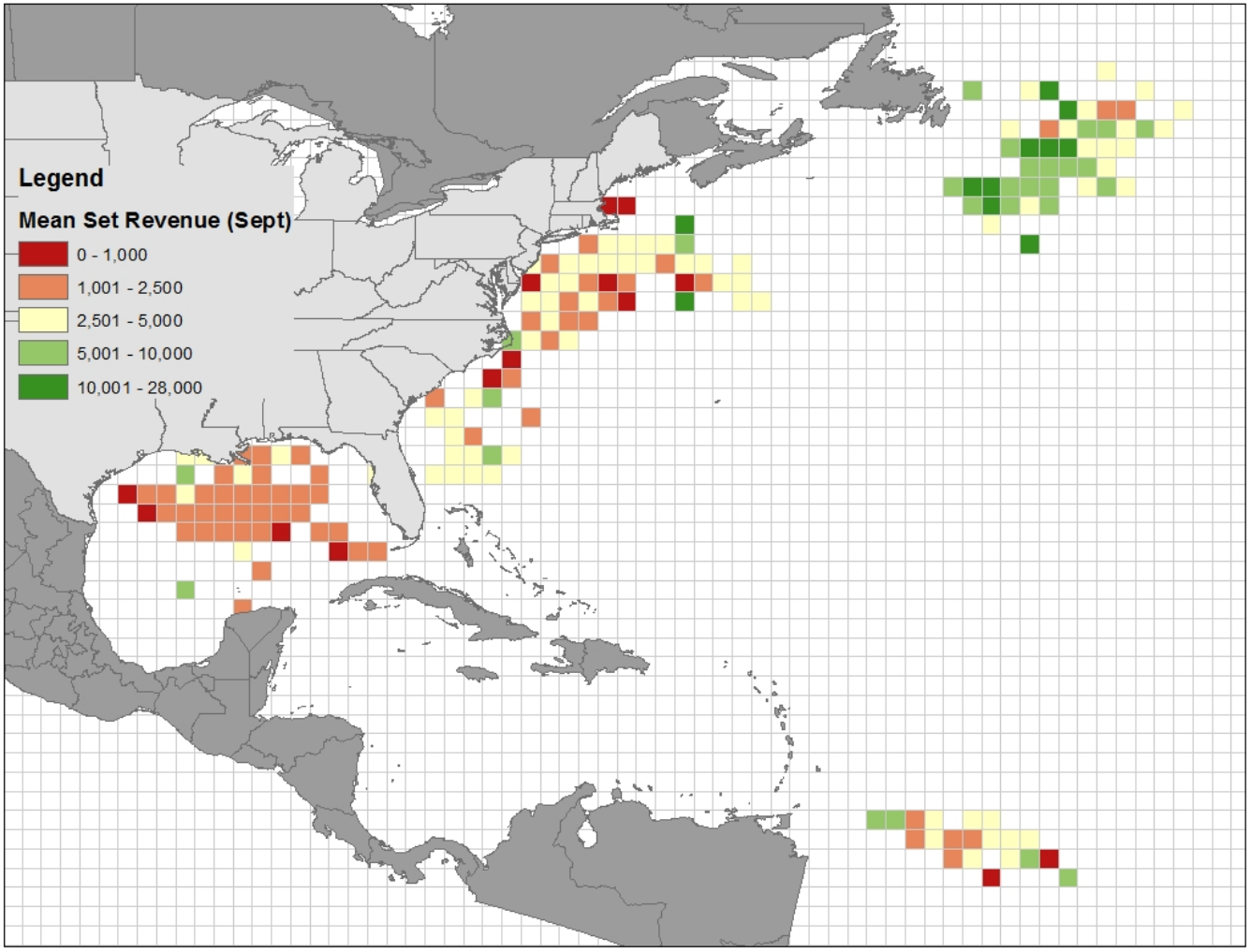


Figure 11.9 Spatial distribution of September (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

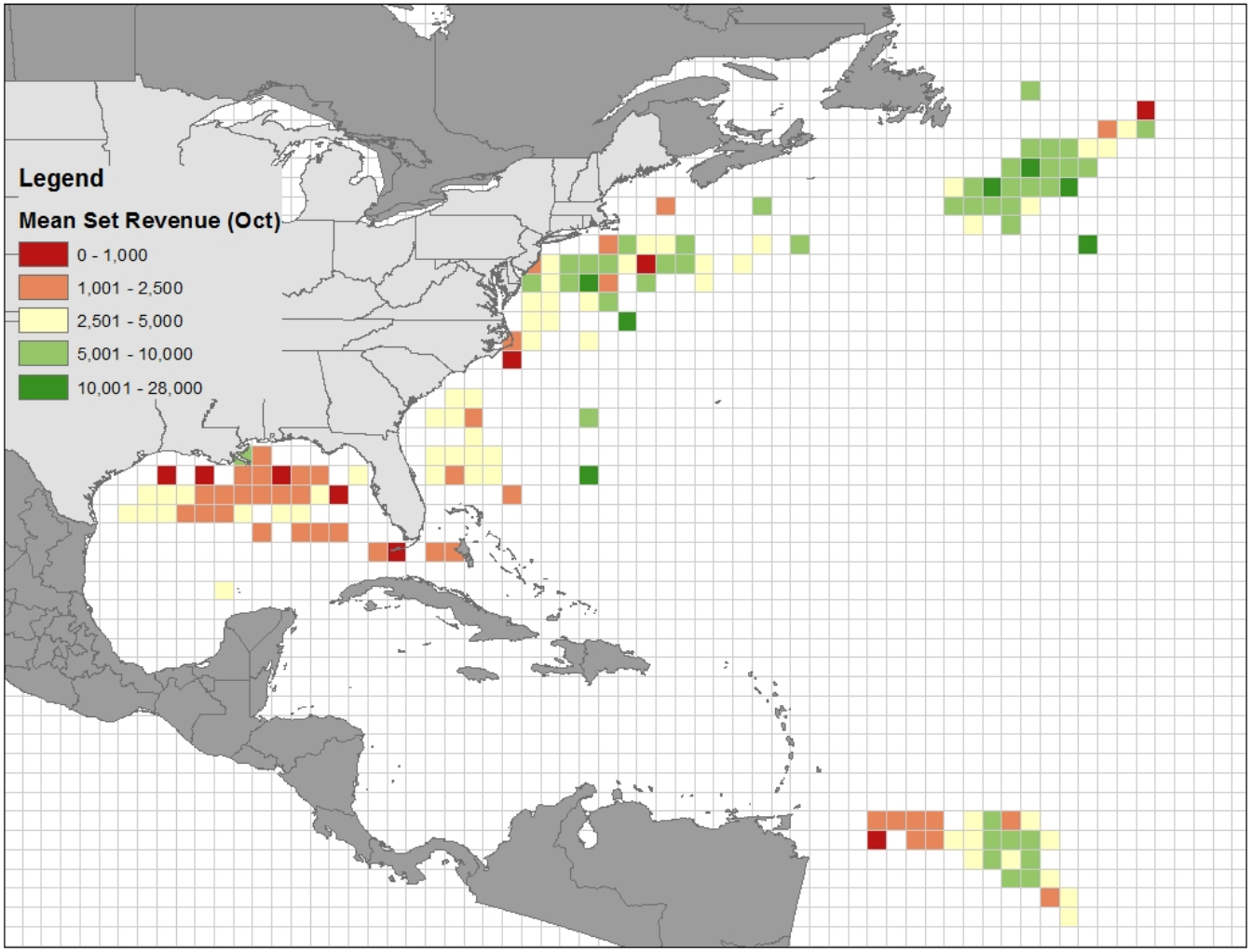


Figure 11.10 Spatial distribution of October (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

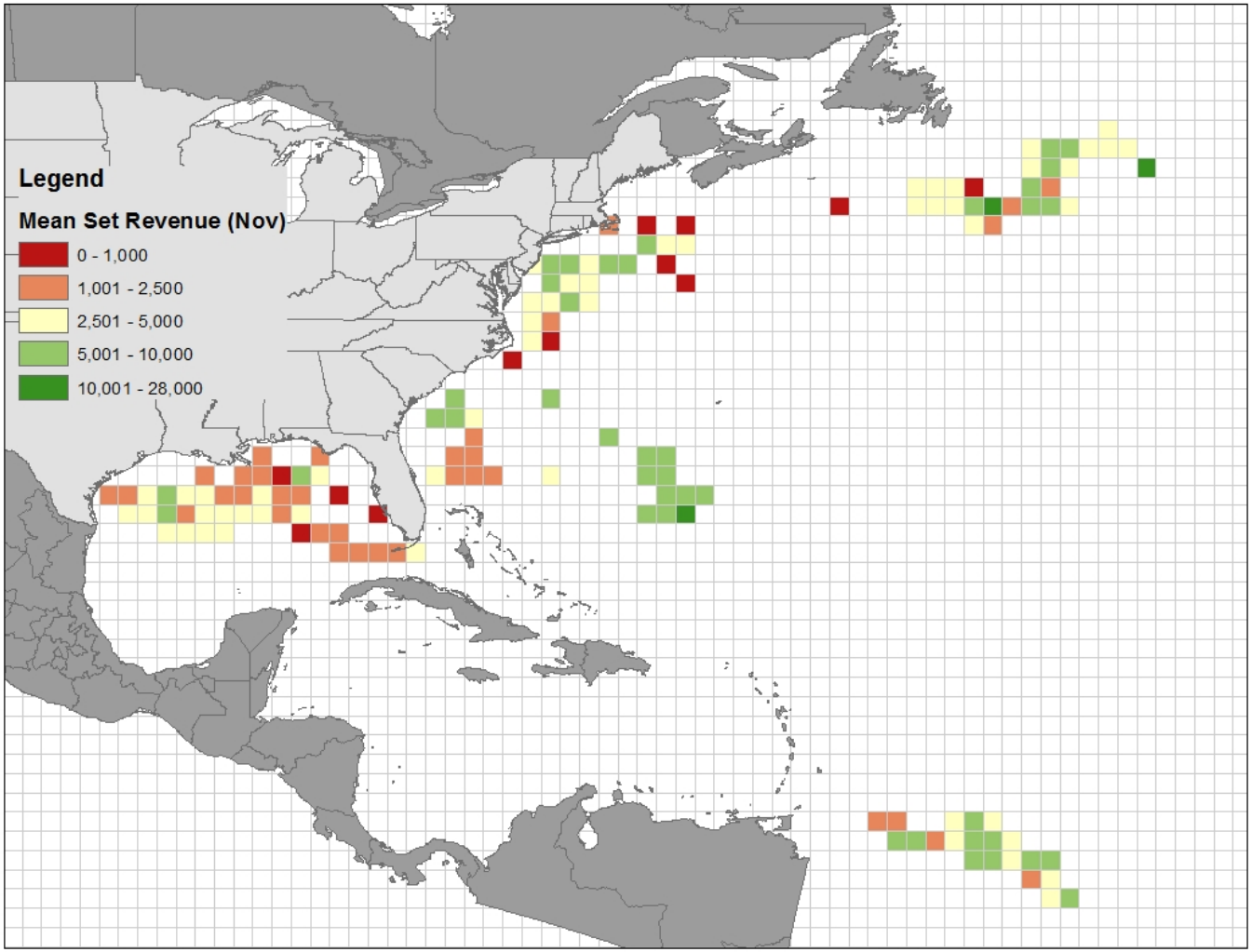


Figure 11.11 Spatial distribution of November (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

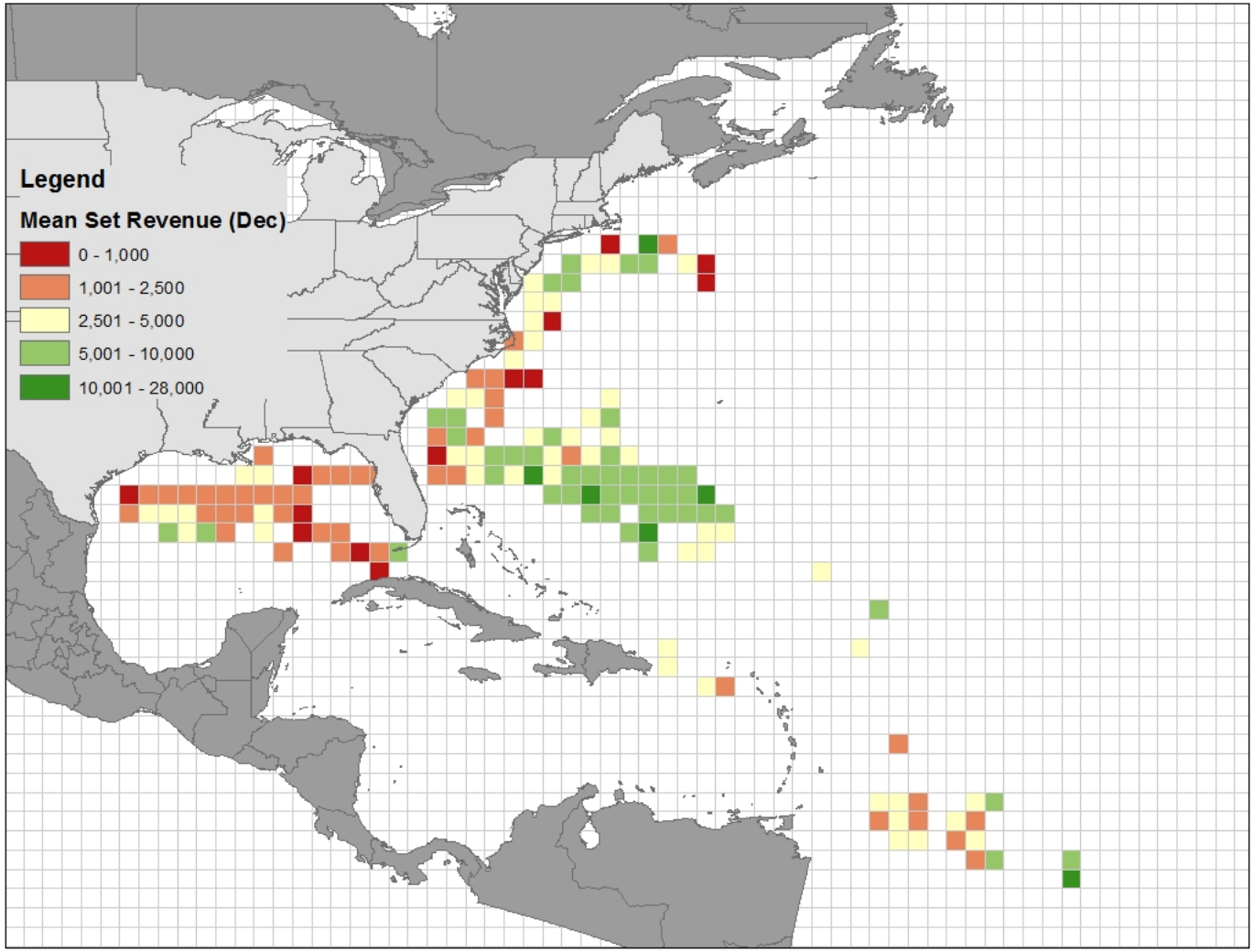


Figure 11.12 Spatial distribution of December (2006 – 2011) set revenue by the pelagic longline fishery based on HMS logbook reports, weighout slips, and dealer reports. Grid cell values reflect the average set revenue of all sets that fall within a particular 1º x 1º grid cell.

11.4 Bluefin Length Data for Landings (LL) and Dead Discards (LLD)

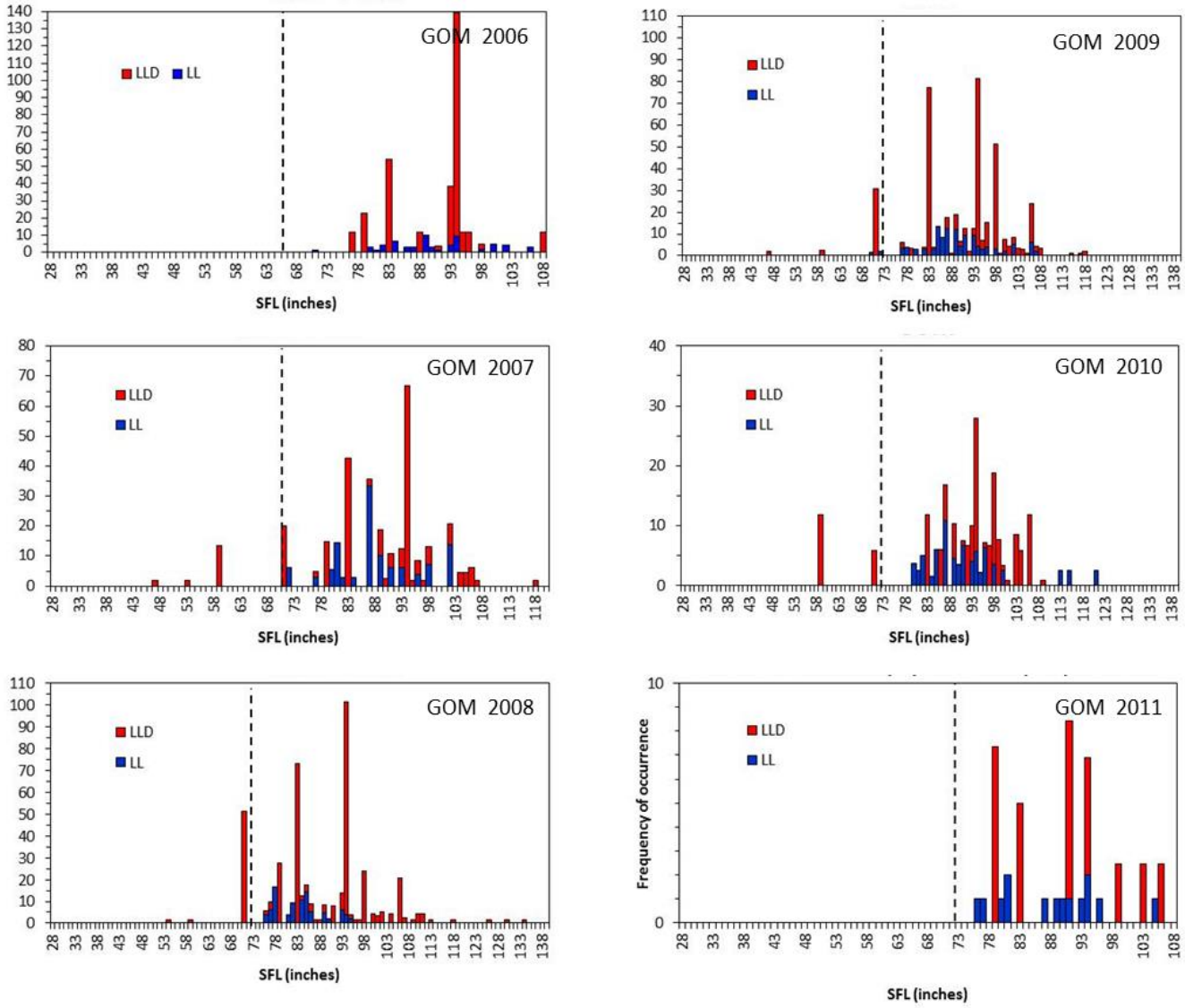


Figure 11.13 Live (LL) and Dead Discards (LLD) of Bluefin tuna by Pelagic Longline Gear from 2006 to 2011 in the Gulf of Mexico.

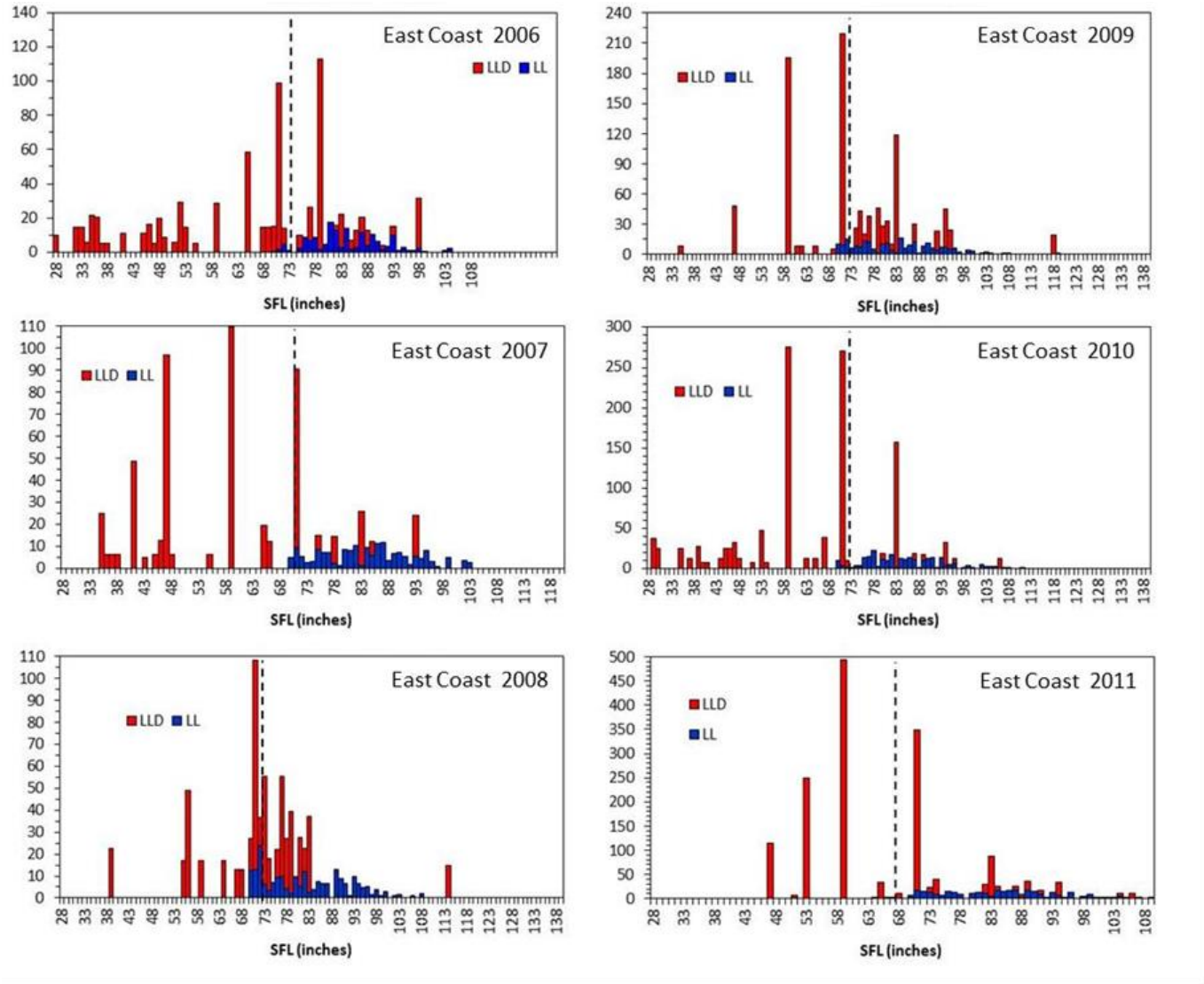


Figure 11.14 Live (LL) and Dead Discards (LLD) of Bluefin tuna by Pelagic Longline Gear from 2006 to 2011 off the East Coast of the U.S (all Atlantic reporting regions except for the NED).

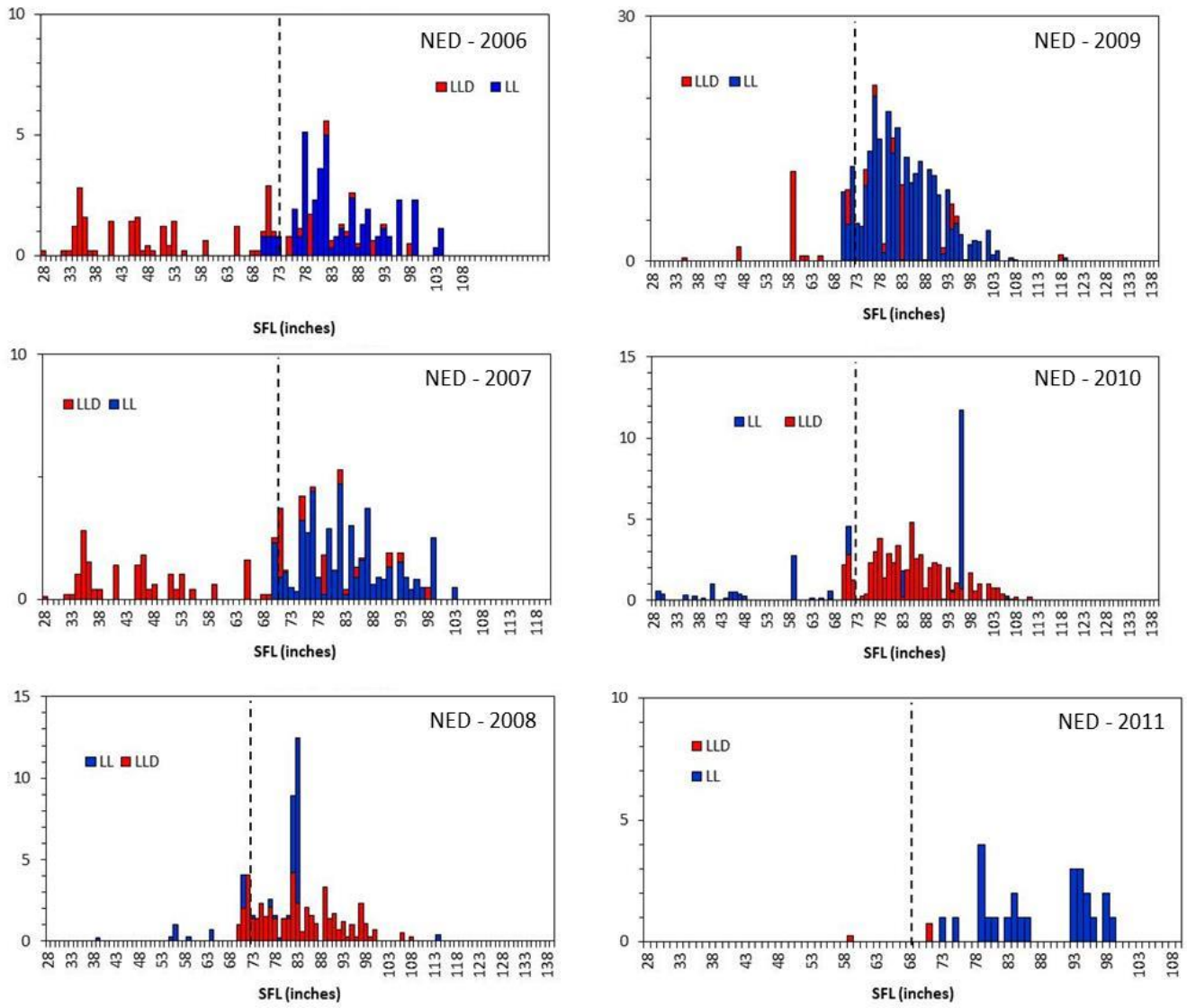


Figure 11.15 Live (LL) and Dead Discards (LLD) of Bluefin tuna by Pelagic Longline Gear from 2006 to 2011 in the NED reporting region.

11.5 Data Accuracy Performance Metric

In Chapter 2, NMFS considered a performance metric that would address the issue of data accuracy, and indicate how closely the vessel's HMS logbook information reflects observer information. NMFS decided not to include this metric among the criteria for access in order to simplify the overall criteria, and due to the variability in the number of observed trips in the fleet. NMFS is providing this information here for informational purposes.

Specifically, NMFS compared pelagic longline observer reports with HMS logbook reports that were submitted on the same trips to assess the accuracy of logbook reporting. Reports were matched up over a six year period (2006 – 2011) and analyzed to identify the overall amount of over and under reporting by species (swordfish, BAYS, bluefin, dolphin, wahoo, shortfin mako, marlins, sailfish, and turtles) and disposition (kept, discarded alive, or discarded dead) per vessel. For each species-disposition code (per vessel), NMFS estimated the percentage difference between logbook and observer reports. The percentage difference was assigned a score based on the following:

Table 11.1 Accuracy Performance Scores for Over and Under Reporting based on the Percent Difference between Logbook and Observer Reports.

Lower %	Upper %	Performance Score
-5000	-75.01	1
-75	-50.01	2
-50	-25.01	3
-25	-10.01	4
-10	-0.01	5
0	9.99	5
10	24.99	4
25	49.99	3
50	74.99	2
75	5000	1

Vessels reporting catch in HMS logbooks that was within 10 percent of the observer reported catch were assigned a high score (5); vessels that reported catch which was greater than ± 75 percent of the observer reported catch were assigned a low score (1). Overall, reporting accuracy performance scores decreased between 2006 and 2009, but improved in 2010 and 2011. The lowest average annual reporting accuracy performance score, 3.88, occurred in 2009.

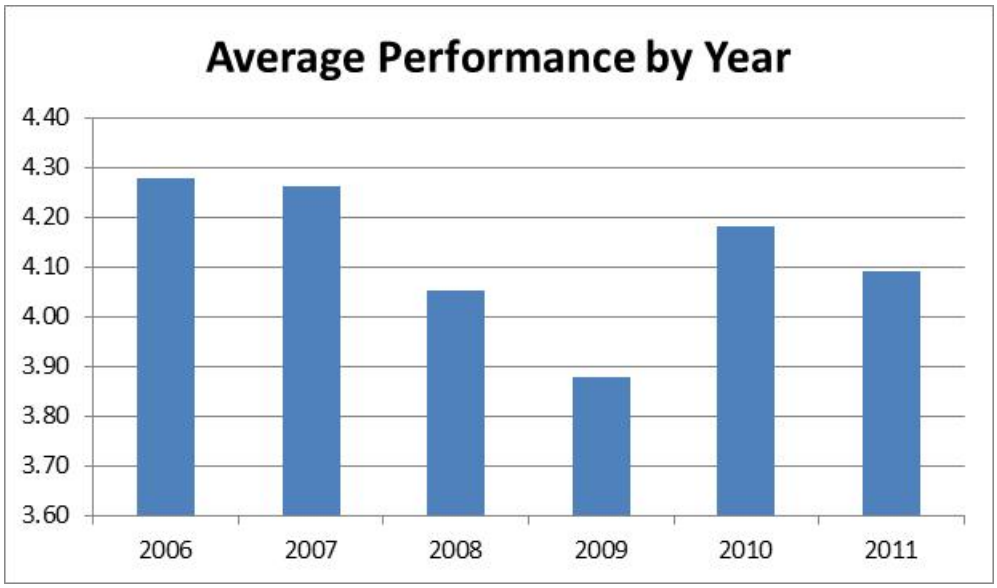


Figure 11.16 Reporting accuracy performance score averaged across all vessels (n = 129) by year.

NMFS estimated the reporting accuracy performance score by vessel for bluefin and for other target species. Once the scores were calculated, NMFS estimated threshold percentiles to identify the scores representing the most accurate (> 90th percentile) and least accurate (< 10th percentile) vessels with respect to bluefin tuna reporting (Table 2.8) and other target species reporting (Table 2.9).

Table 11.2 Bluefin Tuna Reporting Accuracy Score Percentiles.

Percentiles	Value	# Vessels/bin	Cumulative # Vessels
10%	2.33	18	18
25%	3.33	17	35
50%	4.33	31	66
75%	5.00	63	129
90%	5.00	0	129

Table 11.3 Target species accuracy reporting score percentiles.

Percentile	Value	# Vessels	Cumulative # Vessels
10%	2.92	13	13
25%	3.29	20	33
50%	3.65	32	65
75%	4.03	32	97
90%	4.39	19	116

11.6 Calculation of Net Quota Available (from Section 4.1.6.1.2)

Each of the following tables (Tables 4 - Table 7) represents a different permanent reallocation alternative, combined with the different quota control and annual reallocation alternatives. Combination "A" illustrates the scenario where this is a regional quota, and therefore no trading of IBQs, and there is no annual reallocation of quota from the Purse Seine category. Therefore, the Purse Seine quota remains at 18.6 % (171.8 mt based on a quota of 923.7 mt), and the Longline quota remains at 8.1 % (74.8 mt based on a quota of 923.7 mt). Combination "B" illustrates the scenario where this is a regional quota, and therefore no trading of IBQs, but there is annual reallocation of 50% of the quota from the Purse Seine category to the Longline category. Under the Annual Quota Reallocation Alternative, 50% of the Purse Seine quota is the maximum amount of quota that could be reallocated from the Purse Seine to another category. The quota may be reallocated to other quota categories, but "B" illustrates the maximum amount possible. Therefore, the Purse Seine quota would be reduced to 85.9 mt, and the Longline quota would increase by 85.9 mt. The net amount of quota available for use by the Longline category under "B" would be 160.7 mt. Combination "C" illustrates the scenario where this is a regional quota, and therefore no trading of IBQs, but there is annual reallocation of 4% of the quota from the Purse Seine category to the Longline category. The 4% is derived from the same amount of unused Purse Seine quota (50% of the quota), but in this case 4% represents the Longline category share of the unused Purse Seine quota when split among all the quota categories (except Purse Seine) (8.1% of 50% of the Purse Seine quota is equivalent to 4% of the total Purse Seine quota)). Therefore, the Purse Seine quota would be the same amount as under "B" (85.9 mt), and the Longline quota would increase by 6.9 mt as a result of the annual reallocation. The net amount of quota available for use by the Longline category under "C" would be 81.7 mt. The two scenarios "D" and "E" have identical results and demonstrate that additional quota from the Purse Seine category has the same potential net result in amount of quota available to the Longline category (and under either of the Annual Reallocation Alternatives, A 3).

Table 11.4 Calculation of Net Quota Available for Use by the Longline Category; No Action (Permanent Reallocation)

	A	B	C	D	E	F
Base Longline Allocation	74.8 mt	74.8 mt	74.8 mt	74.8 mt	74.8 mt	74.8 mt
Available from ITQ trading from Purse Seine Category Δ	Regional Quota			IBQ		
	Annual Reallocation Options					
	No annual reallocation	Annual reallocation of 50% (of Purse Seine quota) to Longline category	Annual reallocation of 4% (of Purse Seine quota) to Longline category	No annual reallocation	Annual reallocation of 50% (of Purse Seine quota) to Longline category	Annual reallocation of 4% (of Purse Seine quota) to Longline category
	na	na	na	171.8	85.9	85.9
Available from annual quota reallocation	0	85.9	6.9	0	85.9	6.9*
Net quota available for use by Longline category	**74.8**	**160.7**	**81.7**	**246.6**	**246.6**	**167.6**
Purse Seine Quota	171.8	85.9	85.9*	171.8	85.9	85.9*

Δ Assumes all Purse Seine quota is traded to the Longline category.

* The amount of quota available for trading from the Purse Seine category takes into consideration the revised Purse Seine and Longline quota allocations. The Longline category allocated 4% and other categories allocated according to their percentages

Table 11.5 Calculation of Net Quota Available for Use by the Longline Category; Reallocation Based on 68 mt

	A	B	C	D	E	F
Base Allocation	137 mt	137 mt	137 mt	137 mt	137 mt	137 mt
Available from ITQ trading from Purse Seine Category Δ	Regional Quota			IBQ		
	Annual Reallocation Options					
	No annual reallocation	Annual reallocation of 50% (of Purse Seine quota) to Longline category	Annual reallocation of 4% of Purse Seine quota) to Longline category	No annual reallocation	Annual reallocation of 50% (of Purse Seine quota) to Longline category	Annual reallocation of 4% of Purse Seine quota) to Longline category
	na	na	na	159	79.5	79.5
Available from annual quota	0	79.5	6.4	0	79.5	6.4*

reallocation						
Net quota available for use by Longline category	**137**	**216.5**	**143.4**	**296**	**296**	**222.9**
Purse Seine Quota	159	79.5	79.5*	159	79.5	79.5*

Δ Assumes all Purse Seine quota is traded to the Longline category.

* The amount of quota available for trading from the Purse Seine category takes into consideration the revised Purse Seine and Longline quota allocations. The Longline category allocated 4% and other categories allocated according to their percentages

Table 11.6 Calculation of Net Quota Available for Use by the Longline Category; Reallocation based on Recent Catch and Current Allocation (50:50 weighting)

	A	B	C	D	E	F
Base Allocation	137 mt	137 mt	137 mt	137 mt	137 mt	137 mt
Available from ITQ trading from Purse Seine Category Δ	Regional Quota			IBQ		
	Annual Reallocation Options					
	No annual reallocation	Annual reallocation of 50% (of Purse Seine quota) to Longline category	Annual reallocation of 4% of Purse Seine quota) to Longline category	No annual reallocation	Annual reallocation of 50% (of Purse Seine quota) to Longline category	Annual reallocation of 4% of Purse Seine quota) to Longline category
	na	na	na	87	43.5	43.5
Available from annual quota reallocation	0	43.5	3.5	0	43.5	3.5*
Net quota available for use by Longline category	**137**	**180.5**	**140.5**	**224**	**224**	**184**
Purse Seine Quota	87	43.5	43.5*	87	43.5	43.5*

Δ Assumes all Purse Seine quota is traded to the Longline category.

* The amount of quota available for trading from the Purse Seine category takes into consideration the revised Purse Seine and Longline quota allocations. The Longline category allocated 4% and other categories allocated according to their percentages

Table 11.7 Calculation of Net Quota Available for Use by the Longline Category; Reallocation based on Allocation from Purse Seine Category

	A	B	C	D	E	F
Base Allocation	143.5 mt	143.5 mt	143.5 mt	143.5 mt	143.5 mt	143.5 mt
Available from ITQ trading from Purse Seine Category Δ	Regional Quota			IBQ		
	Annual Reallocation Options					
	No annual reallocation	Annual reallocation of 50% (of Purse Seine quota) to Longline category	Annual reallocation of 4% of Purse Seine quota) to Longline category	No annual reallocation	Annual reallocation of 50% (of Purse Seine quota) to Longline category	Annual reallocation of 4% of Purse Seine quota) to Longline category
	na	na	na	103	51.5	51.5
Available from annual quota reallocation	0	51.5	25.8	0	51.5	25.8*
Net quota available for use by Longline category	**143.5**	**195**	**147.6**	**246.5**	**246.5**	**199.1**
Purse Seine Quota	103	51.5	51.5*	103	51.5	51.5*

Δ Assumes all Purse Seine quota is traded to the Longline category.

* The amount of quota available for trading from the Purse Seine category takes into consideration the revised Purse Seine and Longline quota allocations. The Longline category allocated 4% and other categories allocated according to their percentages

11.7 Application of Performance Metrics to Determine Vessel Access to the Cape Hatteras Gear Restricted Area and Specified Closures.

NMFS is considering two alternatives, Preferred Alternative B 1c (Cape Hatteras Pelagic Longline Gear Restricted Area with Access Based on Performance) and Preferred Alternative B 3b (Limited Conditional Access to Closed Areas), which would allow vessels to fish in a new gear restricted area and in certain, previously-established time area closures (Charleston Bump, part of the East Florida Coast, DeSoto Canyon, and Northeastern U.S.). Access to the Cape Hatteras Gear Restricted Area and the current closed areas is based on performance (bluefin avoidance) and compliance (POP compliance and logbook reporting). NMFS also considered the use of reporting accuracy when determining a vessel's overall score (Appendix A.5), but this was not used by NMFS at this time. Current NMFS POP vessel selection procedures would be used to select vessels using the current strata (i.e., the procedures that select vessels to obtain observer coverage each calendar quarter, and deploy in each of the various geographic statistical areas). Continued access to the current pelagic longline closures is contingent upon the availability, the vessel's participation in the POP, and compliance with current regulations.

Individual vessel data would be evaluated annually for the purpose of determining access to the Cape Hatteras Gear Restricted Area and current pelagic longline closures, and results would be communicated to the individual permit holders via a permit holder letter. This evaluation would be based on the most recent information available in order to provide future opportunities and accommodate changes in fishing behavior and compliance with observers and logbooks.

A brief overview of each performance criteria is outlined below, along with a description of how an overall score is generated. Under each section, NMFS has also provided an example with 4 hypothetical vessels to demonstrate how the scores are calculated.

Bluefin interactions performance metric

Vessels that are determined by NMFS to have relatively low rate of interactions with bluefin based on past performance, and that are compliant with reporting and monitoring requirements would be allowed to fish in the Cape Hatteras Gear Restricted Area and current pelagic longline closed areas (with an observer) using pelagic longline gear. NMFS defined a numeric system that would reflect a vessel's bluefin avoidance history, which would contribute toward the vessel's overall performance/compliance score. The initial bluefin avoidance history would be based upon a vessel's rate of interactions during 2006 through 2011, and future scores would be based upon an average score of interaction rates from the most recent three-year period. The score is linked directly to the ratio of the number of bluefin interactions (number of fish; landings, dead discards, and live discards) to the weight of designated species landings (in pounds) (Table 11.8). The ratio is the number of bluefin interactions per 10,000 lbs of designated species landed between 2006-2011. Designated species include swordfish, bigeye tuna, albacore tuna, yellowfin tuna, skipjack tuna, dolphin, wahoo, shortfin mako, porbeagle, and thresher sharks.

NMFS developed a hypothetical scenario with 4 vessels to exemplify the application of the performance metrics. The calculation of bluefin avoidance scores for each vessel, based on different levels of catch and high and low interaction scenarios, are presented in Table 11.9.

Table 11.8 Bluefin Tuna Avoidance Scores assigned to vessels based on the ratio of bluefin interactions to designated species catch (in lbs).

Ratio of Bluefin Interactions to Designated Species Landings (X 10,000)					
Data Range	0	>0 to <1	≥1 to <2	≥2 to <3	≥3
Score	5	4	3	2	1

Table 11.9 Scenarios for the generation of a bluefin avoidance score.

Vessel #	Scenario	Designated Species (lbs) Landings 2006-2011	Total # BFT Interactions	BFT : Designated Species Ratio = #BFT/ (Pelagic Indicator /10,000)	BFT Avoidance Score	Decision Yes; No; NMI (Need More Information, see Table 5)
Vessel 1	Very High Target: High BFT	500,000	300	6	1	No
			30	0.6	4	NMI
Vessel 2	Mod. High Target: Low BFT	250,000	60	2.4	2	NMI
			30	1.2	3	NMI
Vessel 3	Low Target: High BFT	50,000	25	5	1	No
			5	1	3	NMI
Vessel 4	Very Low Target: Low BFT	10,000	5	5	1	No
			0	0	5	NMI

"Designated species" refers to the total landings of species targeted by the pelagic longline fleet, and includes the BAYS tunas, dolphin, wahoo, swordfish, porbeagle shark, thresher shark, and shortfin mako. The bluefin to designated species ratio is scaled to represent the number of bluefin caught per 10,000 pounds of target species landed in order to have simple, meaningful ratios. Bluefin avoidance score is assigned by comparing the bluefin to designated species ratio to the scoring range presented in Table 11.8.

Vessel #1 landed approximately 500,000 pounds (~227 mt) between 2006 and 2011; this averages out to approximately 83,000 lbs (~38 mt) per year. If this vessel had interacted with 300 total bluefin between 2006-2011 (50 bluefin per year on average), then this vessel would have had a bluefin: designated species ratio equal to 6 using the following formula:

((300 bluefin / 500,000 lbs landings)*10,000 lbs designated target species = 6 bluefin per 10,000 lbs of designated target species).

Any ratio greater than a 3 would be assigned a bluefin avoidance score of 1. This vessel would automatically not be allowed access to the Cape Hatteras Gear Restricted Area or specified closures. However, if this vessel only interacted with 30 bluefin (5 per year, on average), then the vessel's bluefin avoidance score would be a 4; the vessel may be allowed into the Cape Hatteras Gear Restricted Area or specified closures. NMFS would need more information from

POP and Observer compliance scores to determine if the vessel was eligible for access.

Vessel #2 landed approximately 250,000 pounds (~113 mt) between 2006 and 2011; this averages out to approximately 41,666 (~19 mt) per year of designated species. If this vessel had interacted with 60 total bluefin between 2006 and 2011 (~10 per year on average), then this vessel would have had a bluefin: designated species ratio equal to 2.4, and resulting bluefin avoidance score of 2. However, if this vessel had landed only 30 bluefin (approximately 5 per year), then the vessel would have a bluefin to designated species ratio of 1.2 and a bluefin avoidance score of 3. Under either scenario, NMFS would need more information from POP and Observer compliance scores to determine if the vessel was eligible for access.

Vessel #3 landed approximately 50,000 pounds (~23 mt) between 2006 and 2011; this averages out to approximately 8,333 (~4 mt) per year of designated species. If this vessel had interacted with 25 total bluefin between 2006 and 2011 (~4 per year on average), then this vessel would have had a bluefin to designated species ratio equal to 5, and resulting bluefin avoidance score of 1. Therefore this vessel would automatically not be allowed into the restricted or closed areas. However, if this vessel had interacted with only 5 bluefin, then the vessel would have a bluefin: designated species ratio of 1 and a bluefin avoidance score of 3. NMFS would need more information from POP and Observer compliance scores to determine if the vessel was eligible for access.

Vessel #4 landed approximately 10,000 pounds (~4.5 mt) between 2006 and 2011; this averages out to approximately 1,667 (~0.75 mt) per year of designated species. If this vessel had interacted with 5 total bluefin between 2006 and 201, then this vessel would have had a bluefin: designated species ratio equal to 5, and resulting bluefin avoidance score of 1. Therefore this vessel would automatically not be allowed into the restricted or closed areas. However, if this vessel had interacted with no bluefin, then the vessel would have a bluefin: designated species ratio of 0 and a bluefin avoidance score of 5. NMFS would need more information from POP and Observer compliance scores to determine if the vessel was eligible for access.

Pelagic Observer Program Compliance Performance Metric

Vessels that have a high enough Bluefin avoidance score would then be evaluated based on compliance with the Pelagic Observer Program (POP). NMFS consulted the POP while developing this metric in order to address common operational and compliance issues encountered by the POP program in meeting observer coverage goals. NMFS defined a two-part scoring system, with the primary element relating to compliance with POP requirements. Compliance is linked to the following factors; communications, and timing of those communications, with POP; presence/absence of a USCG safety decal; life raft capacity, bunk space, vessel selection, and observer deployment. The scoring system is also designed to weigh the communication elements/requirements more heavily than the safety aspects, as well as consider evidence of fishing activity. A vessel with valid reasons for not carrying an observer (e.g., no observer available, or not fishing with pelagic longline gear) would not be penalized under this scoring system. Vessels must be at least 80 percent compliance in order to receive a score that is high enough to allow access to the Cape Hatteras Gear Restricted Area or specified closures.

The second part of the scoring system is based on whether vessels actually undertook observed trips. Due to the importance of having enough observed trips occur to meet the observer coverage targets required by national law and international treaty, NMFS is also evaluating vessels on the percentage of trips that were observed. Observed trips provide critical data that are necessary for in-season management activities, establishing quota specifications, ensuring compliance with the Endangered Species Act and Marine Mammal Protection Act (and continued authorization of the fishery), and the collection of data to be used in stock assessments. The percentage of trips observed would determine whether a vessel received a score of a 3, 4, or 5. A vessel would automatically have access to the closed areas and gear restricted areas under any of these scores; the difference in score is based on the percent of observed trips undertaken by the vessel (e.g., a vessel with a score of 3 would have had between 33 and 60 percent of its trips observed; a vessel with a score of 5 would have had 100 percent of its trips observed). However, if a vessel is determined to have a POP compliance score of 2 or less, then NMFS would need to consider the logbook compliance score to determine if a vessel could be granted access to the Cape Hatteras Gear Restricted Area or specified closures.

Table 11.10 POP Scoring Reference Table. The composite POP score is based on the vessel's compliance in communication with the POP program (first row) and whether the vessel refused to take an observer (and the reasons for the refusal) (Second Row). Vessels need at least a final score of 2 in order to have access to the Cape Hatteras Gear Restricted Area or specified closures.

Percent Compliant	100%	80-100%	80-100%	<80%	na
Percent Observed	90-100%	>60-90%	>33-60%	0-33%	na
Initial Score	5	4	3	2	1
Final Scores: Equal to initial score unless evidence of fishing activity after either refusing to take an observer or non-communication with Pelagic Observer Program, which reduced the initial score by one. Vessels with a composite score less than 1 receive a final score of 1.					

Vessels were analyzed based on a number of variables (Table 11.11):

- Number of Times Selected (A)
- Number of Times Observed (B)
- Number of Times Compliant But Not Observed (C) – e.g., an observer may not have been available, or the vessel was not actively fishing
- Number of Times the Vessel was Non-Compliant (D) – e.g, the vessel refused to take an observer, the vessel did not have proper safety equipment, there was inadequate space for an observer
- Number of Times the Vessel was Non-Compliant, and Fished (E) – The vessel either refused an observer or did not communicate with the POP program, but there are indications that the vessel fished anyways for a selected trip. This automatically reduces the overall score by 1 point.

- Percent Compliance [B+C/A] – calculates a score based on the number of compliant trips or compliant contacts with the POP
- Percent Observed (B/A) - percentage of observed trips out of the number of times the vessel was selected

POP compliance information for the 4 hypothetical vessels is presented in Table 11.11. As indicated in Table 3, the final score is a composite score that reflects both the rate of compliance and the rate of observer coverage for a particular vessel. At this point, additional decisions can be made regarding access to restricted or closed areas based on POP compliance (Table 11.12). However, NMFS may need to refer to the vessel's logbook compliance score to determine a final decision regarding access for the 8 vessel scenarios (Table 11.14).

Table 11.11 POP compliance score calculation of hypothetical vessels. The final score is generated by comparing the percent compliance and percent observed to the score ranges in Table 11.10.

	Times Selected (A)	Times Observed (B)	Compliant But Not Observed (C)	Non-Compliant (D)	Non-Compliant With Fishing* (E)	Percent Compliant (B+C) / A	Percent Observed (B/A)	Final Score*
Vessel 1	10	5	5	0	0	100%	50%	3
Vessel 2	10	3	4	3	3	70%	30%	1*
Vessel 3	5	5	0	0	0	100%	100%	5
Vessel 4	1	0	0	1	0	0%	0%	1

*Vessel 2 was non-compliant with fishing. A percent compliance score of 70% and a percent observed score of 30% would normally result in a POP compliance score of 2, which may be high enough to allow access if the logbook compliance score is high enough. However, the non-compliance with fishing reduces the score by 1 point and automatically makes this vessel ineligible due to a POP compliance score of 1.

Table 11.12 Hypothetical decisions regarding vessel access based on Bluefin Avoidance Scores and POP Compliance Scores (see Table 4).

Vessel #	**Scenario**	**Pelagic Indicator (lbs) Landings 2006-2011**	**BFT Avoidance Score**	**POP Score**	**Decision for Access - Yes; No; or NMI (Need More Information, see Table 7)**
Vessel 1	Very High Target: High BFT	500,000	1	3	No
			4		Yes
Vessel 2	Mod. High	250,000	2	1	NMI

	Target: Low BFT		3		NMI
Vessel 3	Low Target: High BFT	50,000	1	5	No
			3		Yes
Vessel 4	Very Low Target: Low BFT	10,000	1	1	No
			5		NMI

Vessel 1 was selected 10 times for observer coverage between 2006 and 2011. This vessel was observed 5 times, and was found to be compliant but not observed 5 times because it was not fishing at the time it was selected and due local weather events that damaged the vessel (the vessel communicated with the observer program upon selection each time). This vessel was compliant 100 percent of the time, and was observed 50 percent of the time. Its composite score was 3 because, although the vessel was compliant and had valid reasons for not taking observers half of the time, the vessel was unable to meet its full obligation to the POP program for this particular fishery. This vessel, under a low bluefin avoidance score scenario (score of 1), would not be permitted access regardless of the POP score. However, under the high bluefin avoidance score scenario (score of 4), the vessel would be permitted access.

Vessel 2 was also selected 10 times for observer coverage between 2006 and 2011. This vessel was observed 3 times, and was found to be compliant but not observed 4 times. However, this vessel also was non-compliant with the POP observer program 3 times; each time, there was an indication that an HMS fishing activity occurred (weigh out slips and logbooks were submitted). If vessels are non-compliant (D) and there is evidence of fishing activity for those trips (E), then the composite score is reduced by 1 point. Under the low bluefin avoidance scenario (score of 2) and the moderate bluefin avoidance scenario (score of 3), the vessel might be permitted access depending on whether logbooks were submitted on time.

Vessel 3 was selected 5 times for observer coverage between 2006 and 2011. This vessel was observed 5 times, and therefore was compliant and observed 100 percent of the time, respectively. This vessel, under the low bluefin avoidance scenario (score of 1) would not be allowed access to the area despite high observer compliance. Under the moderate bluefin avoidance scenario (score of 3), the vessel's access would be guaranteed by high POP compliance (score of 5).

Vessel 4 was selected 1 time. This vessel was not observed because the vessel captain informed the POP office that adequate safety gear was unavailable for the observer. Therefore the vessel was non-compliant with observer regulations and was not observed (0 percent), and the POP compliance score was 1. Under the low bluefin avoidance scenario (score of 1), the vessel would not be permitted access to the restricted or closed areas. However, under the high bluefin avoidance scenario (score of 5), NMFS would need more information to determine whether the vessel would be permitted access.

Logbook Compliance Performance Metric

Vessels that have a high Bluefin avoidance score and a low POP compliance score would then be evaluated for compliance with logbook reporting requirements to determine whether they would have access to the Cape Hatteras Gear Restricted Area or to closed areas. NMFS consulted with the logbook program to determine how this metric can address compliance issues in logbook reporting processes. The most common issue is delayed reporting (sometimes by as much as a year) of logbooks, which can be highly problematic for data accuracy and quota-monitored fisheries such as HMS. Vessels with an Atlantic Tunas longline permit are required to submit logbooks, including a separate form for each longline set. Logbooks must be submitted within seven days of offloading the catch, and, if no fishing occurred during a month, a no-fishing form must be submitted with a postmark no later than 7 days after the end of the month.

NMFS therefore defined a numeric scoring system based on compliance with logbook reporting requirements (Table 11.13).

Table 11.13 Logbook compliance score for individual vessels based on reporting.

Logbook Compliance					
Data Type	Days Between Offload and Mail Opening				
Data Range	≤ 7	>7 to ≤30	> 30 to ≤60	>60 to ≤90	> 90
Score	5	4	3	2	1

The 4 hypothetical vessels varied in the amount of time that was taken to report logbooks to NMFS (Table 11.14). Vessel 1 and Vessel 3 were fairly compliant, submitting their logbooks within 30 days to the Agency and receiving scores of 4 and 5, respectively. Vessel 2 took 45 days to submit logbooks to NMFS. Delayed reporting by a month and a half could affect bluefin quota monitoring. Vessel 4 reported all of their logbooks on December 31 of the fishing year, 300 days after the most recent trip was made. A delay in reporting of this magnitude could, depending on the available quota and the number of late reports, result in a fishery closure or reductions in quota in future fishing years. This vessel therefore received a logbook compliance score of 1.

Table 11.14 Number of days between offload and mail opening and concurrent logbook compliance score for 4 hypothetical vessels.

	Days Between Offload and Mail Opening	Logbook Compliance Score
Vessel 1	20	4
Vessel 2	45	3
Vessel 3	7	5
Vessel 4	300	1

Combining Scoring Elements into a Single Performance Score

Using the bluefin interactions performance metric, the POP compliance metric, and the logbook compliance performance metric, an overarching performance formula was developed in order to derive a "yes" or "no" answer with respect to whether a vessel is granted access to the proposed

Gear Restricted Area, as well as being a component of granting access to areas currently closed to longline gear. There are some rules that apply to whether the vessel should be granted access to a closed area (Table 11.15; Figure 11.1).

Table 11.15 Rules for annual evaluation of performance criteria.

Score	Access
If Bluefin Avoidance Score = 1	No
If Bluefin Avoidance Score is >1 but Observer Compliance is 1	No, unless Logbook Compliance Score is 4 or 5
If Bluefin Tuna Avoidance Score > 1 and Observer Compliance Score > 2	Yes

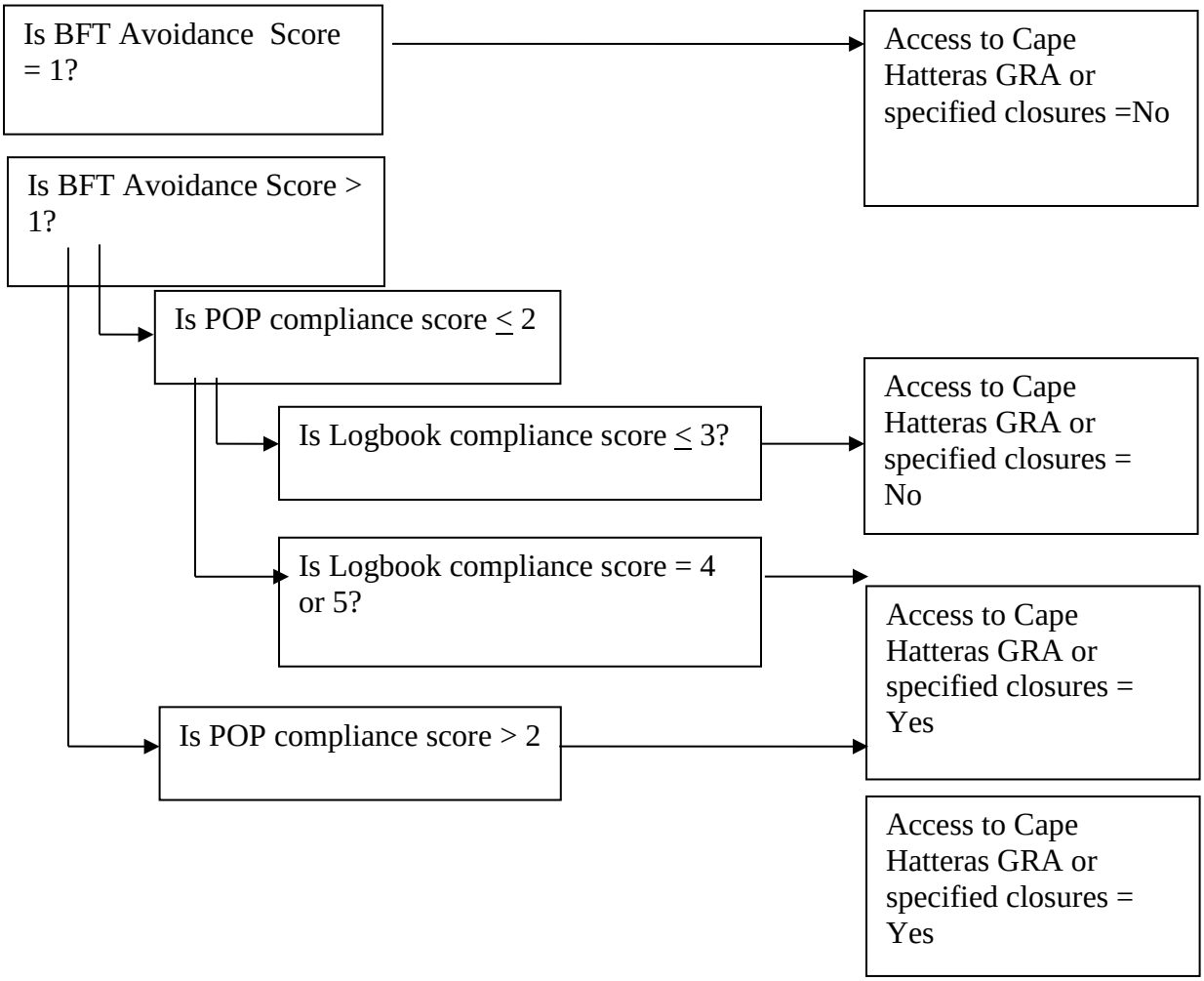


Figure 11.17 Flow chart depicting how bluefin avoidance scores, POP compliance scores, and logbook compliance scores are used to determine access to the Cape Hatteras Gear Restricted Area or specified closures.

The final composite scores for 4 hypothetical vessels are presented in Table 11.16.

Vessel 1 would, under the low bluefin avoidance scenario (score of 1) would not be granted access to restricted or closed areas despite having reasonable POP and logbook compliance. Under this scenario, the vessel has not demonstrated an ability to avoid bluefin tuna. Under the high bluefin avoidance scenario (score of 5), the vessel would be granted access due to a clear ability to avoid bluefin, and reasonable compliance with the POP and logbook reporting requirements.

Vessel 2 would not be granted access to Cape Hatteras Gear Restricted Area or current pelagic longline closed areas under either bluefin avoidance scenario (score of 2 and 3) because the POP and logbook compliance scores are not high enough to qualify for entrance.

Vessel 3 would not be granted access to gear restricted areas or closed areas under the low bluefin avoidance scenario (score of 1). Vessel 3 would be granted access to gear restricted areas or closed areas under the moderate bluefin avoidance scenario (score of 3), because the vessel had a high rate of compliance with the POP (score of 5) and the logbook reporting requirements (score of 5).

Vessel 4 would not be granted access under either the low or high bluefin avoidance scenario. Under the low bluefin avoidance scenario, the bluefin avoidance score is too low to permit access to the restricted area or the closed areas (score of 1). Under the high bluefin avoidance scenario, the vessel demonstrates a good job at avoiding bluefin tuna (score of 5); however the vessel was non-compliant in the only trip selected under the observer program, and the logbooks were batch reported at the end of the year.

Table 11.16 Composite scores and final decisions for 4 hypothetical pelagic longline vessels.

Vessel #	Scenario	Pelagic Indicator (lbs) Landings 2006-2011	BFT Avoidance Score	POP Score	Logbook Compliance Score	Decision for Access - Yes; No
Vessel 1	Very High Target: High BFT	500,000	1	3	4	No
			4			Yes
Vessel 2	Mod. High Target: Low BFT	250,000	2	1	3	No
			3			No

Vessel 3	Low Target: High BFT	50,000	1	5	5	No
			3			Yes
Vessel 4	Very Low Target: Low BFT	10,000	1	1	1	No
			5			No

11.8 Redistribution of Effort Analyses – Methods and Examples.

The redistribution of effort analyses methods are explained in Chapter 4 (starting on section 4.1.2.1), and provide an overview of how NMFS determined which vessels would likely redistribute effort from gear restricted areas. In this section, NMFS provides specific examples of scenarios for redistribution of effort, where effort was redistributed and how NMFS determined which vessels would be capable of fishing outside of gear restricted areas.

There are 2 gear restricted areas where NMFS determined that it was appropriate to redistribute effort to open waters outside of the restricted areas. Vessels that fish in the Small Gulf of Mexico Gear Restricted Area (Preferred Alternative B 1f) are assumed to be capable of redistributing effort into the open areas of the Gulf of Mexico. Affected vessels under both alternatives for the Cape Hatteras Gear Restricted Area, (Alternative B 1b) and (Preferred Alternative B 1c), were assumed to be able to redistribute their effort into the open areas of the Atlantic. Performance criteria are outlined in Chapter 4 and in Appendix 8, and are not discussed within this Appendix. NMFS analyzed all trips departing from the Gulf of Mexico between 2006 and 2011 and concluded that less than 1 percent of those trips left the Gulf. Based on the Gulf of Mexico port of departure analysis, NMFS assumed that no redistribution would occur under the large Gulf of Mexico Gear Restricted Area alternatives Alternative B 1e (March-May) and Alternative B 1g (year round).

Step 1: Identify the affected vessels. Where do they fish?

NMFS used GIS to identify all of the vessels that fished in each closed area. In the example provided within this Appendix, NMFS identified 3 hypothetical vessels that fished within the Cape Hatteras Gear Restricted Area. The three vessels used for this analysis fished in the Mid-Atlantic Bight (MAB) and the South-Atlantic Bight (SAB) pelagic longline statistical areas.

Step 2: Develop summary statistics for the data. How much effort did the vessels make in Gear Restricted Areas?

NMFS considered each vessel's efforts (numbers of hooks) inside of the gear restricted areas. NMFS tabulated effort by month (Rows A- L on the data summary tables under each alternative in Chapter 4) and derived a sum of gear restricted area effort per vessel.

According to an analysis of logbook and observer data, the pelagic longline fishery tends to deploy, on average, between 500 and 750 hooks off the coast of North Carolina (Chapter 3, Figure 3.3). For the redistribution analysis NMFS used the sum of reported hooks per set for each vessel when calculating effort redistribution. Using the actual number of hooks set per

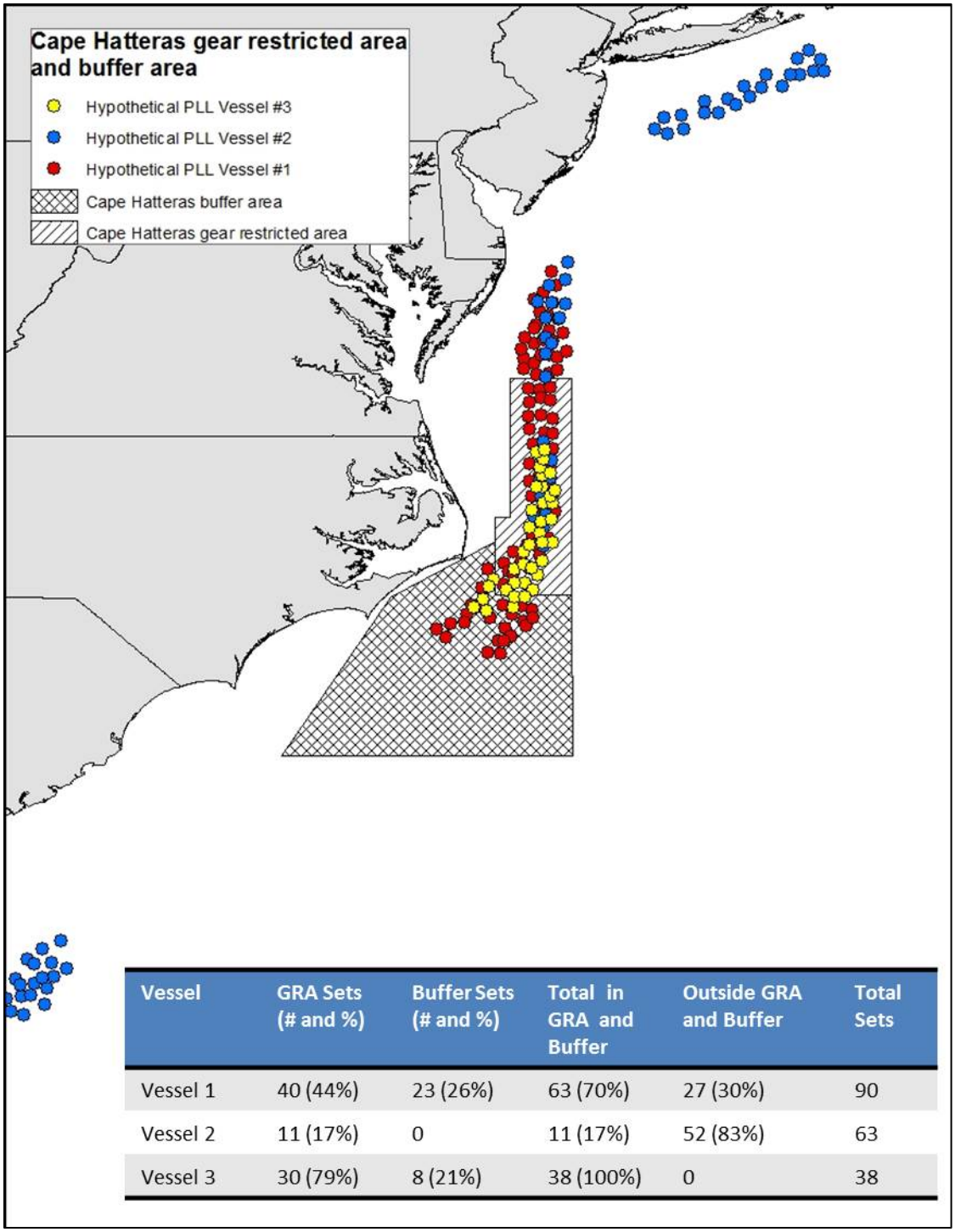
vessel in the open areas derived vessel specific CPUE calculations, specific to the fishing characteristics of each vessel.

Individual vessel effort data is summarized in Figure 11.18.

Vessel #1 made 63 sets in the Cape Hatteras Gear Restricted Area and Buffer. This vessel deployed 67,545 hooks inside the Cape Hatteras Gear Restricted Area and Buffer.

Vessel #2 made 11 sets in the Cape Hatteras Gear Restricted Area and Buffer. This vessel deployed 3,350 hooks inside the Cape Hatteras Gear Restricted Area and Buffer.

Vessel #3 made 38 sets in the Cape Hatteras Gear Restricted Area and Buffer. This vessel deployed 9,150 hooks inside the Cape Hatteras Gear Restricted Area and.



Vessel	GRA Sets (# and %)	Buffer Sets (# and %)	Total in GRA and Buffer	Outside GRA and Buffer	Total Sets
Vessel 1	40 (44%)	23 (26%)	63 (70%)	27 (30%)	90
Vessel 2	11 (17%)	0	11 (17%)	52 (83%)	63
Vessel 3	30 (79%)	8 (21%)	38 (100%)	0	38

Figure 11.18 Distribution of sets made by three hypothetical vessels.

Step 3: Determine where each vessel will be redistributing effort, and calculate the proportion of effort in each area fished by the vessel. How much time and effort did each vessel fish in the open portions of each statistical area?

NMFS determined that the three vessels primarily fish in the Mid-Atlantic Bight. However, the Cape Hatteras Gear Restricted Area is situated near the boundary between the Mid-Atlantic Bight and the South-Atlantic Bight. Fishing activity often straddles the two regions, depending on the availability of fish and the environmental conditions. The distribution of fishing activity in the open portions of the pelagic longline statistical areas for the three vessels is identified in Table 11.17.

Vessel 1 reported 20 sets in the open portions of Mid-Atlantic Bight and 7 sets in the South-Atlantic Bight. Therefore, 74 percent of the vessel's effort occurs in the Mid-Atlantic Bight, and 26 percent of the vessel's effort occurs in the South-Atlantic Bight.

Vessel 2 reported 37 sets in the open portions of Mid-Atlantic Bight and 15 sets in the South-Atlantic Bight. Therefore, 71 percent of the vessel's effort occurs in the Mid-Atlantic Bight, and 29 percent of the vessel's effort occurs in the South-Atlantic Bight.

Vessel 3 reported 0 sets in the open portions of Mid-Atlantic Bight and 0 sets in the South-Atlantic Bight. Since no sets were made outside of the Cape Hatteras Gear Restricted Area or Buffer Area, effort from this vessel is assumed to not redistribute to open portions of the ocean.

The percentage of effort is equivalent to the **proportion of effort** in each area (e.g., 27% = 0.27).

Table 11.17 Distribution of sets for three hypothetical vessels in open regions of each statistical reporting area.

	Number of Sets		Proportion of Effort	
Vessel ID	Mid Atlantic Bight	South Atlantic Bight	Mid Atlantic Bight	South Atlantic Bight
Vessel 1	20	7	0.74	0.26
Vessel 2	37	15	0.71	0.29
Vessel 3	0	0	0	0

Step 4: Determine the redistribution rate of the vessels. How much effort can vessels really redistribute outside of a preferred fishing area?

NMFS developed guidelines based on the probability that vessels would be able to redistribute effort outside of a gear restricted area. Redistribution rates were determined by the natural breaks formed when plotting the percentages of sets occurring inside and outside the gear restricted areas. Vessels that had less than or equal 40 percent of their sets inside a gear restricted area had 100 percent of their effort redistributed to outside the gear restricted area (vessel 2). This is equivalent to a **redistribution rate** of 1.0. Vessels that had between 40 and 75 percent of their sets inside a gear restricted area had 50 percent of their effort redistributed to

outside the gear restricted area (vessel 1). This is equivalent to a **redistribution rate** of 0.5. Vessels that made greater than 75 percent of their sets inside a gear restricted area had none of their effort redistributed and were captured in the no redistributions calculations (vessel 3). This is equivalent to a **redistribution rate** of 0.

As an example, set locations for three hypothetical fishing vessels are shown in Figure 11.18 relative to the Cape Hatteras Gear Restricted Area and adjacent buffer zone.

Vessel #1 (red dots) made 90 sets along the continental shelf between Cape Lookout and Delaware Bay. Seventy percent of the sets were located in either the Cape Hatteras Gear Restricted Area or its adjacent buffer. 30 percent of the sets were located just north of the Cape Hatteras Gear Restricted Area along the continental shelf. In terms of redistribution calculations, NMFS would assume vessel 1 would have half of the effort occurring in the Gear Restricted Area and adjacent buffer redistributed outside to adjacent open regions previously fished in by vessel 1 (redistribution rate of 0.5).

Vessel #2 (blue dots) targeted specific fishing grounds between Long Island and South Carolina. This vessel made 17 percent of its sets within the Cape Hatteras Gear Restricted Area or in the adjacent buffer. The majority of its sets (83 percent) were made outside of the Cape Hatteras Gear Restricted Area and adjacent buffer; therefore, NMFS assumes that this vessel would be capable of redistributing all of its fishing effort inside the gear restricted are to open areas previously fished in by vessel 2 (redistribution rate of 1.0).

Vessel #3 (yellow dots) fished exclusively off the coast of North Carolina. Most of its sets were made in the Cape Hatteras Gear Restricted Area, but a few were made just south in the buffer zone. Since this vessel made 100 percent of its fishing effort in the gear restricted area or buffer zone, NMFS assumed that this vessel would not be capable of redistributing fishing effort into adjacent open areas (redistribution rate of 0).

Step 5: Estimate the number of displaced hooks that will be redistributed out to pelagic longline statistical areas previously fished by vessels.

For each vessel, the **total number of hooks** fished within a gear restricted area was multiplied by the **proportion of effort by area** and the **redistribution rate** to determine the total number of **displaced hooks.**

Vessel #1 set 67,545 hooks in the Cape Hatteras Gear Restricted Area and Buffer. The proportion of effort in the Mid-Atlantic Bight and South Atlantic Bight is 0.74 and 0.26, respectively. The redistribution rate of this vessel is 0.5. Therefore, this vessel is expected to redistribute the following number of hooks:

- Mid Atlantic Bight: 67,545 hooks (in Cape Hatteras Gear Restricted Area) x 0.74 (proportion of effort by area) x 0.5 (redistribution rate) = **24,992 hooks**
- South Atlantic Bight: 67,545 hooks (in Cape Hatteras Gear Restricted Area) x 0.26 (proportion of effort by area) x 0.5 (redistribution rate) = **8,781 hooks**

Vessel #2 set 3,350 hooks in the Cape Hatteras Gear Restricted Area and Buffer. The proportion of effort in the Mid-Atlantic Bight and South Atlantic Bight is 0.71 and 0.29, respectively. The redistribution rate of this vessel is 1.0. Therefore, this vessel is expected to redistribute the following number of hooks:

- Mid Atlantic Bight: 3,350 hooks (in Cape Hatteras Gear Restricted Area) x 0.71 (proportion of effort by area) x 1.0 (redistribution rate) **= 2,379 hooks**
- South Atlantic Bight: 3,350 hooks (in Cape Hatteras Gear Restricted Area) x 0.29 (proportion of effort by area) x 1.0 (redistribution rate) **= 971 hooks**

Vessel #3 set 9,150 hooks in the Cape Hatteras Gear Restricted Area and Buffer. The proportion of effort in the Mid-Atlantic Bight and South Atlantic Bight is 0 and 0, respectively. The redistribution rate of this vessel is 0. Therefore, this vessel is expected to redistribute the following number of hooks:

- Mid Atlantic Bight: 9,150 hooks (in Cape Hatteras Gear Restricted Area) x 0 (proportion of effort by area) x 0 (redistribution rate) **= 0 hooks**
- South Atlantic Bight: 9,150 hooks (in Cape Hatteras Gear Restricted Area) x 0 (proportion of effort by area) x 0 (redistribution rate) **= 0 hooks**

Step 6: Determine the Catch Per Unit Effort (CPUE) of vessels in each statistical reporting area outside of the Gear Restricted Area.

Table 11.18 Hypothetical CPUEs of target and bycatch species in open areas of the Mid-Atlantic Bight (MAB) and South Atlantic Bight (SAB).

Hypothetical CPUE	Swordfish Kept CPUE	Dolphin Kept CPUE	Yellowfin Tuna Kept CPUE	Bluefin Tuna Discarded CPUE
Vessel 1				
MAB	0.0064	0.0000	0.0017	0.0000
SAB	0.0094	0.0005	0.0029	0.00005
Vessel 2				
MAB	0.0000	0.0000	0.0000	0.0000
SAB	0.0038	0.0002	0.0083	0.0004
Vessel 3				
MAB	0.0000	0.0000	0.0000	0.0000
SAB	0.0000	0.0000	0.00000	0.0000

Hypothetical catch per unit effort (CPUEs) are presented in Table 2. These CPUEs are derived from summing the total number of animals kept or discarded outside of the gear restricted area, and dividing that sum by the total number of hooks deployed outside of the gear restricted area.

Vessel 3 did not fish outside of the Gear Restricted Area; therefore, the CPUE is 0.

Step 7: Determine the number of animals that each vessel would catch from displacing effort from the Cape Hatteras Gear Restricted Area and Buffer to open portions of statistical areas.

Table 11.19 describes the redistribution of effort calculations for the three hypothetical vessels. The total number of hooks displaced into each area is multiplied by the CPUE (Table 11.18) to derive the estimated number of interactions for each species.

For example, Vessel #1 would, with the redistribution of 67,545 displaced hooks from the Cape Hatteras Gear Restricted Area, catch an additional 45 swordfish in the Mid-Atlantic Bight and 253 swordfish in the South Atlantic Bight.

Vessel #2 is displacing a much smaller number of hooks than Vessel #1. Therefore, the estimated number of fish kept and discarded would be much smaller.

Vessel #3 was unable to redistribute effort outside of the gear restricted area. Therefore, this vessel had no interactions per 100 hooks in the open areas outside of the gear restricted area.

Once the number of animals caught due to redistribution was calculated for each vessel in each pelagic longline statistical area, a total for all areas was derived. This total was summed with the no redistribution numbers derived from the total interactions of all species of all 3 hypothetical vessels in the gear restricted area. The total from the redistributed interactions and the no redistribution reduction in catch derived the net reduction in catch if redistribution occurs. Table 11.20 shows how the net reduction in catch was calculated for the 3 hypothetical vessels for the hooks and species used in Table 11.19.

Table 11.19 Redistribution of effort calculations.

	Hooks Displaced		Swordfish Kept		Dolphin Kept		Yellowfin Tuna Kept		Bluefin Tuna Discarded	
# Hooks Displaced x Hypothetical CPUE = interactions per 100 hooks										
	MAB	SAB	MAB	SAB	MAB	SAB	MAB	SAB	MAB	SAB
Vessel #1	11,655	4,095	751.74	0.004	2727.27	0.049	684.84	0.01	35.31	0.000055
Vessel #2	3,095	1,595	0.014	0.005	0.073	0.056	0.014	0.033	0.00029	0.000058
Vessel #3	0	0	0	0	0	0	0	0	0	0
Total (rounded)	14,750	5,690	752	0	2,727	0	685	0	35	0
Total for all areas	20,440		752		2,727		685		35	

Table 11.20 Redistribution of effort calculations based on three hypothetical vessels.

2006-2011 Average Annual Interactions	Hooks	Swordfish Kept	Dolphin Kept	Yellowfin Tuna Kept	Bluefin Tuna Discarded
January	13,458	150	1,099	1,619	344
February	10,558	79	8,254	599	525
March	9,732	238	5,884	469	802
April	5,311	497	10,066	736	147
December	12,007	227	255	2,209	389
Dec-Apr Reduction of Catch/Hooks with no redistribution	-51,066	-1,191	-25,558	-5,632	-2,207
Dec-Apr change in catch during closure with redistribution	20,440	752	2,727	685	35
Net Change with redistribution	-30,626	-439	-22,831	-4,947	-2,172

11.9 Summary Data and Analyses to Estimate the Ecological Impacts of Gear Restricted Areas on Skipjack Tuna, Albacore Tuna, Porbeagle Shark, and Thresher Shark Stocks.

Each of the gear restricted area alternatives would have varying degrees of ecological impacts on different species, dependent on how and to what extent fishing effort is redistributed. The ecological impacts of each gear restricted area, with and without redistribution of fishing effort, are presented in summary tables in this section and in Chapter 4. This section includes summary tables for skipjack tuna, albacore tuna, porbeagle shark, and thresher shark. These species are periodically encountered by HMS-permitted pelagic longline fishermen, and are a smaller component of landings. Therefore these species did not figure as prominently in the main analysis and discussion of ecological effects on species that commonly have interactions with the pelagic longline fleet. The same methodologies were used to derive the estimates of ecological impacts for skipjack tuna, albacore tuna, porbeagle shark, and thresher shark as for the primary target and interaction species discussed in Chapter 4. Summary tables for bluefin, swordfish, yellowfin tuna, bigeye tuna, dolphin, wahoo, and shortfin mako sharks are presented in the text of Chapter 4.

Alternative B 1b, the Cape Hatteras Gear Restricted Area, is expected, across the fishery, to increase the number of albacore by 3 percent (+211 fish/year on average); decrease the number of thresher kept by 79 percent (-37 fish/year on average); and decrease the number of thresher discarded by 22 percent (-26 fish/year on average). NMFS does not anticipate that this alternative would result in a noticeable change in the albacore discarded (0 fish/year); skipjack kept or discarded (0 fish/year; porbeagle kept (0 fish/year); and porbeagle discarded (-1 fish/year, on average).

Preferred Alternative B 1c, the Cape Hatteras Gear Restricted Area with Access Based on Performance, is expected, across the fishery, to: increase the number of albacore kept by 1 percent (+74 fish/year, on average); decrease the number of thresher kept by 30 percent (-14 fish/year, on average); and decrease the number of thresher discarded by 16 percent (-19 fish/year, on average). NMFS does not anticipate that this alternative would result in a noticeable change in the albacore discarded (0 fish/year); skipjack kept or discarded (0 fish/year; porbeagle kept (0 fish/year); and porbeagle discarded (-1 fish/year, on average).

Alternative B 1e, the Gulf of Mexico EEZ Gear Restricted Area (March-May) is expected, across the fishery, to: reduce the number of albacore kept and discarded by 0 percent (-17 fish/year on average) and 3 percent (-7 fish/year on average); reduce the number of skipjack kept and discarded by 17percent (-18 fish/year on average) and 8 percent (-79 fish/year on average); not result in an appreciable change in the number of porbeagle kept and discarded, or in the number of thresher kept (0 percent, 0 fish/year, each); and reduce the number of thresher discarded by 8 percent (-10 fish/year on average).

Alternative B 1f, the Small Gulf of Mexico Gear Restricted Area, is expected, across the fishery, to: have negligible effects (0 percent change) on the number of albacore kept (-2 fish/year on average); reduce the number of albacore discarded by 1 percent (-3 fish/year on average); reduce the number of skipjack kept and discarded by 10 percent (-11 fish/year on average) and 1 percent (-7 fish/year on average); not result in an appreciable change in the number of porbeagle kept and discarded, or in the number of thresher kept (0 percent, 0 fish/year, each); and reduce the number of thresher shark kept and discarded by 2 percent (-2 fish/year on average).

Alternative B 1g, the Gulf of Mexico EEZ Gear Restricted Area (Year Round) is expected, across the fishery, to: reduce the number of albacore kept and discarded by 6 percent (-396 fish/year on average) and 34 percent (-84 fish/year on average) across the fishery; reduce the number of skipjack kept and discarded by 46 percent (-49 fish/year on average) and 92 percent (-896 fish/year on average); not result in an appreciable change in the number of porbeagle or thresher kept (0 percent, 0 fish/year, each); reduce the number of porbeagle discarded by 1 percent (-3 fish/year, on average); and reduce the number of thresher shark discarded by 17 percent (-20 fish/year on average).

The US pelagic longline fleet typically does not target albacore, skipjack, porbeagle, or thresher sharks. Porbeagle sharks are managed under an extremely small quota and were closed for the 2013 fishing season; therefore all porbeagle sharks captured in 2013 must be discarded. As a result of the small numbers of interactions typically experienced by the pelagic longline fleet, NMFS expects the preferred alternatives to have direct, minor beneficial short- and long-term ecological effects on these four species.

Table 11.21 Data summary of HMS logbook data (2006 - 2011) and redistribution analyses under Alternative B 1b (Cape Hatteras Gear Restricted Area) for albacore, skipjack, porbeagle, and thresher sharks. Source: HMS Logbook Data.

	2006-2011 Average Annual Interactions	Albacore Kept	Albacore Discarded	Skipjack Kept	Skipjack Discarded	Porbeagle Kept	Porbeagle Discarded	Thresher Kept	Thresher Discarded
(A)	***January***	16	0	0	0	0	1	6	9
(B)	***February***	10	0	0	0	0	0	13	12
(C)	***March***	56	0	0	0	0	0	4	1
(D)	***April***	35	0	0	0	0	0	12	2
(E)	May	2	0	0	0	0	0	2	1
(F)	June	11	0	5	2	0	0	1	1
(G)	July	0	0	20	2	0	0	0	1
(H)	August	1	0	2	1	0	0	0	0
(I)	September	1	0	1	1	0	0	0	0
(J)	October	11	0	8	1	0	0	0	1
(K)	November	56	0	0	0	0	0	1	2
(L)	***December***	49	0	0	0	0	0	3	2
(M)	Dec-Apr Reduction of Catch/Hooks with no redistribution	-166	0	0	0	0	-1	-38	-26
(N)	Dec-Apr change in catch during closure with redistribution	377	0	0	0	0	0	1	0
(O)	Net Change with redistribution	+211	0	0	0	0	-1	-37	-26
(P)	Average Annual # Interactions in Proposed Gear Restricted Area	248	0	36	7	0	1	42	32
(Q)	Percent change in Area with redistribution ((O/P)*100)	+85%	0%	0%	0%	0	-100%	-88%	-81%
(R)	Average # Interactions in entire fishery (Σ(All Pll Interactions 2006 - 2011)/6)	6,422	249	107	977	7	307	47	119

(S)	Percent change in fishery ((O/R)*100)	+3%	0%	0%	0%	0%	0%	-79%	-22%

Table 11.22 Data summary of HMS logbook data (2006 - 2011) and redistribution analyses under Preferred Alternative B 1c (Cape Hatteras Gear Restricted Area with Access Based on Performance) for albacore, skipjack, porbeagle, and thresher sharks. Source: HMS Logbook Data.

	2006-2011 Average Annual Interactions	Albacore Kept	Albacore Discarded	Skipjack Kept	Skipjack Discarded	Porbeagle Kept	Porbeagle Discarded	Thresher Kept	Thresher Discarded
(A)	***January***	***4***	***0***	***0***	***0***	***0***	***1***	***5***	***6***
(B)	***February***	***6***	***0***	***0***	***0***	***0***	***0***	***7***	***11***
(C)	***March***	***15***	***0***	***0***	***0***	***0***	***0***	***2***	***1***
(D)	***April***	***7***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
(E)	May	1	0	0	0	0	0	1	1
(F)	June	0	0	3	1	0	0	1	0
(G)	July	0	0	1	0	0	0	0	1
(H)	August	0	0	0	1	0	0	0	0
(I)	September	1	0	0	0	0	0	0	0
(J)	October	3	0	0	0	0	0	0	0
(K)	November	23	0	0	0	0	0	0	0
(L)	***December***	***14***	***0***	***0***	***0***	***0***	***0***	***1***	***1***
(M)	Dec-Apr Reduction of Catch/Hooks with no redistribution (-(A+B+C+D+L)	-46	0	0	0	0	-1	-15	-19
(N)	Dec-Apr change in catch during closure with redistribution	120	0	0	0	0	0	1	0
(O)	Net Change with redistribution	74	0	0	0	0	-1	-14	-19
(P)	Average Annual # Interactions in Proposed Gear Restricted Area (SUM of A to L)	74	0	4	2	0	1	17	21
(Q)	Percent change in Area with redistribution ((O/P)*100)	100%	0%	0%	0%	0%	-100%	-82%	-90%

(R)	Average # Interactions in entire fishery (Σ(All Pll Interactions 2006 - 2011)/6)	6,422	249	107	977	7	307	47	119
(S)	Percent change in fishery ((O/R)*100)	1%	0%	0%	0%	0%	0%	-30%	-16%

Table 11.23 Data summary of HMS logbook data (2006 - 2011) and redistribution analyses under Alternative B 1e (Gulf of Mexico EEZ Gear Restricted Area, March-May) for albacore, skipjack, porbeagle, and thresher sharks. Source: HMS Logbook Data.

	2006-2011 Average Annual Interactions	Albacore Tuna Kept	Albacore Tuna Discarded	Skipjack Tuna Kept	Skipjack Tuna Discarded	Porbeagle Kept	Porbeagle Discarded	Thresher Kept	Thresher Discarded
(A)	January	88	12	1	47	0	0	0	2
(B)	February	45	10	3	36	0	0	0	2
(C)	***March***	***15***	***4***	***2***	***9***	***0***	***0***	***0***	***3***
(D)	***April***	***1***	***1***	***3***	***8***	***0***	***0***	***0***	***4***
(E)	***May***	***1***	***2***	***13***	***62***	***0***	***0***	***0***	***3***
(F)	June	0	1	8	127	0	1	0	2
(G)	July	0	8	7	113	0	1	0	2
(H)	August	0	2	3	54	0	0	0	1
(I)	September	5	2	1	56	0	1	0	0
(J)	October	10	3	3	59	0	0	0	1
(K)	November	74	12	2	177	0	0	0	0
(L)	December	157	29	4	148	0	0	0	2
(M)	Average Annual Reduction of Catch (-(C+D+E))	-17	-7	18	-79	0	0	0	-10
(O)	Average Annual # Interactions in Proposed Gear Restricted Area (SUM A to L)	396	84	49	896	0	3	0	20
(P)	Average Annual Percent change in Area ((M/O)*100)	-4%	-8%	37%	-9%	0%	0%	-100%	-50%

(Q)	Average Annual # Interactions (Σ(All Pll Interactions 2006 - 2011))	6422	249	107	977	7	307	47	119
(R)	Average Annual Percent change in fishery ((M/Q)*100)	0%	-3%	17%	-8%	0%	0%	0%	-8%

Table 11.24 Data summary of HMS logbook data (2006 - 2011) and redistribution analyses under Alternative B 1f (Small Gulf of Mexico EEZ Gear Restricted Area) for albacore, skipjack, porbeagle, and thresher sharks. Source: HMS Logbook Data.

	2006-2011 Average Annual Interactions	Albacore Tuna Kept	Albacore Tuna Discarded	Skipjack Tuna Kept	Skipjack Tuna Discarded	Porbeagle Kept	Porbeagle Discarded	Thresher Kept	Thresher Discarded
(A)	January	41	6	0	2	0	0	0	0
(B)	February	25	4	1	1	0	0	0	0
(C)	March	11	3	0	2	0	0	0	0
(D)	***April***	***1***	***1***	***3***	***3***	***0***	***0***	***0***	***1***
(E)	***May***	***1***	***1***	***9***	***10***	***0***	***0***	***0***	***1***
(F)	June	0	0	0	0	0	0	0	0
(G)	July	0	1	0	3	0	0	0	0
(H)	August	0	0	0	1	0	0	0	0
(I)	September	3	0	0	3	0	0	0	0
(J)	October	5	2	0	9	0	0	0	0
(K)	November	50	5	0	7	0	0	0	0
(L)	December	109	21	2	12	0	0	0	1
(M)	Apr-May Reduction of Catch with no redistribution (-(D+E))	-2	-2	-12	-13	0	0	0	-2
(N)	Apr-May change in catch with redistribution	0	-1	1	6	0	0	0	0
(O)	Net Change with redistribution (M+N)	-2	-3	-11	-7	0	0	0	-2
(P)	Total # Interactions in Proposed Gear Restricted Area (SUM of A to L)	245	42	15	52	0	0	0	5

(R)	Percent change in Area with redistribution ((O/P)*100)	-1%	-7%	-73%	-14%	0%	-100%	0%	-44%
(S)	Total # Interactions (Σ(All Pll Interactions 2006 - 2011))	6422	249	107	977	7	307	47	119
(T)	Percent change in fishery ((O/S)*100) with redistribution	0%	-1%	-10%	-1%	0%	0%	0%	-2%

Table 11.25 Data summary of HMS logbook data (2006 - 2011) and redistribution analyses under Alternative B 1g (Gulf of Mexico EEZ Gear Restricted Area, Year Round) for albacore, skipjack, porbeagle, and thresher sharks. Source: HMS Logbook Data.

	2006-2011 Average Annual Interactions	Albacore Tuna Kept	Albacore Tuna Discarded	Skipjack Tuna Kept	Skipjack Tuna Discarded	Porbeagle Kept	Porbeagle Discarded	Thresher Kept	Thresher Discarded
(A)	***January***	**88**	**12**	**1**	**47**	**0**	**0**	**0**	**2**
(B)	***February***	**45**	**10**	**3**	**36**	**0**	**0**	**0**	**2**
(C)	***March***	**15**	**4**	**2**	**9**	**0**	**0**	**0**	**3**
(D)	***April***	**1**	**1**	**3**	**8**	**0**	**0**	**0**	**4**
(E)	***May***	**1**	**2**	**13**	**62**	**0**	**0**	**0**	**3**
(F)	***June***	**0**	**1**	**8**	**127**	**0**	**1**	**0**	**2**
(G)	***July***	**0**	**8**	**7**	**113**	**0**	**1**	**0**	**2**
(H)	***August***	**0**	**2**	**3**	**54**	**0**	**0**	**0**	**1**
(I)	***September***	**5**	**2**	**1**	**56**	**0**	**1**	**0**	**0**
(J)	***October***	**10**	**3**	**3**	**59**	**0**	**0**	**0**	**1**
(K)	***November***	**74**	**12**	**2**	**177**	**0**	**0**	**0**	**0**
(L)	***December***	**157**	**29**	**4**	**148**	**0**	**0**	**0**	**2**
(M)	Average Annual Reduction of Catch (-(SUM A to L))	-396	-84	-49	-896	0	-3	0	-20
(O)	Average Annual # Interactions in Proposed Gear Restricted Area (SUM A to L)	396	84	49	896	0	3	0	20
(P)	Average Annual Percent change in Area ((M/O)*100)	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%
(Q)	Average Annual # Interactions (Σ(All Pll Interactions 2006 - 2011))	6422	249	107	977	7	307	47	119
(R)	Average Annual Percent change in fishery ((M/Q)*100)	-6%	-34%	-46%	-92%	0%	-1%	0%	-17%

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