Final Environmental Assessment,
Regulatory Impact Review,
and
Final Regulatory Flexibility Analysis

for

Amendment 6 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan: Commercial Shark Management Measures

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

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ABSTRACT

Action:	Implement management measures for the commercial Atlantic shark fisheries that will achieve the objectives of increasing management flexibility to adapt to the changing needs of the shark fisheries, prevent overfishing while achieving on a continuing basis optimum yield, and rebuild overfished shark stocks.
Type of statement:	Environmental Assessment (EA), Regulatory Impact Review (RIR), and Final Regulatory Flexibility Analysis (FRFA)
Lead Agency:	National Marine Fisheries Service (NMFS): Office of Sustainable Fisheries
For further information:	Highly Migratory Species Management Division (F/SE1) 1315 East-West Highway Silver Spring, Maryland 20910 Phone: 301-427-8503; Fax: 301-713-1917

Abstract:

In September 2010, NMFS published an Advanced Notice of Proposed Rulemaking (ANPR) to request public comment on potential adjustments to the regulations governing the Atlantic shark fisheries to address specific issues such as commercial landings that exceed quotas, declining numbers of fishing permits since limited access was implemented, complex regulations, derby fishing conditions due to small quotas and short seasons, increasing numbers of regulatory discards, and declining market prices and to identify specific goals for management of these fisheries in the future. Based on the comments received on the ANPR, in September 2011, NMFS published a Notice of Intent (NOI) to prepare an FMP Amendment that would consider catch shares for the Atlantic shark fisheries. Based on comments received on the ANPR and NOI, in April 2014, NMFS released a Predraft for Amendment 6 to the 2006 Consolidated Highly Migratory Species (HMS) Fishery Management Plan (FMP) that included management options for changes to regional quota and permit structures. On May, 27 2014, NMFS published another NOI announcing its intent to prepare an Environmental Assessment instead of an Environmental Impact Statement and that the agency was moving away from the catch share concept for this particular Amendment. On January 20, 2015, NMFS released the Draft EA and published a proposed rule (80 FR 2648) for Amendment 6 to the 2006 Consolidated HMS FMP, and the public comment period was open until April 3, 2015. This Final EA analyzes the potential environmental impacts related to (1) permit stacking (2) adjusting the large coastal sharks (LCS) trip limit for shark directed limited access permit holders; (3) establishing a management boundary in the Atlantic region, (4) creating sub-regional quotas in the Atlantic and Gulf of Mexico regions for LCS and small coastal sharks (SCS); (5) modifying the LCS and SCS quota linkages; (6) implementing total allowable catches and adjusting the non-blacknose SCS commercial quotas in the Atlantic and Gulf of Mexico regions based on the 2013 Atlantic sharpnose and bonnethead sharks stock assessments; and (7) modifying upgrading restrictions for shark permit holders.

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1.0 INTRODUCTION

On September 10, 2010 (75 FR 57235), the National Marine Fisheries Service (NMFS) published an Advanced Notice of Proposed Rulemaking (ANPR) to solicit public comments on potential adjustments to regulations governing the Atlantic shark fisheries to address several specific issues affecting the management of those fisheries. In the ANPR, NMFS discussed that since management of sharks began, there have been many changes to the regulations and major rules, either through fishery management plan (FMP) amendments or regulatory amendments, to respond to results of stock assessments, changes in stock status, and other fishery fluctuations. Despite modifications to the regulations and Amendments to the FMP to respond to these issues, the Atlantic shark fisheries continue to be faced with problems, such as commercial landings that exceed the quotas, declining numbers of fishing permits since limited access was implemented, complex regulations, derby fishing conditions due to small quotas and short seasons, increasing numbers of regulatory discards, and declining market prices. Rather than continuing to react to these issues every year with a new regulation or every other year with a new FMP amendment, NMFS stated that it wanted the regulations to be more proactive in management and explore methods to establish more flexible regulations that would consider the changing needs of the fisheries. More specifically, the ANPR explored management ideas related to quota structure, permit structure, and catch shares. NMFS held several public meetings regarding the ANPR and received many comments, as explained below.

Based on the comments received on the ANPR, on September 16, 2011, NMFS published a Notice of Intent (NOI) (76 FR 57709) to prepare an FMP Amendment that would consider catch shares for the Atlantic shark fisheries. The NOI also established a control date for eligibility to participate in a catch share program and announced the availability of a white paper that explored potential design elements of a shark catch share program. NMFS held several public meetings and received many comments regarding the NOI, as explained below.

In April 2014, NMFS released a Predraft for Amendment 6 to the 2006 Consolidated Highly Migratory Species (HMS) FMP (Amendment 6). A Predraft document allows NMFS to obtain additional information and input from HMS Advisory Panel (AP) members 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) on potential alternatives prior to development of the formal FMP Amendment and proposed rule. The Predraft explored potential management options for the future management of the Atlantic shark fisheries, taking into consideration comments received on the ANPR and NOI.

Since issuing the ANPR, NOI, and Predraft, and after reviewing the comments received, NMFS has continued to consider various ways to move forward to address recurring issues through regulations that provide managers and fishermen with increased management and implementation flexibility, while maintaining conservation measures. Additionally, there have continued to be changes in the federal and state management of the Atlantic shark fisheries that have affected the fisheries and its communities. On May 27, 2014 NMFS published another NOI (79 FR 30064) announcing its intent to prepare an Environmental Assessment (EA) instead of an Environmental

Impact Statement (EIS) and that the agency is moving away from the catch share concept for this particular Amendment.

This EA explores potential alternatives for the future management of the Atlantic shark fisheries, taking into consideration comments received on the ANPR, NOI, Predraft and Draft EA. The primary goal of Amendment 6 remains to implement management measures for the Atlantic shark fisheries that will achieve the objectives of increasing management flexibility to adapt to the changing needs of the Atlantic shark fisheries, prevent overfishing while achieving on a continuing basis optimum yield, and rebuild overfished shark stocks.

1.1 BACKGROUND ON DEVELOPMENT OF THE FMP AMENDMENT

As described above in the Introduction section, NMFS started the Amendment 6 process with the ANPR in 2010. The ANPR provided background information and requested public comment on potential adjustments to the regulations governing the Atlantic shark fisheries. In the ANPR, NMFS explored changes to the current quota and permit structures. NMFS also requested comments on the implementation of catch shares such as limited access privilege programs (LAPPs), individual fishing quotas (IFQs), and/or sectors for the Atlantic shark fisheries.

With regard to quota structure changes presented in the ANPR, NMFS specifically looked at ideas such as moving towards species-specific quotas, revising species management complexes, revising quota linkages, reconsidering regional quotas, and adjusting season openings. The specific details and explanation of each of these ideas can be found in the Federal Register notice for the 2010 ANPR. During the ANPR comment period, NMFS received a variety of comments in response to these quota structure ideas including:

- NMFS should separate blacktip sharks from non-sandbar large coastal shark (LCS) and give them their own quota;
- Blacknose sharks should be prohibited and then the non-blacknose small coastal shark (SCS) quota would not be constrained by the quota linkage;
- Stock assessments cannot be performed quickly enough for species-specific quotas;
- It may be difficult to monitor numerous species-specific quotas;
- Quotas for blacktips and spinner sharks should be combined;
- NMFS should consider the impacts of no quota linkages and consider smaller commercial quotas;
- NMFS should structure the quotas and opening dates to coincide with regional shark availability; and
- The LCS and SCS quotas in the Atlantic should be split into 2 or more regions.

In the ANPR, NMFS also looked at ideas for possible changes to the current shark permit structure, such as permit stacking, a use or lose permit system, and matching permit capacity to the shark quotas. Specific details related to each of these ideas can also be found in the Federal Register

notice of the 2010 ANPR. During the ANPR comment period, NMFS received comments related to the potential changes to the permit structure, including:

- Permit stacking could be a reasonable solution for the directed fisheries;
- Permit stacking may cause the quota to be harvested even faster;
- Permit stacking could make shark fishing more efficient and profitable due to higher trip limits;
- Permit stacking may lead to fewer dead discards of sharks;
- Permit stacking should only be implemented if the number of permits matches the effort needed to catch the current shark quotas;
- Permit stacking may cause many latent permits to become active;
- Permit stacking would disadvantage fishermen that do not have access to multiple permits;
- A "use or lose" permit system should not be implemented for the incidental shark permits;
- "Use it or lose it" for directed shark permits could be employed to reduce latent effort. Seven to ten years is a reasonable period of inactivity. These permits could be transferred to a reserve pool for future consideration; and
- A "use or lose" permit system may result in latent permits becoming active and harvesting the quotas more quickly.

The final topic discussed in the ANPR was catch shares. Prior to the publication of the ANPR, NMFS received multiple questions and requests from fishermen and other interested parties to consider catch shares for the Atlantic shark fisheries. NMFS provided background information in the ANPR on catch share programs in general and posed specific questions related to how these programs would apply to the Atlantic shark fishery and requested comments on these ideas. NMFS received many comments on catch shares in general and specific comments related to the questions posed regarding the Atlantic shark fisheries, including:

- The 33 non-sandbar LCS trip limit is not economical for fishermen. Catch shares could help with this problem;
- The shark fisheries need management measures to decrease dead discards;
- Individual Fishing Quotas (IFQ) and sector catch shares should be explored to improve the conservation and economic performance of the commercial shark fisheries;
- IFQs can save fuel and maximize prices;
- IFQs can make fishermen more efficient because there is no trip limit;
- Catch shares are more predictable for managers;
- NMFS should consider a pilot catch share program in the Gulf of Mexico;
- NMFS does not need an IFQ program. NMFS could establish community quotas instead;
- If a catch share is implemented, NMFS should reevaluate quota distribution after three years;
- NMFS should not implement shark catch shares unless it conducts a referendum or a weighted referendum;
- Non-fishing interests might attempt to control quota shares by buying catch shares;
- NMFS should look into days at sea instead of catch shares;
- NMFS should not consider catch shares for the Atlantic shark fisheries;

- Catch shares would not stop fishermen from fishing in dangerous conditions because fish houses dictate when fishermen fish; and
- Catch shares will take quota and profits away from fishermen.

After publication of the ANPR, NMFS also received a proposal from fishermen located in the Gulf of Mexico to implement a catch share program for the Atlantic shark fisheries, particularly the LCS portion in the Gulf of Mexico. In the proposal, these fishermen stated that they preferred to replace the current LCS management structure with an IFQ program. The fishermen expressed that they would like this IFQ program to be integrated into existing catch share programs in the Gulf of Mexico for reef fish (i.e., red snapper, red grouper, and tilefish) and employ some of the same infrastructure for monitoring and reporting as well as some of the same design and management elements associated with these Council-managed catch share programs in the Gulf of Mexico.

In light of these comments, NMFS decided to begin the rulemaking process to consider implementing catch shares for the Atlantic shark fisheries. Therefore, on September 16, 2011, NMFS published a NOI (76 FR 57709) to explore implementation of a catch share program and design elements for the Atlantic shark fishery. The NOI also established a control date for eligibility to participate in an Atlantic shark catch share program, announced the availability of a white paper describing design elements of catch share programs in general and issues specific to the Atlantic shark fisheries, announced a catch share workshop at an HMS AP meeting, and requested public comment on the implementation of catch shares in the Atlantic shark fisheries.

The white paper that was prepared in association with the publication of the NOI provided more detail concerning some of the design elements for catch share programs and provided the public with additional information regarding issues in the Atlantic shark fisheries that NMFS was interested in obtaining feedback on, including, but not limited to: eligibility (directed and/or incidental permit holders), specification of the resource unit (species and regions to include), initial allocation (based on catch history and/or other means), and catch share management. During the NOI comment period, NMFS received comments in support of and in opposition to catch shares for the Atlantic shark fisheries and comments that were specific to the issues presented regarding regions, resource unit, eligibility, and allocation, including:

- NMFS should increase the trip limits instead of doing a catch share program;
- Catch shares can save fuel and maximize revenue;
- Catch shares can make fishermen more efficient because there's no trip limit;
- NMFS does not need an IFQ program. NMFS should look at community quotas instead;
- NMFS needs to consider regional differences if designing a catch share program;
- Sharks are a public resource and should not be privatized or individualized;
- NMFS should look into days at sea instead of catch shares;
- There is inequity in the shark fishery and catch shares would make it worse;
- NMFS should give Florida a January opening and 33 non-sandbar LCS per trip and there will be no need for catch shares;
- NMFS does not have the science it needs to implement a catch share program;
- Catch shares will shift effort in the shark fisheries;

- NMFS should include all regions in a catch share program, not just the Gulf of Mexico;
- Fishermen are losing infrastructure as a result of state fin possession bans and catch shares will not help this problem;
- Catch shares will take quota and profits away from fishermen;
- Catch shares are being forced upon fishermen from the top down; and
- NMFS should conduct a referendum or a weighted referendum.

Since the publication of the NOI in September 2011, there have been a few major changes in the management of the Atlantic shark fisheries. The most notable was the publication of the final rule for Amendment 5a which established several new commercial regional shark management groups and quotas. Additionally, Amendment 5a implemented regional quota linkages between management groups whose species are often caught together in the same fisheries to prevent exceeding the newly established quotas through discarded bycatch.

In 2011, the President signed into law the Shark Conservation Act of 2010 (Pub. L. 111–348, Jan. 4, 2011), which amended the High Seas Driftnet Fishing Moratorium Protection Act and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to improve the conservation of sharks. In particular, the Shark Conservation Act prohibits any person from: (1) removing any of the fins of a shark (including the tail) at sea; (2) having custody, control, or possession of a fin aboard a fishing vessel unless it is naturally attached to the corresponding carcass; (3) transferring a fin from one vessel to another vessel at sea, or receiving a fin in such transfer, unless the fin is naturally attached to the corresponding carcass; or (4) landing a fin that is not naturally attached to the corresponding carcass, or landing a shark carcass without its fins naturally attached. On May 2, 2013, NMFS published a proposed rule (78 FR 25685) to implement the provisions of the Shark Conservation Act of 2010 for sharks harvested seaward of state waters. The Shark Conservation Act of 2010 includes smoothhound shark-specific provisions that exempt that fishery from the finning prohibition under certain limited conditions. Recently, NMFS published a proposed rule (79 FR 56047; September 18, 2014) on Draft Amendment 9 to the 2006 Consolidated HMS FMP to consider management measures in the smoothhound shark and other Atlantic shark fisheries.

In addition to the changes in federal regulations, while NMFS has been considering comments on the ANPR and the NOI, there have also been changes in state shark management. Since 2010, several states have passed legislation banning the possession, sale, trade, and distribution of shark fins, which have had economic impacts on federally-permitted shark fishermen. NMFS is working with states to determine the relationship between their laws and Federal shark fisheries management under the Magnuson-Stevens Act.

The Atlantic States Marine Fisheries Commission (ASMFC) recently made changes to the Atlantic state shark management measures. The ASMFC Coastal Shark Board made the decision to amend the Interstate Coastal Shark FMP to be consistent with NMFS's recent changes in Amendment 5a, and they have expressed their preference for NMFS to open the LCS management group in the Atlantic region after July 1 each year. The Shark Board also approved measures for each Atlantic

state to implement the 12 percent fin to carcass ratio for smoothhound sharks as specified in the smoothhound shark-specific provisions of the Shark Conservation Act of 2010.

In addition to these state measures, there have also been many international efforts to prohibit shark finning at sea as well as campaigns targeted at the shark fin soup markets. All of these efforts, including the U.S. state shark fin possession bans, have impacted the market and demand for shark fins. In addition, NMFS has seen a steady decline in ex-vessel prices for shark fins in all regions since 2010 (NMFSb, 2013).

On January 20, 2015, NMFS released the Draft EA and published the proposed rule (80 FR 2648) for Amendment 6. The Draft EA and proposed rule analyzed the potential environmental impacts related to (1) permit stacking (2) adjusting the LCS retention limit for shark directed limited access permit (LAP) holders; (3) creating sub-regional quotas in the Atlantic and Gulf of Mexico regions for LCS and SCS; (4) modifying the LCS and SCS quota linkages; (5) implementing total allowable catches (TACs) and adjusting the non-blacknose SCS commercial quotas in the Atlantic and Gulf of Mexico regions based on the 2013 Atlantic sharpnose and bonnethead sharks stock assessments; and (6) modifying upgrading restrictions for shark permit holders. The public comment period ended on April 3, 2015. NMFS held four public hearings and one conference call/webinar during that time and consulted with the five Atlantic Regional Fishery Management Councils, the Atlantic and Gulf of Mexico States Marine Fisheries Commissions, and the HMS Advisory Panel (HMS AP). A summary of both oral and written public comments received, as well as NMFS' response to those comments, is included as Appendix A of this document and is also in the final rule implementing the regulations. Copies of all the written comments received can be found at http://regulations.gov (search for NOAA-NMFS-2010-0188). A summary of the changes to the preferred alternatives from the Draft EA to the Final EA and the reasons for those changes are included in the table below.

Table 1.1 The preferred alternatives at the draft and final stage of Amendment 6 to the 2006 Consolidated HMS FMP

Alternative Topics	Preferred Alternatives in Draft EA	Preferred Alternatives in Final EA
Permit Stacking	*Alternative A2* No Action. Do not implement permit stacking	Same
***Reason for Changes*:** No change from the Draft EA to Final EA.		
Commercial Retention Limits	*Alternative B2* Increase the LCS retention limit for directed permit holders to a maximum of 55 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 75.7 mt dw (166,826 lb dw)	*Alternative B2* Increase the LCS retention limit for directed permit holders to a maximum of 55 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 90.7 mt dw (199,943 lb dw); set the default LCS retention limit for directed permit holders to 45 LCS other than sandbar sharks per trip
***Reason for Changes*:** Based on public comment and discussions with the Southeast Fisheries Science Center (SEFSC), NMFS re-evaluated the calculations used to determine the sandbar shark research fishery quota. Constituents preferred a lower commercial retention limit of 45 LCS other than sandbar sharks per trip since		

Alternative Topics	Preferred Alternatives in Draft EA	Preferred Alternatives in Final EA
the quotas are not increasing and there was concern that an increased retention limit could increase participation in the fishery resulting in quotas being harvested faster. NMFS prefers to increase the commercial shark retention limit to 55 LCS other than sandbar sharks per trip, but set a default commercial retention limit of 45 LCS other than sandbar sharks per trip, which can be adjusted before the next fishing season or inseason based on the fishing rates from the current or previous years and consideration of other factors.		
Atlantic Regional and Sub-Regional Quotas	*Alternative C4* Apportion the Atlantic regional commercial quotas for certain LCS and SCS management groups along 34° 00' N. latitude (lat.) (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas and maintain SCS quota linkages in the southern sub-region of the Atlantic region; remove the SCS quota linkages in the northern sub-region of the Atlantic region and prohibit the harvest and landings of blacknose sharks in the North Atlantic region *Alternative C6* Establish a non-blacknose SCS TAC of 401.3 mt dw and maintain the 2014 commercial base annual quota of 176.1 mt dw (388,222 lb dw)	*Alternative C7* Establish a non-blacknose SCS TAC of 489.3 mt dw and increase the commercial quota to 264.1 mt dw (582,333 lb dw) *Alternative C8* Do not implement sub-regional quotas in the Atlantic region; establish a management boundary in the Atlantic region along 34° 00' N. lat. (approximately at Wilmington, North Carolina) for the SCS fishery; maintain SCS quota linkages south of the 34° 00' N. lat. management boundary; and prohibit the harvest and landings of blacknose sharks north of the 34° 00' N. lat. management boundary
***Reason for Changes*:** Based on public comment, additional analyses, and further review, in the Final EA, NMFS prefers Alternative C7 for the non-blacknose SCS TAC and commercial quota since stock assessment projections stated that the Atlantic sharpnose stock could withstand harvest above current levels and because most landings of SCS in the Atlantic region are Atlantic sharpnose, not bonnethead sharks, and the lower TAC and quota were preferred due to the unknown status of bonnethead sharks. NMFS created a new alternative, Alternative C8, that would establish a management boundary at 34° 00' N. lat. for the SCS fishery based on additional analyses and comments requesting that NMFS not implement sub-regional quotas for the LCS and SCS fisheries, but remove the blacknose and non-blacknose SCS quota linkage in the northern Atlantic region.		
Gulf of Mexico Regional and Sub-Regional Quotas	*Alternative D4* Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks along 89° 00' W. longitude (long.) into western and eastern sub-regional quotas and maintain the LCS quota linkages for aggregated LCS and hammerhead sharks in the eastern sub-region of the Gulf of Mexico region; remove the linkage in the western sub-region of the Gulf of Mexico region and prohibit the harvest and landing of hammerhead sharks in that sub-region	*Alternative D3* Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks into western and eastern sub-regional quotas along 88° 00' W. long. *Alternative D8* Establish a non-blacknose SCS TAC of 999.0 mt dw, increase the commercial quota to 112.6 mt dw (248,215 lb dw), and prohibit the retention of blacknose sharks in the Gulf of Mexico

Alternative Topics	Preferred Alternatives in Draft EA	Preferred Alternatives in Final EA
	Alternative D6 Establish a non-blacknose SCS TAC of 954.7 mt dw and increase the commercial quota to the 2014 adjusted annual quota of 68.3 mt dw (150,476 lb dw)	
***Reason for Changes*:** Based on public comment and additional analysis, in the Final EA, NMFS now prefers Alternative D3, which would implement the sub-regional boundary line at 88° 00' W. long., since it would provide better geographic separation between the major stakeholders in the Gulf of Mexico. NMFS also re-calculated the sub-regional LCS quota percentages for the blacktip and aggregated LCS, and used updated data for the hammerhead shark sub-regional quota percentages to represent current landings patterns. Based on those calculations and public comments, hammerhead sharks will not be prohibited in the western Gulf of Mexico sub-region, as proposed, and both the eastern and western sub-regions will receive hammerhead shark quota, which will remain linked to the aggregated LCS management group. Alternative D8 was developed as a new preferred alternative based on additional analysis and public comment and would implement a higher non-blacknose SCS TAC and commercial quota, as well as a prohibition of blacknose shark landings in the Gulf of Mexico to prevent early closure of the non-blacknose SCS fishery.		
Upgrading Restrictions	*Alternative E2* Remove current upgrading restrictions for shark limited access permit holders	Same
***Reason for Changes*:** No change from the Draft EA to Final EA.		

Atlantic sharpnose and bonnethead sharks stock assessments

Atlantic sharpnose and bonnethead sharks were both previously assessed in 2007 as part of the Southeast Data, Assessment, and Review (SEDAR) process. At that time, the statuses of both species were determined to be "not overfished" and "no overfishing occurring." These species were assessed again in 2013 using "standard" assessments as part of SEDAR 34. Standard assessments generally update previous benchmark assessments with additional years of data and do not allow for major changes; standard assessments typically can be completed in approximately a year. On the first day of the face-to-face assessment workshop meeting held for both species, the scientists determined that the genetic information clearly indicated both species should be split into a Gulf of Mexico stock and an Atlantic stock. However, because the assessments had been scheduled as standard assessments as opposed to benchmark assessments, the assessment process and timing would not allow the scientists to make this change. Making such a change would have required four benchmark assessments rather than two standard assessments. It would have also required additional changes to the format and structure of the data that had not been anticipated and allowed for in the overall SEDAR schedule. Based on a request from fishery managers to continue with the standard assessments at that time, given that the previous assessments were over five years old and updated scientific advice was needed, the scientists agreed to continue with the standard assessment of both species as single stocks in order to provide management advice on the potential status of the stocks. Based on the results of SEDAR 34, NMFS recommended splitting the Atlantic sharpnose shark species into two stocks – an Atlantic stock and a Gulf of Mexico stock – and determined, based on the overall data for the species as a whole, that the status of both stocks is not overfished and no overfishing is occurring. With regards to bonnethead sharks, NMFS recommended splitting this stock into an Atlantic stock and a Gulf of Mexico stock and determined, based on the overall data for

the species as a whole, that the status of both bonnethead stocks is unknown. The results of the SEDAR 34 assessment and additional information regarding the status of these species are described in detail in Chapter 3, Section 3.2. In this rulemaking, NMFS considers implementing total allowable catches (TAC) and commercial quotas for the non-blacknose SCS complexes in the Atlantic and Gulf of Mexico regions based on the results of the SEDAR 34 assessment.

1.2 PURPOSE, NEED, AND OBJECTIVES FOR THE ACTION

Purpose: While NMFS received a variety of comments on the 2010 ANPR, 2011 NOI, and Predraft, many of the commenters opposed the idea of catch shares for the Atlantic shark fisheries as the appropriate management tool for the shark fisheries. These comments, along with the recent shark fishery trends and management changes, have led NMFS to re-consider whether catch shares are the best management tool for the Atlantic shark fisheries at this time. Catch shares remain a potential management tool that could address some of the issues in the Atlantic shark fisheries in the future. At this time, the purpose of this rulemaking is to consider management measures that can be implemented in the short-term that may better address the current issues facing these fisheries, while potentially economically benefiting the Atlantic shark fishery participants.

Need: It is NMFS' goal to implement management measures for the Atlantic shark fisheries that will achieve the objectives of increasing management and implementation flexibility to adapt to the issues facing the Atlantic shark fisheries and achieving optimum yield while rebuilding overfished shark stocks and ending overfishing. To achieve this purpose and need, and to comply with existing statutes such as the Magnuson-Stevens Act and its objectives, NMFS has identified the following objectives with regard to this proposed action:

- Increasing the efficiency in the LCS and SCS fisheries;
- Maintaining or increasing equity across all shark fishermen and regions;
- Promoting economic viability for the shark fishery participants;
- Obtaining optimum yield from the LCS and SCS fisheries;
- Maintaining or increasing management flexibility for the shark fisheries;
- Decreasing dead discards of sharks;
- Continuing to rebuild overfishing shark stocks; and
- Preventing overfishing of shark stocks.

1.3 SCOPE AND ORGANIZATION OF THIS DOCUMENT

In considering the management measures outlined in this document, NMFS is responsible for complying with a number of Federal statutes, including the National Environmental Policy Act (NEPA). Under NEPA, the purpose of an EA is to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact and to aid in the Agency's compliance with NEPA when no environmental impact statement is necessary.

This document, as an EA, assesses potential impacts on the biological and human environments associated with the establishment under Federal regulation of various management measures for fisheries catching and interacting with Atlantic sharks. In this document, NMFS evaluates the potential impacts of these management-based alternatives on the fishery, along with other impacts (e.g., biological, social, and economic, see Chapter 4). The chapters that follow describe the 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 management measures and their alternatives (Chapter 4), and any mitigating measures (Chapter 5).

In developing this document, NMFS adhered to the procedural requirements of NEPA, the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 C.F.R. 1500-1508) 28, and National Oceanic and Atmospheric Administration's (NOAA) 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 in this EA. Chapter 4 describes more specifically how these definitions were used for each alternative.

- 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 C.F.R. § 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 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 impact. 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 C.F.R. § 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. Thus, Chapter 6 provides a summary of all the economic analyses and associated data. Chapter 7 meets the requirements under Executive Order 12866; and Chapter 8 provides the Final Regulatory Flexibility Analysis required under the Regulatory Flexibility Act. Chapters 9 through 11 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.

2.0 SUMMARY OF THE ALTERNATIVES

NEPA requires that any Federal agency proposing a major federal action consider all reasonable alternatives, in addition to the proposed action. The evaluation of alternatives in an EA assists NMFS in ensuring that any unnecessary impacts are avoided through an assessment of alternative ways to achieve the underlying purpose of the project that may result in less environmental harm.

To warrant detailed evaluation, an alternative must be reasonable[1] and meet the purpose and need (see Chapter 1). Screening criteria are used to determine whether an alternative is reasonable. The following discussion identifies the screening criteria used in this EA to evaluate whether an alternative is reasonable; evaluates various alternatives against the screening criteria (including the proposed measures) and identifies those alternatives found to be reasonable; identifies those alternatives found not to be reasonable; and for the latter, provides the basis for this finding. Alternatives considered but found not to be reasonable are not evaluated in detail in this EA.

Screening Criteria – To be considered "reasonable" for purposes of this EA, an alternative must meet the following criteria:

- *An alternative must be consistent with the 10 National Standards set forth in the Magnuson-Stevens Act.*
- *An alternative must be administratively feasible. The costs associated with implementing an alternative cannot be prohibitively exorbitant or require unattainable infrastructure.*
- *An alternative cannot violate other laws (e.g., ESA, MMPA).*
- *An alternative must be consistent with the 2006 Consolidated Atlantic HMS FMP and its amendments.*
- *An alternative must be consistent with the Terms and Conditions of the 2012 Shark Biological Opinion (BiOp).*

This chapter includes a full range of reasonable alternatives designed to meet the purpose and need for action described in Chapter 1. The environmental, economic, and social impacts of these alternatives are discussed in later chapters.

1 "Section 1502.14 (of NEPA) requires the EIS to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant." (CEQ, "NEPA's Forty Most Asked Questions" (available at http://ceq.hss.doe.gov/nepa/regs/40/40P1.HTM) (emphasis added))

2.1 PERMIT STACKING

Alternative A1 *No Action – Do not implement permit stacking – Preferred Alternative*

Under Alternative A1, the preferred alternative, NMFS would not implement permit stacking for the shark directed limited access permit holders. Instead, under the No Action alternative, NMFS would continue to allow only one directed limited access permit per vessel and thus one retention limit.

Alternative A2 Implement permit stacking for directed limited access permit holders where each permit holder could place a maximum of 2 directed permits on a vessel; those 2 permits would allow the permit holder to harvest a maximum of 2 retention limits per trip (e.g., 72 LCS other than sandbar sharks per trip).

Under Alternative A2, NMFS would allow fishermen to use a maximum of 2 shark directed permits concurrently on one vessel, which would result in aggregated and thus, higher trip limits. Under the current LCS retention limit of 36 LCS, this would mean that a vessel with 2 stacked permits would have a LCS retention limit of 72 LCS per trip. In order to allow shark directed permits to be stacked, NMFS would remove the shark permit upgrade restrictions. This alternative would allow the swordfish, shark, and tuna limited access permit (triple pack permit) holders to stack their directed shark permits and would not affect the current swordfish permit upgrading restrictions.

Alternative A3 Implement permit stacking for directed limited access permit holders where each permit holder could place a maximum of 3 directed permits on a vessel; those 3 permits would allow the permit holder to harvest a maximum of 3 retention limits per trip (e.g., 108 LCS other than sandbar sharks per trip).

Under Alternative A3, NMFS would allow fishermen to use a maximum of 3 shark directed permits concurrently on one vessel, which would result in aggregated and thus, higher trip limits. Under the current LCS retention limit of 36 LCS, this would mean that a vessel with 3 stacked permits would have a LCS retention limit of 108 LCS per trip. As in Alternative A2, NMFS would remove the shark permit upgrade restrictions. This alternative would allow the swordfish, shark, and tuna limited access permit (triple pack permit) holders to stack their directed shark permits and would not affect the current swordfish permit upgrading restrictions.

2.2 COMMERCIAL RETENTION LIMITS

Alternative B1 No Action – No changes to current LCS retention limits for directed shark permit holders

Under alternative B1, NMFS would maintain the current retention limits for the Atlantic and Gulf of Mexico LCS fisheries of 36 LCS per trip for shark directed permit holders.

Alternative B2 *Increase the LCS retention limit for directed permit holders to a maximum of 55 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 90.7 mt dw (199,943 lb dw); set a default LCS retention limit for directed permit holders to 45 LCS other than sandbar sharks per trip – Preferred Alternative.*

Under Alternative B2, the preferred alternative, NMFS would increase the retention limit for LCS in the Atlantic and Gulf of Mexico regions from 36 to a maximum of 55 LCS other than sandbar sharks per trip and establish a new sandbar shark research fishery quota of 90.7 mt dw (199,943 lb dw). Based on public comment, NMFS would set the default the retention limit for LCS in the Atlantic and Gulf of Mexico regions to 45 LCS other than sandbar sharks per trip.

As described in the Draft EA of Amendment 6, the current retention limit for LCS was in part based on how many sandbar sharks would be discarded dead from the number of shark trips that were expected to interact with sandbar sharks. Thus, NMFS is using a portion of the unharvested sandbar shark research fishery quota to account for sandbar shark discards that might occur with a higher LCS retention limit and adjusting the sandbar shark research fishery quota accordingly. Based on comments on the Draft EA and discussions with the Southeast Fisheries Science Center (SEFSC), NMFS has revised the data used to calculate the adjustment to the sandbar shark research fishery quota.

To calculate the adjustment to the sandbar shark research fishery quota necessary in order to increase the LCS retention limit, NMFS first calculated the number of directed shark trips in vessel logbook reports from 2008 through 2013 (Table 2.1). Trips were considered directed shark trips when LCS accounted for at least two-thirds of the landings, which is the same approach the shark observer program uses to determine which vessels should be observed. This definition of a directed shark trip is a change from the Draft EA, where NMFS had identified directed shark trips as those trips that had at least one LCS in their vessel logbook report from 2008 through 2012. This new approach reduces the number of directed shark trips per year. Under the most recent estimate, most of these directed shark trips occurred in the Atlantic region, and the highest number of trips according to logbook reports was in 2013 (796 trips). Based on the variability in the number of directed shark trips by region and year, and the fact that the increased retention limit is expected to result in fewer trips, NMFS decided to use the average number of directed shark trips in the calculations. Thus, NMFS used an average of 592 directed shark trips.

Based on observer reports from 2008 through 2013, NMFS also calculated the catch composition ratio of sandbar sharks to LCS other than sandbar sharks in trips that targeted sharks (Table 2.2). These data indicate that the catch composition ratio of sandbar sharks is 1:26.7 (1 sandbar shark per 26.7 LCS other than sandbar sharks) in the Gulf of Mexico region, 1:8.8 ratio in the Atlantic region, and 1:14.3 for both regions combined. This catch composition ratio is a ratio of interactions and does not consider whether the sandbar shark was dead or alive. In addition, NMFS calculated the number of sandbar sharks discarded per year based on the observed dead discard rate of sandbar sharks from the commercial bottom longline observer program. In the Atlantic region, 31.5 percent of the sandbar sharks were observed discarded dead, while 19.3 percent were observed

discarded dead in the Gulf of Mexico region. In calculating the adjustment to the sandbar shark research fishery quota, NMFS used the average number of directed trips, the Atlantic region catch composition ratio of 1:8.8 for retention limit calculations, and the observed dead discard rate of sandbar sharks (31.5 percent) in the Atlantic region. Using this estimate in the Final EA results in a higher sandbar shark research fishery quota, which could help account for any increase in effort or new participants in the research fishery.

Table 2.1 **Number of trips by region that landed LCS by directed shark permit holders, 2008-2013.** Source: Fisheries Logbook System.

Year	Region	Directed Shark Permit Holder Trips	Total Number of Trips
2008	Atlantic	271	412
	Gulf of Mexico	141	
2009	Atlantic	496	563
	Gulf of Mexico	67	
2010	Atlantic	457	512
	Gulf of Mexico	55	
2011	Atlantic	421	614
	Gulf of Mexico	193	
2012	Atlantic	276	654
	Gulf of Mexico	378	
2013	Atlantic	339	796
	Gulf of Mexico	457	
Average			592

Table 2.2 **Catch composition of sandbar sharks to non-sandbar LCS, 2008-2013.** Source: Bottom line observer reports that targeted sharks.

Region	Sandbar Shark Interactions	Non-Sandbar LCS Interactions	Catch Composition Ratio (Sandbar shark to Non-sandbar LCS)
Atlantic	130	1,145	1:8.8
Gulf of Mexico	57	1,523	1:26.7
Total	187	2,668	1:14.3

After estimating the number of directed shark trips and the interaction ratio, the catch composition ratio of 1:8.8, and the observed dead discard rate of sandbar sharks, NMFS used the following steps to calculate the adjustment to the sandbar shark research fishery quota. First, NMFS divided the potential retention limit by the LCS catch composition ratio from the Atlantic region (8.8:1; 8.8 LCS other than sandbar sharks per 1 sandbar shark) to determine the potential number of sandbar shark discards per trip (Column A in Table 2.3). Under the current alternative of 55 LCS other than sandbar sharks per trip, this resulted in 6.2 sandbar sharks being discarded per trip (55 LCS other than sandbar sharks per trip divided by 8.8 = 6.2 sandbar sharks per trip). Next, the sandbar shark discards per trip in Column A in Table 2.3 was multiplied by the average number of directed shark trips (592 trips; Table 2.1) to determine the potential number of sandbar sharks discarded per year by shark fishermen targeting LCS (Column B in Table 2.3). Under this alternative, this resulted in potential discards of 3,696 sandbar sharks being discarded live or dead per year (6.2 sandbar sharks per trip * 592 trips per year = 3,696 sandbar sharks per year). Third, to determine the number of sandbar sharks discarded dead (Column C), NMFS multiplied the number of sandbar sharks discarded per year in Column B by the observed dead discard rate of sandbar sharks (31.5 percent) in

the Atlantic region from the commercial bottom longline observer program. Under this alternative, this results in potential dead discards of sandbar sharks per year of 1,166 sharks (3,696 sandbar sharks discarded per year * 0.315 sandbar sharks observed dead = 1,166 sandbar sharks discarded dead per year). Fourth, to determine the total weight of the dead discards of sandbar sharks, NMFS used the average weight of 49.0 lb dw based on the 2010/2011 stock assessment, which is the most recent stock assessment for sandbar sharks. Under this alternative, this would result in 57,113 lb dw, or 25.9 mt dw of dead discards of sandbar sharks (Column D in Table 2.3; 1,166 dead sandbar sharks per year * 49.0 lb dw = 57,113 lb dw of dead sandbar sharks / 2,204.6 lb = 25.9 mt dw). Last, to compensate for the additional mortality of sandbar sharks in directed shark fishing trips, NMFS adjusted the sandbar shark research fishery quota by subtracting the additional mortality from the current baseline quota. For this alternative, this results in a sandbar research fishery quota of 199,943 lb dw, or 90.7 mt dw (257,056 lb dw baseline sandbar shark research quota – 57,113 lb dw additional mortality of sandbar sharks = 199,943 lb dw, or 90.7 mt dw new baseline sandbar shark research quota) (Column E in Table 2.3).

Table 2.3 **Retention limits and sandbar shark quota in the Atlantic shark research fishery under the different alternatives.** Note: Dead discard rate is 31.5 percent; average weight of sandbar sharks = 49.0 lb dw; baseline sandbar shark research fishery quota is 116.6 mt dw (257,056 lb dw).

Alternatives	Retention Limit	**(A)** Sandbar Shark Discards per Retention Limit (Number of sharks)	**(B)** Sandbar Shark Discards (Number of sharks)	**(C)** Sandbar Shark Dead Discards (Number of sharks)	**(D)** Sandbar Shark Quota Adjustment	**(E)** Sandbar Shark Research Fishery Quota Under the Different Alternatives
B2	55	6.2	3,696	1,166	25.9 mt dw (57,113 lb dw)	90.7 mt dw (199,943 lb dw)
B3	72	8.2	4,838	1,526	33.9 mt dw (74,766 lb dw)	82.7 mt dw (182,290 lb dw)
B4	108	12.3	7,257	2,289	50.9 mt dw (112,150 lb dw)	65.7 mt dw (144,906 lb dw)

In addition, NMFS received public comments that constituents preferred a lower commercial retention limit of 45 LCS other than sandbar sharks per trip, since the quotas are not increasing and there are concerns about increased participation in the fishery with a retention limit of 55 LCS other than sandbar sharks per trip. Under this alternative, NMFS would increase the commercial shark retention limit to a maximum of 55 LCS other than sandbar sharks per trip, but set the default commercial retention limit at 45 LCS other than sandbar sharks per trip. Under existing regulations, NMFS can adjust the commercial retention limit before the next fishing season or inseason based on the fishing rates from the current or previous years to account for spatial and temporal variations in the shark fishery.

Alternative B3 Increase the LCS retention limit for directed permit holders to a maximum of 72 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 82.7 mt dw (182,290 lb dw).

Under Alternative B3, NMFS would increase the retention limit for LCS in the Atlantic and Gulf of Mexico regions from 36 to 72 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 82.7 mt dw (182,290 lb dw). This retention limit is double the current retention limit. To calculate the new sandbar shark research fishery quota in this alternative, NMFS followed the same calculations as described in Alternative B2, including using the same assumptions regarding the average number of directed shark trips in the vessel logbooks in a year (592 trips), catch composition ratio from the Atlantic region (1:8.8; 1 sandbar shark for 8.8 non-sandbar LCS), dead discard rate of 31.5 percent, and average sandbar shark weight of 49.0 lb dw (see Tables Table 2.1, Table 2.2, and Table 2.3).

Alternative B4 Increase the LCS retention limit for directed permit holders to a maximum of 108 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 65.7 mt dw (144,906 lb dw).

This alternative would increase the current LCS trip limit to a maximum of 108 LCS other than sandbar sharks per trip in the Atlantic and Gulf of Mexico regions and adjust the sandbar shark research fishery quota to 65.7 mt dw (144,906 lb dw). This retention limit is three times the current retention limit. To calculate the new sandbar shark research fishery quota, NMFS followed the same calculations as described in Alternative B2, including using the same assumptions regarding the average number of directed shark trips in the vessel logbooks in a year (592 trips), catch composition ratio from the Atlantic region (1:8.8; 1 sandbar shark for 8.8 non-sandbar LCS), dead discard rate of 31.5 percent, and average sandbar shark weight of 49.0 lb dw (see Tables Table 2.31, Table 2.2, and Table 2.3).

2.3 ATLANTIC REGIONAL AND SUB-REGIONAL QUOTAS

Alternative C1 No Action: Do not implement sub-regional quotas in the Atlantic region; do not adjust the non-blacknose SCS quota to reflect the results of the 2013 assessments for Atlantic sharpnose and bonnethead sharks; do not adjust the quota linkages in the Atlantic region; do not prohibit the harvest of blacknose sharks in the Atlantic region or any portion of the Atlantic region.

Under Alternative C1, NMFS would maintain the current regional quotas and quota linkages in the Atlantic region and continue to allow harvest of blacknose sharks in the Atlantic region. Under this alternative, the commercial quotas for aggregated LCS (168.9 mt dw; 372,552 lb dw), hammerhead sharks (27.1 mt dw; 59,736 lb dw), non-blacknose SCS (176.1 mt dw; 388,222 lb dw), and blacknose sharks (18.0 mt dw; 39,749 lb dw) would remain unchanged in the Atlantic region. Existing quota linkages would also be maintained between the aggregated LCS and hammerhead shark management groups, as well as between the non-blacknose SCS and blacknose shark management groups. Additionally, the harvest of blacknose sharks would still be allowable throughout the entire Atlantic region. Furthermore, current regional quotas would continue to not address differences between states in how sharks are dressed, which ultimately impacts the final weight of landings attributed to each state.

Alternative C2 Apportion the Atlantic regional commercial quotas for certain LCS and SCS management groups along 33° 00' N. Latitude. (approximately at Myrtle Beach, South Carolina) into northern and southern sub-regional quotas.

Under Alternative C2, the annual base quotas for certain Atlantic LCS and SCS management groups would be apportioned into northern and southern sub-regional quotas, with the boundary between the northern and southern Atlantic sub-regions drawn along 33° 00' N. lat., and current quota linkages would be maintained. This latitude correlates to the southern boundary of U.S. federal fishing catch areas 706-711 that are found within the electronic dealer reporting system. All fish harvested in waters east of Maine through North Carolina, as well as all fish harvested in waters east of South Carolina, north of 33° 00' N. lat. (see Figure 2.1) would be considered from the northern Atlantic sub-region, while all fish harvested south of 33° 00' N. Lat. would be considered from the southern Atlantic sub-region.

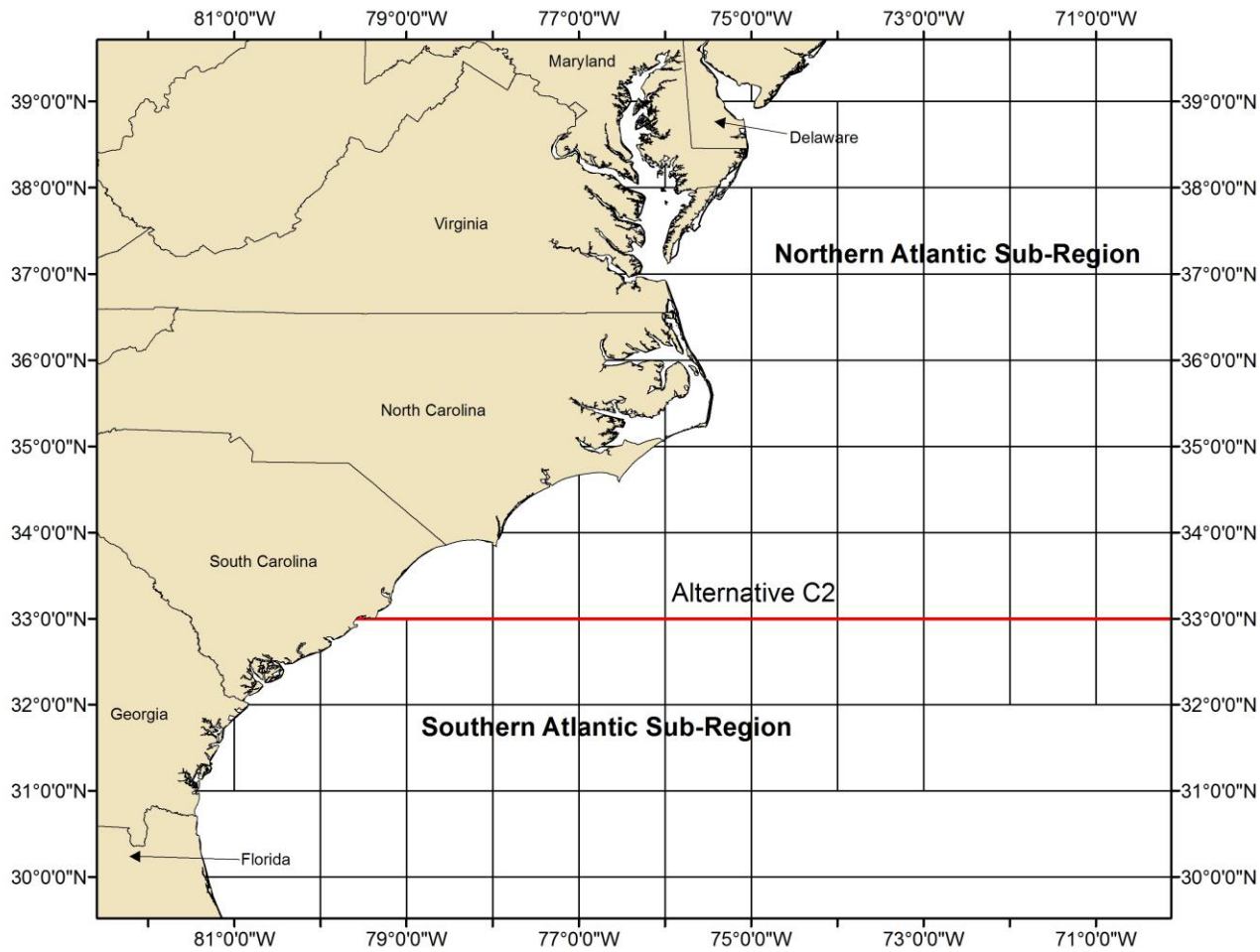


Figure 2.1: Map of sub-regional quotas for LCS and SCS along 33° 00' N latitude (approximately at Myrtle Beach, South Carolina). The regional split is based on Atlantic fishing catch areas**.**

The northern and southern sub-regional quotas would be calculated using the following methodology:

Using ACCSP data from 2008 through 2013, NMFS summarized the Atlantic aggregated LCS and hammerhead shark landings by year for the different sub-regions (Table 2.4). During the public comment period, commenters requested NMFS consider the International Commission for the Conservation of Atlantic Tunas (ICCAT) rule that prohibited landings of hammerhead sharks with pelagic longline gear in the sub-regional quota calculations. Specifically, the commenters believed that landing percentages by sub-region would be different pre- and post-rulemaking, and should not include the range of years since the fishery has changed due to the rulemaking. NMFS did not modify the landings from pelagic longline fishermen to account for that rule change as few hammerhead sharks were landed by pelagic longline fishermen between 2008 and 2011 and as such would have minimal impact on the calculations. Once ACCSP data from 2008 through 2013 was summarized, the data were separated by year, reporting state, species, catch area, and market code. All the reported carcass landings were converted to metric ton (mt) dressed weight (dw). All "round" market codes in ACCSP were converted into mt dw by dividing the weight by 1.39. NMFS summed all of the landings by catch area and species. Since ACCSP data include all of the LCS landings from the shark research fishery, NMFS removed all shark research fishery landings from the sub-regional calculations. Next, NMFS needed to account for all the landings that were not reported to either the species or management group level (i.e., those reported as either unknown shark, LCS, SCS, or pelagic sharks). If landings by state were reported as a certain shark management group but not reported to species-level, then the species-specific landings were determined using the species composition reported for the management group in a given sub-region as a proxy. For example, if there were 6,000 lb dw of unknown LCS landings by a state and blacktip shark landings accounted for 70 percent of the total LCS landing from that state, then 4,200 lb dw (6,000 lb dw of unknown LCS landings * 0.70 percentage that blacktip sharks accounted for the total LCS landings = 4,200 lb dw blacktip sharks) was added to the species-specific landings for that state and year. If landings by state were just reported as unknown shark landings, then the species-specific landings were determined using the species composition reported across all shark management groups in a given sub-region as a proxy. For example, if there were 6,000 lb dw of unknown shark landings reported by a state and blacktip shark landings accounted for 25 percent of the total shark landing from that state, then 1,500 lb dw (6,000 lb dw of unknown shark landings * 0.25 total percentage of blacktip shark landings = 1,500 lb dw blacktip sharks) was added to the species specific landings for that state and year.

Due to the variability in the aggregated LCS and hammerhead shark fisheries between 2008 and 2013, and various impacts of seasonal closures and changes to regulations and fishery management groups that did not impact one region more than another, NMFS calculated the sub-regional quotas based on total landings during this time period. NMFS used ACCSP data because these data include all reported landings, including state landings, by species and catch area. To determine the percentage of the quota each sub-region would receive for a given management group, NMFS then calculated the percentage of total landings associated with each management group within each sub-region and multiplied that percentage by the 2014 aggregated LCS or hammerhead shark base annual quota (Table 2.5). Using this methodology, the northern Atlantic sub-region would receive 21.0 percent of the Atlantic LCS base annual quota, or 35.4 mt dw (78,236 lb dw),

while the southern Atlantic sub-region would receive 79.0 percent of the Atlantic LCS base annual quota, or 133.5 mt dw (294,316 lb dw). For the hammerhead shark management group, the northern Atlantic sub-region would receive 34.9 percent of the Atlantic hammerhead base annual quota, or 9.5 mt dw (20,848 lb dw), while the southern Atlantic sub-region would receive 65.1 percent of the Atlantic hammerhead base annual quota, or 17.6 mt dw (38,888 lb dw) (Table 2.5). NMFS would maintain the current quota linkages between the aggregated LCS and hammerhead shark management groups within each sub-region.

Table 2.4 Atlantic Aggregated LCS and Hammerhead Shark Landings (lb dw) by Alternative C2 sub-region (percent of landings presented in parenthesis). Source: ACCSP Database (2008-2013).

Management Group	Sub-region	2008	2009	2010	2011	2012	2013	Total Landings
Aggregated LCS	Northern Atlantic	94,593 (23.2)	28,793 (7.1)	78,088 (19.2)	65,275 (16.0)	66,378 (16.3)	74,151 (18.2)	407,279
	Southern Atlantic	239,990 (15.7)	325,201 (21.3	299,703 (19.6)	220,612 (14.4)	175,311 (11.5)	267,951 (17.5)	1,528,768
Hammerhead Shark	Northern Atlantic	8,325 (12.4)	13,629 (20.4)	17,488 (26.1)	12,970 (19.4)	7,665 (11.5)	6,843 (10.2)	66,920
	Southern Atlantic	13,201 (10.6)	44,799 (35.8)	21,199 (16.9)	11,537 (9.2)	12,235 (9.8)	22,100 (17.7)	125,072

Table 2.5 Potential Atlantic Aggregated LCS and Hammerhead Shark Quotas by Alternative C2 sub-region. Source: ACCSP Database (2008-2013). The potential sub-regional quotas are a percentage of the base annual quota of the aggregated LCS (168.9 mt dw; 372,552 lb dw) and hammerhead shark (27.1 mt dw; 59,736 lb dw).

Management Group	Sub-region	Total Landings (lb dw)	Percentage of Landings	2014 Quota (lb dw)	LCS Sub-Regional Quotas for Alternative C2	
					lb dw	mt dw
Aggregated LCS	Northern Atlantic	407,279	21.0	372,552	78,236	35.4
	Southern Atlantic	1,528,768	79.0		294,316	133.5
Hammerhead Shark	Northern Atlantic	66,920	34.9	59,736	20,848	9.5
	Southern Atlantic	125,072	65.1		38,888	17.6

Unlike the calculations for aggregated LCS and hammerhead sharks, the data used to calculate non-blacknose SCS and blacknose shark quotas start after 2010 because SCS fisheries management changed in 2010 under Amendment 3 to the 2006 Consolidated HMS FMP, in which NMFS created a separate blacknose shark quota and linked the quota to the non-blacknose SCS quota. NMFS used ACCSP landings data from 2011 and 2012 to calculate SCS sub-regional quotas in Alternatives C2, C3, and C4. These years were used because they are years where the SCS fisheries were open year-round and sub-regional allocations would not be impacted by early closures; this approach was supported by some members of the HMS AP at the September 2014 meeting. NMFS then used the same methodology used for LCS to calculate non-blacknose SCS and blacknose shark quotas (see Table 2.6 and Table 2.7). For the blacknose shark management group, the northern Atlantic sub-region would receive 6.2 percent of the Atlantic blacknose base annual quota, or 1.1 mt dw (2,464 lb

dw), while the southern Atlantic sub-region would receive 93.8 percent of the Atlantic blacknose base annual quota or 16.9 mt dw (37,285 lb dw) (Table 2.7). Using this methodology, the northern Atlantic sub-region would receive 33.5 percent of the non-blacknose SCS base annual quota, while the southern Atlantic sub-region would receive 66.5 percent of the non-blacknose SCS base annual quota. NMFS is considering revising the non-blacknose SCS quota due to SEDAR 34 (see Alternatives C5 through C7). Thus, under this alternative, NMFS would use the percentages calculated here and the overall non-blacknose quota from Alternatives C5 through C7 to calculate the sub-regional quotas. NMFS would maintain the current quota linkages between the blacknose shark and non-blacknose SCS management groups within each sub-region.

Table 2.6 **Atlantic Non-Blacknose SCS and Blacknose Shark Landings (lb dw) by Alternative C2 sub-region (percent of landings presented in parenthesis).** Source: ACCSP Database (2011-2012).

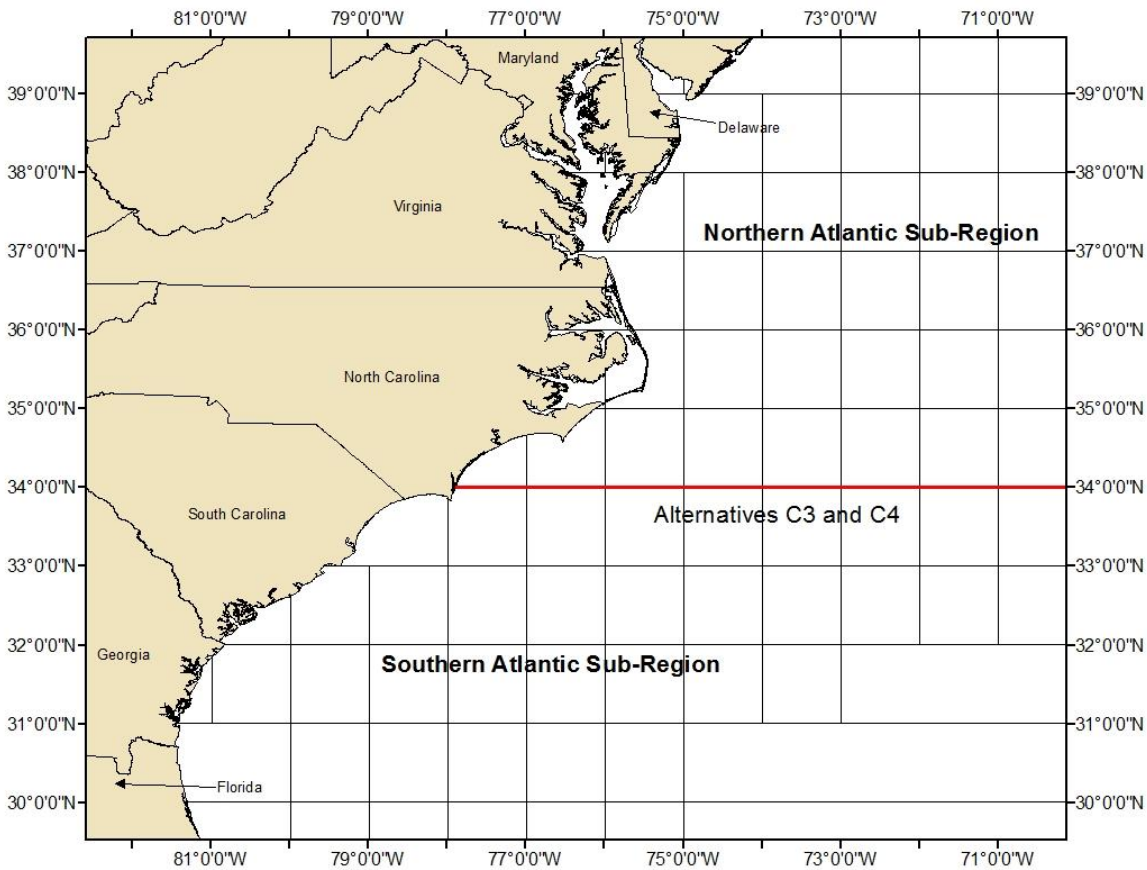
Management Group	Sub-region	2011	2012	Total Landings
Non-Blacknose SCS	Northern Atlantic	72,172 (32.3)	151,165 (67.7)	223,337
	Southern Atlantic	208,973 (47.1)	234,589 (52.9)	443,562
Blacknose Shark	Northern Atlantic	2,008 (50.6)	1,963 (49.4)	3,971
	Southern Atlantic	26,934 (45.2)	32,627 (54.8)	59,561

Table 2.7 **Potential Non-Blacknose SCS and Blacknose Shark Quotas by Alternative C2 sub-region.** Source: ACCSP Database (2011-2012). Please refer to tables 2.13, 2.15 and 2.16 for the potential sub-regional quotas for non-blacknose SCS. The potential sub-regional quotas are a percentage of the base annual quota of blacknose sharks (18.0 mt dw; 39,749 lb dw).

Management Group	Sub-region	Total Landings (lb dw)	Percentage of Landings	2014 Quota (lb dw)	SCS Sub-Regional Quotas under Alternative C2	
					lb dw	mt dw
Non-Blacknose SCS	Northern Atlantic	223,337	33.5	See Tables 2.13, 2.15, and 2.16		
	Southern Atlantic	443,562	66.5			
Blacknose Shark	Northern Atlantic	3,971	6.2	39,749	2,464	1.1
	Southern Atlantic	59,561	93.8		37,285	16.9

Alternative C3 Apportion the Atlantic regional commercial quotas for certain LCS and SCS along 34° 00' N. latitude. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas.

Under Alternative C3, the annual base quotas for certain Atlantic LCS and SCS management groups would be apportioned into northern and southern sub-regional quotas, with the boundary between the northern and southern Atlantic sub-regions drawn along 34° 00' N. lat., and current quota linkages would be maintained. This latitude correlates to the northern boundary of U.S. federal fishing catch areas 706-711 that are found in the electronic dealer reporting system. All fish harvested in waters east of South Carolina through Florida, as well as all fish harvested in waters east of North Carolina, south of 34° 00' N. lat. (see Figure 2.2) would be considered from the southern Atlantic region, while all fish harvested north of 34° 00' N. lat. would be considered from the



northern Atlantic sub-region.

Figure 2.2: Map of sub-regional quotas for LCS and SCS along 34° 00' N latitude (approximately at Wilmington, North Carolina). The regional split is based on Atlantic catch areas.

To calculate the northern and southern sub-regional quotas for the aggregated LCS and hammerhead shark management groups, NMFS followed the same methodology and calculations as described in Alternative C2, including using the same data source (ACCSP) and data years (2008-

2013) for the percentage of total landings associated with each management group within each sub-region (Table 2.8). Using this methodology, the northern Atlantic sub-region would receive 18.4 percent of the Atlantic LCS base annual quota, or 31.0 mt dw (68,550 lb dw), while the southern Atlantic sub-region would receive 81.6 percent of the Atlantic LCS base annual quota, or 137.9 mt dw (304,002 lb dw). For the hammerhead shark management group, the northern Atlantic sub-region would receive 34.9 percent of the Atlantic hammerhead shark base annual quota, or 9.5 mt dw (20,848 lb dw), while the southern Atlantic sub-region would receive 65.1 percent of the Atlantic hammerhead shark base annual quota, or 17.6 mt dw (38,888 lb dw) (Table 2.9). NMFS would maintain the current quota linkages between the aggregated LCS and hammerhead shark management groups within each sub-region.

Table 2.8 **Atlantic Aggregated LCS and Hammerhead Shark Landings (lb dw) by Alternative C3 sub-region (percent of landings presented in parenthesis).** Source: ACCSP Database (2008-2013).

Management Group	Sub-region	2008	2009	2010	2011	2012	2013	Total Landings
Aggregated LCS	Northern Atlantic	91,669 (25.7)	23,408 (6.6)	61,582 (17.2)	45,004 (12.6)	64,138 (18.0)	71,314 (20.0)	357,116
	Southern Atlantic	242,914 (15.4)	330,585 (20.9)	316,209 (20.0)	240,883 (15.3)	177,551 (11.2)	270,788 (17.2)	1,578,930
Hammerhead Shark	Northern Atlantic	8,325 (12.4)	13,629 (20.4)	17,488 (26.1)	12,970 (19.4)	7,665 (11.5)	6,843 (10.2)	66,920
	Southern Atlantic	13,201 (10.6)	44,799 (35.8)	21,199 (16.9)	11,537 (9.2)	12,235 (9.8)	22,100 (17.7)	125,072

Table 2.9 **Potential Atlantic Aggregated LCS and Hammerhead Shark Quotas by Alternative C3 sub-region.** Source: ACCSP Database (2008-2013). The potential sub-regional quotas are a percentage of the base annual quota of the aggregated LCS (168.9 mt dw; 372,552 lb dw) and hammerhead shark (27.1 mt dw; 59,736 lb dw).

Management Group	Sub-region	Total Landings (lb dw)	Percentage of Landings	2014 Quota (lb dw)	LCS Sub-Regional Quotas under Alternative C3	
					lb dw	mt dw
Aggregated LCS	Northern Atlantic	436,357	18.4	372,552	68,550	31.0
	Southern Atlantic	1,578,934	81.6		304,002	137.9
Hammerhead Shark	Northern Atlantic	89,750	34.9	59,736	20,848	9.5
	Southern Atlantic	125,072	65.1		38,888	17.6

NMFS used the same methodology to calculate the non-blacknose SCS and blacknose shark percentage of total landings associated with each management group within each sub-region, as described in Alternative C2, including using the same data source (ACCSP) and data years (2011-2012) (Table 2.10 and Table 2.11). Using this methodology for the non-blacknose SCS sub-regional

quota as described in Alternative C2, the northern Atlantic sub-region would receive 32.9 percent of the non-blacknose SCS base annual quota, while the southern Atlantic sub-region would receive 67.1 percent of the non-blacknose SCS base annual quota. For the blacknose shark management group, the northern Atlantic sub-region would receive 4.6 percent of the Atlantic blacknose base annual quota, while the southern Atlantic sub-region would receive 95.4 percent of the Atlantic blacknose base annual quota (Table 2.11). As with Alternative C2, the percentages of total landings associated with each management group within each sub-region from this alternative would be used with the new non-blacknose SCS quotas considered in Alternatives C5, C6, and C7 to calculate the non-blacknose SCS sub-regional quotas. NMFS would maintain the current quota linkages between the blacknose shark and non-blacknose SCS management groups within each sub-region.

Table 2.10 Atlantic Non-Blacknose SCS and Blacknose Shark Landings (lb dw) by Alternative C3 sub-region (percent of landings presented in parenthesis). Source: ACCSP Database (2011-2012).

Management Group	Sub-region	2011	2012	Total Landings
Non-Blacknose SCS	Northern Atlantic	70,445 (32.1)	149,020 (67.9)	219,465
	Southern Atlantic	210,700 (47.1)	236,734 (52.9)	447,434
Blacknose Shark	Northern Atlantic	1,197 (40.6)	1,753 (59.4)	2,951
	Southern Atlantic	27,745 (45.8)	32,837 (54.2)	60,582

Table 2.11 Potential Atlantic Non-Blacknose SCS and Blacknose Shark Quotas by Alternative C3 sub-region. Source: ACCSP Database (2011-2012). Please refer to tables 2.13, 2.15 and 2.16 for the potential sub-regional quotas for non-blacknose SCS. The potential sub-regional quotas are a percentage of the base adjusted annual quota of blacknose sharks (18.0 mt dw; 39,749 lb dw).

Management Group	Sub-region	Total Landings (lb dw)	Percentage of Landings	2014 Quota (lb dw)	SCS Sub-Regional Quotas under Alternative C3	
					lb dw	mt dw
Non-Blacknose SCS	Northern Atlantic	219,465	32.9	See Tables 2.13, 2.15, and 2.16		
	Southern Atlantic	447,434	67.1			
Blacknose Shark	Northern Atlantic	2,951	4.6	39,749	1,828	0.8
	Southern Atlantic	60,582	95.4		37,921	17.2

Alternative C4 Apportion the Atlantic regional commercial quotas for certain LCS and SCS management groups along 34° 00' N. latitude. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas and maintain SCS quota linkages in the southern sub-region of the Atlantic region; remove the SCS quota linkages in the northern sub-region of the Atlantic region and prohibit the harvest and landings of blacknose sharks in the North Atlantic region

As in Alternative C3, under Alternative C4 the annual base quotas for the Atlantic LCS and SCS management groups would be apportioned into northern and southern sub-regional quotas, with the boundary between the northern and southern Atlantic sub-regions drawn along 34° 00' N. lat. This latitude correlates to the northern boundary of U.S. federal fishing catch areas 706-711 that are found in the electronic dealer reporting system. All fish harvested in waters east from South Carolina through Florida, as well as all fish harvested in waters east of North Carolina, south of 34° 00' N. lat. (see Figure 2.2) would be considered from the southern Atlantic sub-region, while fish harvested north of 34° 00' N. lat. would be considered from the northern Atlantic sub-region. Alternative C4 uses 34° 00' N. lat. as the boundary between the sub-regions because this would give fishermen from states in the northern region more control over opening dates for the shark fisheries, which would allow them greater opportunities to maximize fishing efforts and revenue once the Mid-Atlantic Shark Closed Area is open to fishing. However, a different boundary between sub-regions could be used, with sub-regional quotas calculated using the same methodology and the analysis of the quota linkages remaining the same.

Unlike in Alternative C3, Alternative C4 would maintain the SCS linkages in the southern Atlantic sub-region, due to the overlap of blacknose and non-blacknose SCS, but would eliminate the linkage between blacknose and non-blacknose SCS in the northern Atlantic sub-region and prohibit the harvest and landing of blacknose sharks in the northern Atlantic sub-region, because of the difficulties of monitoring a quota of 0.8 mt dw. This alternative does not consider removing linkages between the aggregated LCS and hammerhead shark management groups, for several reasons. Removing linkages between these management groups would require an adjustment in quotas, in order to account for potential interactions and mortalities, and could result in an increase in regulatory discards. Additionally, there are specific reasons for maintaining the linkages, as described in the FMP amendments that established them. For example, as described in Amendment 5a, the link between the aggregated LCS and hammerhead shark management groups was established to end overfishing and rebuild overfished stocks. To date, the closure of these management groups in the Atlantic region has been the result of harvesting the aggregated LCS quota. As described in Amendment 3 and 5a for the link between non-blacknose SCS and blacknose sharks, the linking of quotas of species that are often caught together on the same set or trip can prevent incidental catch of sharks in a closed fishery as bycatch in other directed shark fisheries, possibly resulting in mortality and negating some of the conservation benefit of the quota closure. Nevertheless, maintaining the linkage between blacknose and non-blacknose SCS and implementing the calculated sub-regional quota of 0.8 mt dw for blacknose sharks for the northern Atlantic sub-region could be impractical as such a small quota would be difficult to monitor. Additionally, the quota would be so low that it could result in very early closure of the non-blacknose SCS fishery on an annual basis.

The resulting quotas would be the same as those presented in Alternative C3 (see Table 2.11), except that the northern sub-regional quota for blacknose sharks would be 0 mt dw. For all other species and management groups, any overharvest of the overall regional base quota would be accounted for in the next fishing season and would be deducted from the sub-region(s) that caused the overharvest. For example, if a northern sub-region quota was overharvested and that caused the overall regional base quota to be exceeded, then the amount overharvested by the northern sub-region would be deducted from the northern sub-region's base quota, and not the southern sub-region's base quota, the following fishing season. However, if a sub-region's quota is overharvested but the overall regional quota is not exceeded, then no overharvest would be deducted from either sub-region the following fishing season. In regards to underharvest of the overall regional base quota, if the species or all species in a management group is not declared to be overfished, to have overfishing occurring, or to have an unknown status, NMFS may increase the following year's base annual quota, including regional quota, by an equivalent amount of the underharvest up to 50 percent above the base annual quota. For example, if the northern sub-region's base quota is underharvested and the southern sub-region's base quota is fully harvested, in the following year the amount underharvested by the northern sub-region would be equally distributed between the sub-regions and added to the northern and southern sub-region's base quotas. If there is underharvest of the overall regional base quota and a species' status is unknown, overfished, or overfishing is occurring, NMFS would not carry over the underharvest to the following year's base annual quota.

Alternative C4 was preferred in the Draft EA, but is no longer the preferred alternative. During the public comment period, NMFS received requests to maintain the status quo and not implement sub-regional quotas for LCS and SCS in the Atlantic region due to concerns about the landings history used in the quota calculations and past season opening/closing dates that may have affected fishing effort and fishery participation. Additionally, commenters supported removing the linkage between the blacknose and non-blacknose SCS quotas in the northern sub-region. NMFS has acknowledged these concerns by developing a new preferred alternative, Alternative C8, which would address both issues by modifying the commercial quota measures and the blacknose and non-blacknose SCS quota linkage in the Atlantic region.

Alternative C5 Establish an Atlantic non-blacknose SCS TAC of 353.2 mt dw and adjust the non-blacknose SCS commercial quota to 128 mt dw (282,238 lb dw)

Under Alternative C5, for the Atlantic region, NMFS would establish a non-blacknose SCS TAC (total allowable catch) of 353.2 mt dw, based on the mortality of all three species in the non-blacknose SCS management group, and a commercial quota of 128 mt dw (282,238 lb dw), based on the results of the 2013 assessment for bonnethead sharks. As described in Chapters 1 and 3, NMFS completed standard stock assessments on Atlantic sharpnose and bonnethead sharks in 2013 and found that the Atlantic sharpnose shark stock in the Atlantic region is not overfished with no overfishing occurring, while the status of the bonnethead shark stock in the Atlantic region is unknown. On September 5, 2014, NMFS issued a determination notice (79 FR 53024) stating that Atlantic sharpnose sharks are split into two stocks (Atlantic and Gulf of Mexico), each with a status of not overfished with no overfishing occurring, and bonnethead sharks are split into two stocks (Atlantic and Gulf of Mexico), each with an unknown biomass and fishing mortality status.

Under this alternative, since NMFS determined that bonnethead sharks have an unknown stock status, and bonnethead sharks are part of the non-blacknose SCS management group[2], NMFS would take a conservative approach and base the non-blacknose SCS quota and part of the TAC on the Atlantic stock bonnethead shark stock assessment results, particularly the projection results, and base the percentages of sub-regional quotas on historical landings of SCS in the Atlantic. In SEDAR 34, the bonnethead shark stock was assessed as one single species stock (Atlantic and Gulf of Mexico combined), with projections that indicate, as a single stock, bonnethead sharks could withstand annual harvest levels of 550,000 sharks through the year 2041 with at least a 70 percent chance of not becoming overfished or experiencing overfishing. Current catches from the Atlantic and Gulf of Mexico regions combined were approximately 350,000 sharks in 2011. Due to the requirements of the assessment, the scientists were unable to separate the Atlantic and Gulf of Mexico catches of bonnethead sharks and instead calculated only the overall catches for the single stock. Additionally, at this time, NMFS cannot accurately calculate the bonnethead landings split between regions because dealers in the Gulf of Mexico did not consistently report SCS by species until 2013 and the data indicate few bonnethead-specific landings. As a result, in this alternative, NMFS took a conservative approach and based the quota and part of the non-blacknose SCS TAC only on the results of the bonnethead shark stock assessment. NMFS used the catches and projections from the Atlantic sharpnose shark stock assessment as a proxy in order to calculate the split between Atlantic and Gulf of Mexico catches of bonnethead sharks. Using Atlantic sharpnose as a proxy is appropriate because Atlantic sharpnose and bonnethead sharks are usually both caught with the same gear, and both species are found in similar habitats within the Atlantic region. In addition, Atlantic sharpnose and bonnethead sharks have similar life spans of 18 years.

To calculate the bonnethead shark regional quotas, NMFS used the Atlantic sharpnose shark stock assessment as a reference to create a regional bonnethead shark TAC. In SEDAR 34, the Atlantic sharpnose stock assessment had total catches by fleet and catches by region. NMFS used the proportion of regional catches from the Atlantic sharpnose shark stock assessment as a proxy to split the bonnethead shark projected harvest into regions, based on results from the stock assessment. In the Atlantic sharpnose shark stock assessment, 81 percent of the total catches were from the Gulf of Mexico region, while 16.9 percent were from the Atlantic region[3]. Using these percentages and the results of the bonnethead projections, the bonnethead shark TAC would be derived from the projected TAC of 93,058 bonnethead sharks (550,000 bonnethead shark projected harvest for the entire fishery * 0.169 Atlantic sharpnose shark Atlantic regional split = 93,058 bonnethead sharks for the Atlantic region), or 177.3 mt dw (93,058 bonnethead sharks * 4.2 lb dw average weight of bonnethead sharks / 2,204.6 lb = 177.3 mt dw).

To calculate the Atlantic non-blacknose SCS commercial quota, all of the other sources of bonnethead shark mortality (i.e., recreational harvest, commercial discards, which includes estimates

[2] The non-blacknose SCS management group consists of Atlantic sharpnose, finetooth, and bonnethead sharks. Atlantic sharpnose and finetooth shark stocks are considered not overfished with no overfishing occurring.

3 In SEDAR 34, Atlantic sharpnose sharks were assessed as one stock. Because the SEDAR 13 benchmark stock assessment had previously split the catch data and indices of abundance data between stocks in 2007, the SEDAR 34 assessment could continue to split the catch and indices of abundance data between stocks. Since the sensitivity runs were performed in a standard assessment, some data calculations to split the data and indices of abundance might not have been as accurate as in a benchmark assessment. Thus, the Atlantic sharpnose regional split does not equal 100 percent.

of shrimp trawl discards, and research set-aside mortality) were subtracted from the bonnethead shark TAC (Table 2.12). NMFS used the bonnethead shark recreational landings and shrimp trawl discards from SEDAR 34. The commercial discards from longline and gillnet gear were derived from multiplying the longline and gillnet landings and fishing trips by the percentage of bonnethead shark dead discards observed by the Southeast bottom longline and gillnet observer programs. The research set-aside mortality is the landings and dead discards of bonnethead sharks from researchers that are issued HMS exempted fishing permits. The resulting Atlantic non-blacknose SCS commercial quota is 282,238 lb dw or 128 mt dw and would apply to landings of all non-blacknose SCS (i.e., bonnethead, Atlantic sharpnose, and finetooth sharks). The above methodology for calculating the Atlantic commercial non-blacknose SCS quota based on the Atlantic bonnethead shark regional projections is outlined in an equation format below:

(Atlantic bonnethead shark TAC) – (recreational Atlantic bonnethead shark landings) – (commercial Atlantic bonnethead shark discards) – (research set aside) = Total Atlantic commercial non-blacknose SCS quota.

- **177.3 mt dw** (Atlantic bonnethead shark TAC) – 0.4 mt dw (recreational Atlantic bonnethead shark landings) – 48.5 mt dw (commercial Atlantic bonnethead shark discards) – 0.4 mt dw (research set-aside) = **128 mt dw (Atlantic commercial non-blacknose SCS quota)**

Table 2.12 Average annual Atlantic bonnethead shark mortality, 2008-2012.
Sources: SEDAR 34. Commercial discard estimates from data reported in SEDAR 34 and the Southeast bottom longline and gillnet observer programs. Estimates for the 2012 recreational landings and commercial discards from the shrimp trawl fishery were based on the 2011 landings.

Gear	Recreational Landings	Commercial Discards		Research Set-Aside	Total
		Longline and Gillnet	Shrimp Trawl		
Weight (lb dw)	843	1,229	105,572	961	108,606
Weight (mt dw)	0.4	0.6	47.9	0.4	49.3
Percentage	1%	1%	97%	1%	100%

Since the non-blacknose SCS quota was calculated based on the bonnethead shark TAC, NMFS would need to establish the TAC for all Atlantic non-blacknose SCS based on all sources of mortality for the species in the management group. This TAC would be 353.2 mt dw and is calculated by summing all of the sources of mortality for Atlantic sharpnose, bonnethead, and finetooth sharks (recreational landings, commercial discards, which includes estimates of shrimp trawl discards, and research set-aside mortality) (Table 2.13) and the commercial base annual quota based on the bonnethead shark assessment. NMFS used the recreational landings and shrimp trawl discards for Atlantic sharpnose sharks from SEDAR 34. Since finetooth sharks were not assessed in SEDAR 34, NMFS used the 2005 recreational landings and shrimp trawl discards from SEDAR 13 as the best available data. In SEDAR 13, finetooth sharks were assessed as a single stock (Atlantic and Gulf of Mexico combined). Thus, NMFS used the same proportion of regional catches as described

above from the Atlantic sharpnose shark stock assessment as a proxy to split the finetooth shark catches (81 percent of the total catches for the Gulf of Mexico region and 16.9 percent for the Atlantic region). This approach was necessary as catch data was not separated by region (i.e. Atlantic and Gulf of Mexico) for finetooth sharks in the most recent assessment. As described above, NMFS used the average annual commercial discards from longline and gillnet gear and the research set-aside mortality for Atlantic sharpnose, bonnethead, and finetooth sharks from 2008-2012. The Atlantic non-blacknose SCS TAC would be calculated using the following methodology:

(Atlantic non-blacknose SCS TAC) = (recreational Atlantic sharpnose, bonnethead, and finetooth shark landings) + (Atlantic sharpnose, bonnethead, and finetooth sharks commercial discards) + (research set aside) + (Atlantic non-blacknose SCS base annual quota based on the bonnethead shark assessment)

- **353.2 mt dw** (Atlantic non-blacknose SCS TAC) = 100.6 mt dw (recreational Atlantic sharpnose, bonnethead, and finetooth shark landings) + 122.4 mt dw (Atlantic sharpnose, bonnethead, and finetooth shark commercial discards) + 2.2 mt dw (research set-aside) + **128 mt dw (Atlantic non-blacknose SCS base annual quota)**

Table 2.13 Average annual Atlantic sharpnose, bonnethead, and finetooth shark mortality (2008-2012) used to estimate the Atlantic non-blacknose SCS base annual quota and TAC.
Sources: SEDAR 13 and 34. Commercial discard estimates from data reported in SEDAR 34, SEDAR 13, and the Southeast bottom longline and gillnet observer programs. Estimates for the 2012 recreational landings and commercial discards from the shrimp trawl fishery for Atlantic sharpnose and bonnethead sharks were based on the 2011 landings. NMFS used the 2005 recreational landings and commercial discards from the shrimp trawl fishery in SEDAR 13 for finetooth sharks.

Species	Gear		Weight (lb dw)	Weight (mt dw)	Percentage
Atlantic Sharpnose	Recreational Landings		219,756	99.7	44%
	Commercial Discards	Longline and Gillnet	3,663	1.7	< 1%
		Shrimp Trawl	159,005	72.1	32%
	Research Set-Aside		3,898	1.8	< 1%
Bonnethead	Recreational Landings		843	0.4	< 1%
	Commercial Discards	Longline and Gillnet	1,229	0.6	< 1%
		Shrimp Trawl	105,572	47.9	21%
	Research Set-Aside		961	0.4	< 1%
Finetooth	Recreational Landings		1,178	0.5	< 1%
	Commercial Discards	Longline and Gillnet	26	< 0.1	0%
		Shrimp Trawl	26	< 0.1	< 1%
	Research Set-Aside		0	0	0%
Total			496,157	225.2	100%

Alternative C5 would establish a non-blacknose SCS commercial quota of 128 mt dw for the entire Atlantic region based on the results of the 2013 assessment for bonnethead sharks. In combination with Alternatives C2, C3, or C4, Alternative C5 would establish the non-blacknose SCS quota, split into northern and southern sub-regional quotas based on landings percentages as outlined in Table 2.14. In addition, no underharvest of the non-blacknose SCS quota in the Atlantic region could be carried forward to the next fishing season because the status of the bonnethead shark stock within the non-blacknose SCS management group is "unknown."

Table 2.14 **Potential Atlantic Non-Blacknose SCS Quotas by sub-region Alternatives.** Source: Tables 2.7 and 2.11. Potential sub-regional quotas are a percentage of the potential annual quota of non-blacknose SCS (128 mt dw (282,238 lb dw)).

Alternative	Management Group	Sub-region	Percentage of Landings	Potential SCS Sub-Regional Quotas	
				lb dw	mt dw
C2	Non-Blacknose SCS	Northern Atlantic	33.5	94,550	42.9
		Southern Atlantic	66.5	187,688	85.1
C3 and C4	Non-Blacknose SCS	Northern Atlantic	32.9	92,856	42.1
		Southern Atlantic	67.1	189,382	85.9

Alternative C6 Establish a non-blacknose SCS TAC of 401.3 mt dw and maintain the 2014 commercial base annual quota of 176.1 mt dw (388,222 lb dw)

Under Alternative C6, NMFS would establish a non-blacknose SCS TAC of 401.3 mt dw and maintain the 2014 base annual commercial quota of 176.1 mt dw (388,222 lb dw). As described in Chapters 1 and 3, NMFS completed standard stock assessments for Atlantic sharpnose and bonnethead sharks and found that the Atlantic sharpnose shark stock in the Atlantic region is not overfished with no overfishing occurring, while the status of the bonnethead shark stock in the Atlantic region is unknown. Based on this determination, for this alternative, NMFS maintained the 2014 catch levels at 2013 levels by maintaining the 2014 base annual quota at this time, due to uncertainty of the bonnethead shark status. The TAC and quota considered under Alternative C5 may be unnecessarily conservative, as the quota is only based on results of the bonnethead shark stock assessment and does not consider results for Atlantic sharpnose.

To calculate the TAC and commercial quota, NMFS used the same methodology as outlined in Alternative C5, except the commercial quota would be equal to the current base annual quota of 176.1 mt dw. This commercial quota was then added to all the sources of mortality for Atlantic sharpnose, bonnethead, and finetooth sharks (Table 2.13) to create a TAC of 401.3 mt dw for Atlantic non-blacknose SCS.

Alternative C6 would establish a non-blacknose SCS commercial quota of 176.1 mt dw for the entire Atlantic region based on the 2014 base annual quota. As described in Alternative C5, when considered in combination with Alternative C2, C3, or C4, the non-blacknose SCS quota considered under this alternative would be split into a northern and southern sub-regional quotas based on landings percentages as outlined in Table 2.15. In addition, no underharvest of the non-blacknose SCS quota in the Atlantic region could be carried forward to the next fishing season because the status of bonnethead shark stock within the non-blacknose SCS management group is "unknown."

Table 2.15 **Potential Atlantic Non-Blacknose SCS Quotas by sub-region alternatives.** Source: Tables 2.7 and 2.11. The potential sub-regional quotas are a percentage of the potential annual quota of non-blacknose SCS (176.1 mt dw 388,222 lb dw)

Alternative	Management Group	Sub-region	Percentage of Landings	Potential Sub-Regional Quotas	
				lb dw	mt dw
C2	Non-Blacknose SCS	Northern Atlantic	33.5	130,054	59.0
		Southern Atlantic	66.5	258,168	117.1
C3 and C4	Non-Blacknose SCS	Northern Atlantic	32.9	127,725	57.9
		Southern Atlantic	67.1	260,497	118.2

Alternative C6 was preferred in the Draft EA, but is no longer the preferred alternative. During the public comment period for the Draft EA for Amendment 6, most commenters supported a higher non-blacknose SCS TAC and commercial quota, with specific requests to implement the higher non-preferred non-blacknose SCS TAC and commercial quota. Commenters indicated that bonnethead sharks do not comprise a large portion of the SCS landings and as such the SCS fishery should not be limited by the bonnethead shark assessment. NMFS recognizes the concerns of the commenters and recognizes that a higher non-blacknose SCS TAC and commercial quota is consistent with the results of the 2013 Atlantic sharpnose and bonnethead shark stock assessments and would not have a negative impact on the non-blacknose SCS management group and additional analyses confirms that that bonnethead sharks do not comprise a large portion of SCS landings. Therefore, NMFS no longer prefers Alternative C6.

Alternative C7 *Establish a non-blacknose SCS TAC of 489.3 mt dw and increase the commercial quota to 264.1 mt dw (582,333 lb dw) – Preferred Alternative*

Under Alternative C7, the preferred alternative, NMFS would establish a non-blacknose SCS TAC and increase the quota to the 2014 adjusted annual quota of 264.1 mt dw (582,333 lb dw). As described above, NMFS accepted the 2013 SEDAR stock assessment as the best available science, and had preferred in the Draft EA to maintain 2014 catch levels, as described in Alternative C6, due to uncertainty of the bonnethead shark assessment. For this alternative, NMFS would establish a non-blacknose SCS TAC based on the 2014 levels of catch as adjusted to account for commercial

underharvests of non-blacknose SCS in 2013. Current regulations allow stocks that are not overfished and have no overfishing occurring to have underharvest carried over in the following year, up to 50 percent of the base quota.

To calculate the TAC and commercial quota, NMFS used the same methodology as outlined in Alternative C5, except the commercial quota would be 50 percent greater than the 2014 base quota due to adjustments for underharvests. This adjusted commercial quota of 264.1 mt dw was then added to all the sources of mortality for Atlantic sharpnose, bonnethead, and finetooth sharks (Table 2.13) to create a TAC of 489.3 mt dw for Atlantic non-blacknose SCS.

Alternative C7 would establish a non-blacknose SCS quota of 264.1 mt dw for the entire Atlantic region, based on the 2014 adjusted annual non-blacknose SCS quota. As described in the draft EA, this alternative would have been combined with Alternative C5, which would have split the non-blacknose SCS into a northern and southern sub-regional quotas based on landings percentages as outlined in Table 2.16. In addition, no underharvest of the non-blacknose SCS quota in the Atlantic region could be carried forward to the next fishing season because the status of bonnethead shark stock within the non-blacknose SCS management group is "unknown."

Table 2.16 **Potential Atlantic Non-Blacknose SCS and Blacknose Shark Quotas by sub-region alternatives.** Source: Tables 2.7 and 2.11. The potential sub-regional quotas are a percentage of the potential annual quota of non-blacknose SCS (264.1 mt dw (582,333 lb dw)).

Alternative	Management Group	Sub-region	Percentage of Landings	Potential Sub-Regional Quotas	
				lb dw	mt dw
C2	Non-Blacknose SCS	Northern Atlantic	33.5	195,082	88.4
		Southern Atlantic	66.5	387,251	175.7
C3 and C4	Non-Blacknose SCS	Northern Atlantic	32.9	191,588	86.9
		Southern Atlantic	67.1	390,745	177.2

Alternative C8 *Do not implement sub-regional quotas in the Atlantic region; establish a management boundary in the Atlantic region along 34° 00' N. latitude (approximately at Wilmington, North Carolina) for the SCS fishery; maintain SCS quota linkages south of the 34° 00' N. latitude; and prohibit the harvest and landings of blacknose sharks north of the 34° 00' N. latitude - Preferred Alternative*

Based on public comment, additional analyses, and further review, Alternative C8 was developed as a new preferred alternative in the Final EA. Commenters requested that NMFS not implement sub-regional quotas for both the LCS and SCS management groups. This new alternative

is a hybrid of management measures previously evaluated in the Draft EA and therefore falls within the range of alternatives that were discussed and analyzed in the Draft EA. This alternative is based on measures analyzed in Alternative C4, the preferred alternative in the Draft EA.

Under Alternative C8, NMFS would no longer implement sub-regional quotas for LCS and SCS management groups and would maintain the current aggregated LCS (168.9 mt dw; 372,552 lb dw) and hammerhead shark (27.1 mt dw; 59,736 lb dw) regional quotas in the Atlantic region, establish a management boundary at 34° 00' N. lat. for the SCS fishery, and prohibit the retention of blacknose sharks north of the management boundary at 34° 00' N. lat. For the Atlantic non-blacknose SCS management group, NMFS would implement the non-blacknose SCS TAC and commercial quota described in Alternative C7, a preferred alternative. Under Alternative C8, NMFS would remove the quota linkage between non-blacknose SCS and blacknose sharks north of 34° 00' N. lat.(because blacknose sharks would be prohibited north of the management boundary) and maintain this quota linkage south of 34° 00' N. lat., where the majority of blacknose sharks are caught. In order to account for blacknose shark discard mortality north of 34° 00' N. lat., NMFS would reduce the Atlantic blacknose shark quota from 18 mt dw (39,749 lb dw) to 17.2 mt dw (37,921 lb dw).

2.4 GULF OF MEXICO REGIONAL AND SUB-REGIONAL QUOTAS

Alternative D1 No Action: Do not implement sub-regional quotas in the Gulf of Mexico region; do not adjust the non-blacknose SCS quota to reflect the results of the 2013 assessments for Atlantic sharpnose and bonnethead sharks; do not adjust the quota linkages in the Gulf of Mexico region; do not prohibit the harvest of hammerhead sharks in the Gulf of Mexico region or any portion of the Gulf of Mexico region.

Under Alternative D1, NMFS would maintain the current regional quotas and quota linkages in the Gulf of Mexico region and continue to allow harvest of hammerhead sharks throughout the Gulf of Mexico region. Under this alternative, the commercial quotas for blacktip sharks (274.3 mt dw; 604,626 lb dw), aggregated LCS (151.2 mt dw; 333,828 lb dw), and hammerhead sharks (25.3 mt dw; 55,722 lb dw would remain unchanged in the Gulf of Mexico. Existing quota linkages would also be maintained between the aggregated LCS and hammerhead shark management groups, as well as between the non-blacknose SCS and blacknose shark management groups, with the blacktip shark management group remaining unlinked.

Alternative D2 Apportion the Gulf of Mexico regional quotas for aggregated LCS, blacktip, and hammerhead sharks along 89° 00' W. longitude into western and eastern sub-regional quotas

Under Alternative D2, the annual base quotas for the Gulf of Mexico blacktip, aggregated LCS, and hammerhead sharks would be apportioned into western and eastern sub-regional quotas. The boundary between the western and eastern Gulf of Mexico sub-regions would be drawn along 89° 00' W. long. This longitude correlates to the boundary between U.S. federal fishing catch areas 11 and

12. All fish harvested in waters off Texas and Louisiana, as well as all fish harvested in waters off Mississippi west of 89° 00' W. longitude (see Figure 2.3) would be considered from the western Gulf of Mexico sub-region, while all fish harvested east of 89° 00' W. longitude would be considered from the eastern Gulf of Mexico sub-region.

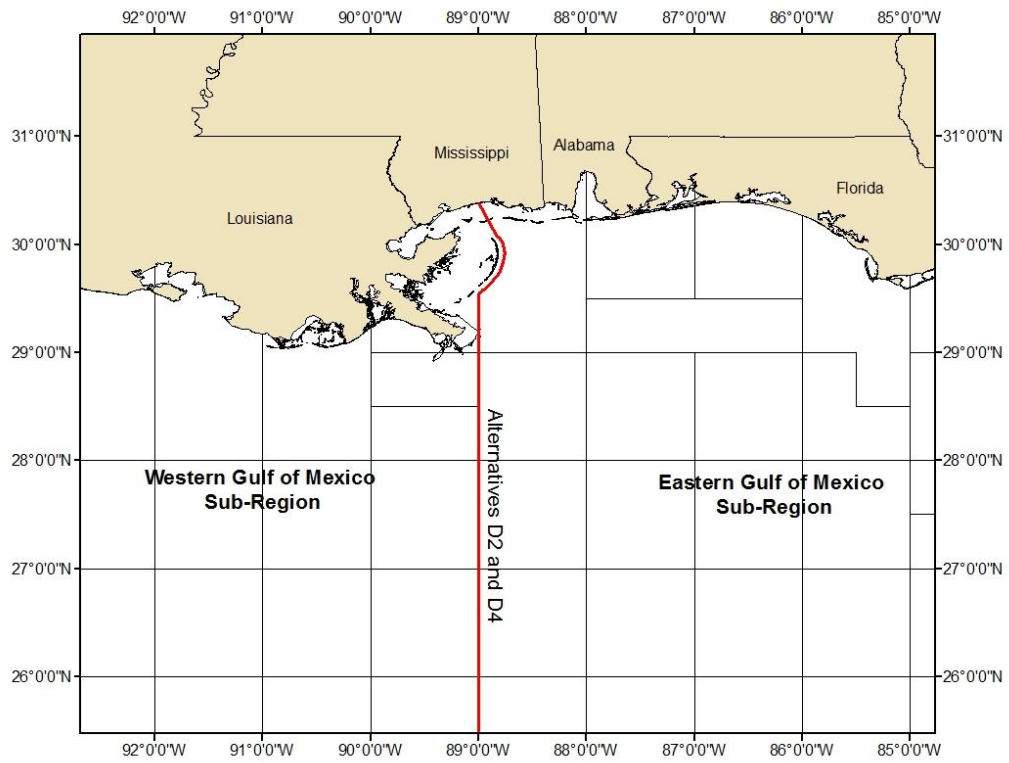


Figure 2.3: Map of sub-regional quotas for aggregated LCS, hammerhead sharks and blacktip sharks along 89° 00' W. longitude (east of the Breton National Wildlife Refuge). The regional split is based on Atlantic fishing catch areas.

The eastern and western sub-regional quotas could be calculated using the following methodology:

NMFS used the same methodology as explained above for Alternatives C2 – C4 in the Atlantic region, except that GULFIN data was used in the Gulf of Mexico sub-regional alternatives. Table 2.17 contains the Gulf of Mexico aggregated LCS, hammerhead shark, and blacktip shark landings by year for the different sub-regions, which have been updated, with some landings changing since the Draft EA for Amendment 6. NMFS used GULFIN data because it includes all reported landings, including state landings, by species, and catch area. Landing data from Table 2.17 were summed in Table 2.18 as total landings from 2008-2013, with the exception of landings of hammerhead sharks, which were only estimated from 2014 (see paragraph below). To determine the percentage of the quota each sub-region would receive for a given management group, NMFS calculated the percentage of total landings associated with each management group within each sub-region and multiplied that percentage by the 2014 blacktip shark, aggregated LCS, or hammerhead

shark base annual quota (Table 2.18). Using this methodology, the eastern Gulf of Mexico sub-region would receive 12.0 percent of the Gulf of Mexico blacktip shark base annual quota, or 30.8 mt dw (67,884 lb dw), while the western Gulf of Mexico sub-region would receive 88.0 percent of the Gulf of Mexico blacktip shark base annual quota, or 225.8 mt dw (497,816 lb dw). For the aggregated LCS management group, the eastern Gulf of Mexico sub-region would receive 56.4 percent of the Gulf of Mexico aggregated LCS base annual quota, or 88.8 mt dw (195,887 lb dw), while the western Gulf of Mexico sub-region would receive 43.6 percent of the Gulf of Mexico aggregated LCS base annual quota, or 68.7 mt dw (151,430 lb dw).

In the Final EA, NMFS reconsidered the source and years of landing data originally used in the Draft EA for the hammerhead shark management group. Since publication of the Draft EA for Amendment 6, because of public comment, NMFS has become aware of issues with how hammerhead sharks were reported in GULFIN, as well as how the new hammerhead shark management group (implemented mid-season in 2013 under Amendment 5a to the 2006 Consolidated HMS FMP) impacted the landings data from GULFIN. As a result of using the GULFIN dataset, landings of hammerhead sharks likely underestimated the magnitude and regional distribution of landings in the Gulf of Mexico. As such, NMFS is now using eDealer data from 2014 to calculate the percentages of the hammerhead shark base annual quota that would be apportioned to each sub-region. NMFS would use only 2014 eDealer data since it represents the first full year of electronic reporting by dealers for all shark landings and is species-specific[4]. Since these sub-regional hammerhead quotas would be based on a single year of data, NMFS may adjust the percentage of the quota apportioned to each sub-region in the future. Thus, for the hammerhead shark management group, the eastern Gulf of Mexico sub-region would receive 52.8 percent of the hammerhead shark base annual quota, or 13.4 mt dw (29,421 lb dw), while the western Gulf of Mexico sub-region would receive 47.2 percent of the hammerhead shark base annual quota, or 11.9 mt dw (23,301 lb dw) (Table 2.18). While the percentages of the Gulf of Mexico regional quota for hammerhead shark apportioned to each sub-region are different than what was considered in the Draft EA for Amendment 6, they are consistent with public comments and the current landings for the fishery. Furthermore, the hammerhead shark quota has not been the limiting factor initiating closure of any of the LCS management groups in the Gulf of Mexico. Under this alternative, NMFS would also maintain the current quota linkages between the aggregated LCS and hammerhead shark management groups within each sub-region.

4 eDealer was implemented on January 1, 2013, requiring HMS dealers to report commercially harvested Atlantic sharks, swordfish, and BAYS in an electronic reporting system, but Amendment 5a was implemented mid-season in 2013, so 2014 represents the first full year of data with the new hammerhead shark management group.

Table 2.17 **Gulf of Mexico Blacktip Shark Landings (lb dw) by Alternative D2 sub-region (percent of landings presented in parenthesis).** Source: GULFIN Database (2008-2013).

Management Group	Sub-region	2008	2009	2010	2011	2012	2013	Total Landings
Blacktip Shark	Eastern Gulf	73,377 (20.7)	98,855 (22.8)	26,987 (4.3)	33,657 (9.1)	60,774 (14.6)	35,165 (6.5)	328,815
	Western Gulf	280,847 (79.3)	334,037 (77.2)	595,037 (95.7)	335,366 (90.9)	354,749 (85.4)	502,889 (93.5)	2,402,923
Aggregated LCS	Eastern Gulf	326,579 (70.7)	266,006 (77.0)	104,074 (36.9)	362,776 (68.4)	338,399 (57.1)	68,795 (17.8)	1,466,628
	Western Gulf	135,214 (29.3)	79,322 (23.0)	178,276 (63.1)	167,970 (31.6)	254,004 (42.9)	317,101 (82.2)	1,131,888
Hammerhead Shark	Eastern Gulf	33,501 (99.1)	58,936 (99.8)	21,767 (97.3)	37,698 (98.7)	11,917 (98.0)	0 (0.0)	163,819
	Western Gulf	293 (0.9)	101 (0.2)	604 (2.7)	495 (1.3)	248 (2.0)	0 (0.0)	1,741

Table 2.18 **Potential Gulf of Mexico Blacktip, Aggregated LCS, and Hammerhead Shark Quotas by Sub-Region.** Source: GULFIN Database (2008-2013) for blacktip shark and aggregated LCS management groups; eDealer Database (2014) for hammerhead shark management group. Potential regional quotas are based on the 2014 base annual quotas of blacktip shark (256.6 mt dw; 565,700 lb dw), aggregated LCS (157.5 mt dw; 347,317 lb dw), and hammerhead shark (25.3 mt dw; 55,722 lb dw)

Management Group	Sub-region	Total Landings (lb dw)	Percentage Landings	2014 Quota (lb dw)	LCS Sub-Regional Quotas under Alternative D2	
					lb dw	mt dw
Blacktip Shark	Eastern Gulf	328,815	12.0	565,700	67,884	30.8
	Western Gulf	2,402,923	88.0		497,816	225.8
Aggregated LCS	Eastern Gulf	1,466,628	56.4	347,317	195,887	88.8
	Western Gulf	1,131,888	43.6		151,430	68.7
Hammerhead Shark	Eastern Gulf	16,073	52.8	55,722	29,421	13.4
	Western Gulf	14,374	47.2		23,301	11.9

Alternative D3 *Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks into western and eastern sub-regional quotas along 88° 00' W. longitude – Preferred Alternative*

Under Alternative D3, the preferred alternative, the annual base quotas for the Gulf of Mexico blacktip, aggregated LCS, and hammerhead sharks would be apportioned into western and eastern sub-regional quotas. The boundary between the western and eastern Gulf of Mexico sub-regions would be drawn along 88° 00' W. long. This longitude correlates to the boundary between U.S. federal fishing catch areas 10 and 11 from within the dealer reporting system. All fish harvested in waters off Texas, Louisiana, and Mississippi, as well as all fish harvested in waters off Alabama west of 88° 00' W. longitude (see Figure 2.4) would be considered from the western Gulf of Mexico sub-region, while all fish harvested east of 88° 00' W. longitude would be considered from the eastern Gulf of Mexico sub-region.

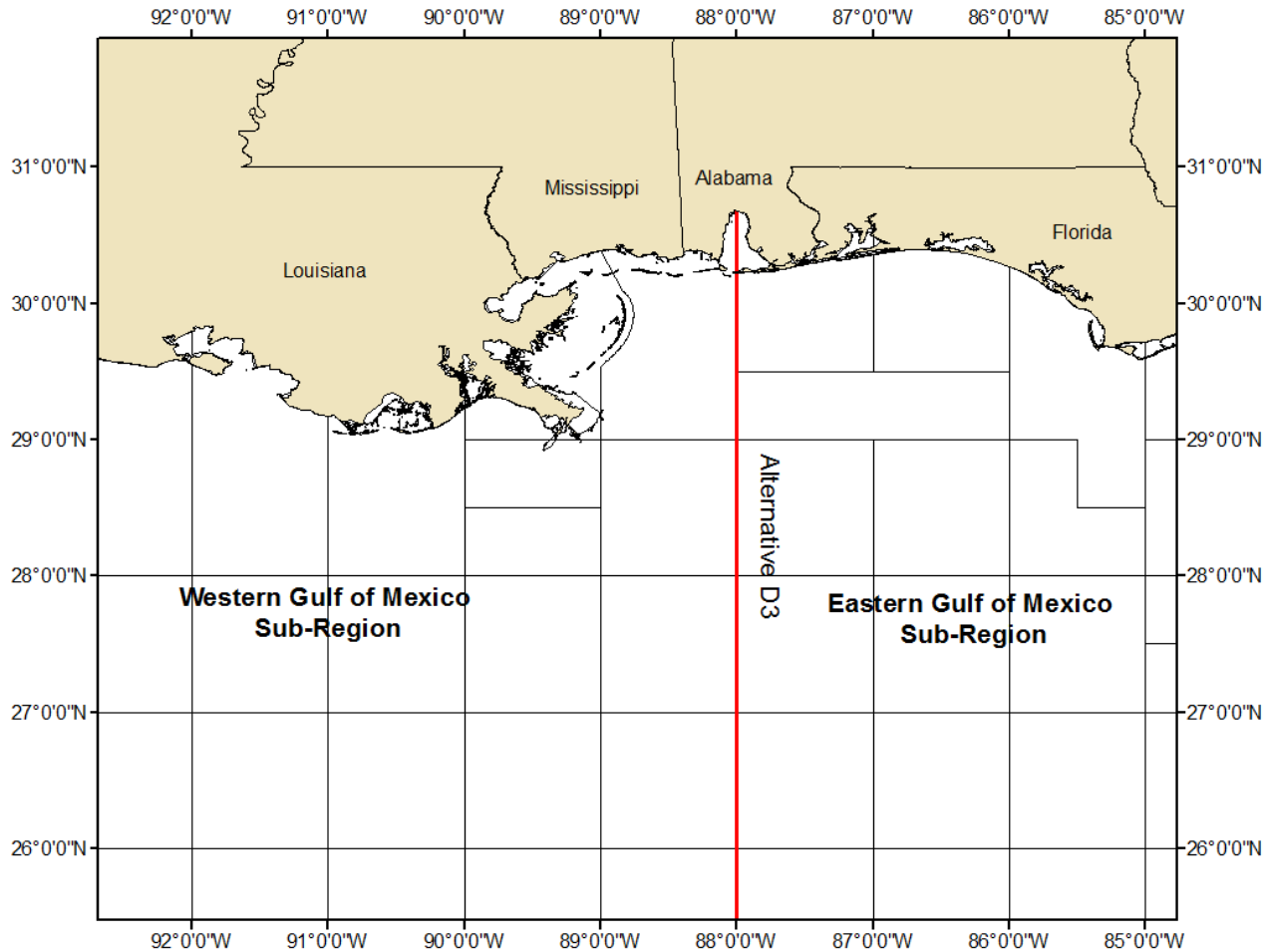


Figure 2.4: Map of sub-regional quotas for aggregated LCS, hammerhead sharks and blacktip sharks along 88° 00' W. longitude (approximately at Mobile Bay in Alabama). The regional split is based on Atlantic catch areas.

The eastern and western sub-regional quotas could be calculated using the following methodology:

To calculate the eastern and western sub-regional quota, NMFS followed the same methodology and calculations as described in Alternative D2 including using the same data source (GULFIN Database) and data years (2008-2013) for the percentage of total landings associated with each management group within each sub-region (Table 2.19). Using this methodology, the eastern Gulf of Mexico sub-region would receive 31.2 percent of the Gulf of Mexico blacktip shark base annual quota, or 85.6 mt dw (188,643 lb dw), while the western Gulf of Mexico sub-region would receive 68.8 percent of the Gulf of Mexico blacktip shark base annual quota, or 188.7 mt dw (415,983 lb dw). For the aggregated LCS management group, the eastern Gulf of Mexico sub-region would receive 53.2 percent of the Gulf of Mexico aggregated LCS base annual quota, or 80.4 mt dw (177,596 lb dw), while the western Gulf of Mexico sub-region would receive 46.8 percent of the Gulf of Mexico aggregated LCS base annual quota, or 70.8 mt dw (156,232 lb dw). For the hammerhead shark management group, landings were only estimated from 2014, as explained in Alternative D2. As such, the eastern Gulf of Mexico sub-region would receive 52.8 percent of the Gulf of Mexico hammerhead shark base annual quota, or 13.4 mt dw (29,421 lb dw), while the western Gulf of Mexico sub-region would receive 47.2 percent of the Gulf of Mexico hammerhead shark base annual quota, or 11.9 mt dw (23,301 lb dw) (Table 2.20). NMFS would maintain the current quota linkages between the aggregated LCS and hammerhead shark management groups within each sub-region.

Table 2.19 Gulf of Mexico Blacktip Shark Landings (lb dw) by Alternative D3 sub-region (percent of landings presented in parenthesis). Source: GULFIN Database (2008-2013).

Management Group	Sub-region	2008	2009	2010	2011	2012	2013	Total Landings
Blacktip Shark	Eastern Gulf	45,976 (13.0)	85,686 (19.8)	18,819 (3.0)	28,948 (7.8)	53,268 (12.8)	35,165 (6.5)	267,862
	Western Gulf	308,247 (87.0)	347,206 (80.2)	603,205 (97.0)	340,075 (92.2)	362,255 (87.2)	502,889 (93.5)	2,463,877
Aggregated LCS	Eastern Gulf	291,467 (63.1)	256,570 (74.3)	96,401 (34.1)	359,928 (67.8)	338,360 (57.1)	68,795 (17.8)	1,411,521
	Western Gulf	170,326 (36.9)	88,757 (25.7)	185,949 (65.9)	170,818 (32.2)	254,044 (42.9)	317,101 (82.2)	1,186,995
Hammerhead Shark	Eastern Gulf	33,501 (99.1)	58,936 (99.8)	21,767 (97.3)	37,698 (98.7)	11,917 (98.0)	0 (0.0)	163,819
	Western Gulf	293 (0.9)	101 (0.2)	604 (2.7)	495 (1.3)	248 (2.0)	0 (0.0)	1,741

Table 2.20 **Potential Gulf of Mexico Blacktip, Aggregated LCS, and Hammerhead Shark Quotas by Sub-Region.** Source: GULFIN Database (2008-2013) for blacktip shark and aggregated LCS management groups; eDealer Database (2014) for hammerhead shark management group. Potential regional quotas are based on the 2014 base annual quotas of blacktip shark (256.6 mt dw; 565,700 lb dw), aggregated LCS (157.5 mt dw; 347,317 lb dw), and hammerhead shark (25.3 mt dw; 55,722 lb dw).

Management Group	Sub-region	Total Landings (lb dw)	Percentage of Landings	2014 Quota (lb dw)	LCS Sub-Regional Quotas under Alternative D3	
					lb dw	mt dw
Blacktip Shark	Eastern Gulf	267,862	9.8	565,700	55,439	25.1
	Western Gulf	2,463,877	90.2		510,261	231.5
Aggregated LCS	Eastern Gulf	1,411,521	54.3	347,317	188,593	85.5
	Western Gulf	1,186,995	45.7		158,724	72.0
Hammerhead Shark	Eastern Gulf	16,073	52.8	55,722	29,421	13.4
	Western Gulf	14,374	47.2		23,301	11.9

Alternative D4 Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks along 89° 00’ W. longitude into western and eastern sub-regional quotas and maintain the LCS quota linkages for aggregated LCS and hammerhead sharks in the eastern sub-region of the Gulf of Mexico region; remove the linkage in the western sub-region of the Gulf of Mexico region and prohibit the harvest and landing of hammerhead sharks in that sub-region

As in Alternative D2, under Alternative D4, the boundary between the western and eastern Gulf of Mexico sub-regions would be drawn along 89° 00’ W. long. This longitude correlates to the boundary between U.S. federal fishing catch areas 11 and 12 from within the dealer reporting system. All fish harvested in waters off Texas and Louisiana, as well as fish harvested in waters off Mississippi west of 89° 00’ W. longitude (see Figure 2.3) would be considered from the western Gulf of Mexico sub-region, while all fish harvested east of 89° 00’ W. longitude would be considered from the eastern Gulf of Mexico sub-region.

In the Draft EA for Amendment 6, sub-regional quotas in the Gulf of Mexico were originally calculated using aggregated LCS, hammerhead shark, and blacktip shark landings by year for the different sub-regions from the GULFIN Database from 2008-2013, using methodologies similar to those outlined above in Alternative D2. Based on this data and methodologies used to calculate sub-regional quotas, 99.4 percent of the hammerhead shark base annual quota would have been apportioned to the eastern sub-region, while only 0.6 percent to the eastern sub-region (see Table 2.18 in the Draft EA for Amendment 6). As such, NMFS felt it was appropriate to maintain the linkage

between aggregated LCS and hammerhead sharks in the eastern Gulf of Mexico sub-region because of the overlap of ranges of these management groups, but would eliminate the linkage between aggregated LCS and hammerhead sharks in the western Gulf of Mexico sub-region and prohibit the harvest and landings of hammerhead sharks in the western Gulf of Mexico sub-region, due to predicted challenges associated with monitoring a small quota of 0.1 mt dw. However, since publication of the Draft EA for Amendment 6 and based in part on public comment, NMFS has reconsidered the source and years of landing data originally for the hammerhead shark management group. NMFS has become aware of issues with how hammerhead sharks were reported in GULFIN, as well as how the new hammerhead shark management group (implemented mid-season in 2013 under Amendment 5a to the 2006 Consolidated HMS FMP) impacted the landings data in GULFIN. Due to these issues, landings of hammerhead sharks reported in GULFIN likely underestimated the magnitude and regional distribution of landings in the Gulf of Mexico.

As such, while Alternative D4 was preferred in the Draft EA, it is no longer the preferred alternative. This alternative, among other things, would have set the hammerhead shark sub-regional quota for the western sub-region at 0 mt dw, prohibiting retention of hammerhead sharks. Given the issues with the GULFIN landings data for hammerhead sharks, removing quota linkages between aggregated LCS and hammerhead sharks and prohibiting retention of hammerhead sharks in the western sub-region are no longer preferred. Additionally, during the public comment period, NMFS received requests that a small hammerhead shark quota be provided to the western Gulf of Mexico sub-region because commenters noted that catches in this area had recently increased. Providing a quota to the western Gulf of Mexico sub-region would prevent large numbers of hammerhead sharks from being discarded, as in recent years a higher number of hammerhead sharks were reported caught in the area that would now be defined as the western sub-region.

Alternative D5 Establish a non-blacknose SCS TAC of 931.9 mt dw and maintain the 2014 commercial base annual non-blacknose SCS quota of 45.5 mt dw (100,317 lb dw)

Under Alternative D5, for the Gulf of Mexico region, NMFS would establish a non-blacknose SCS TAC and maintain the 2014 commercial base annual non-blacknose SCS quota of 45.5 mt dw (100,317 lb dw). In SEDAR 34, NMFS performed a stock assessment on Atlantic sharpnose and bonnethead sharks. As described in Chapters 1 and 3, NMFS accepted the assessment as the best available science, and determined that the status of the Atlantic sharpnose shark stock in the Gulf of Mexico region is not overfished with no overfishing occurring, while the status of the bonnethead shark stock is unknown.

Based on the uncertainty with the SEDAR 34 stock assessment results, NMFS would establish a TAC based on current landings. NMFS would use current landing levels, instead of taking a more conservative approach based only on the bonnethead shark stock assessment, because, as explained under Alternative C6, using a more conservative TAC based only on the results of the bonnethead shark stock assessment does not take into account stock assessment results for Atlantic sharpnose and would be unnecessarily conservative. Consistent with the methodology described in Alternative C6,

this TAC would be calculated by summing all of the sources of mortality for Atlantic sharpnose, bonnethead, and finetooth sharks in the Gulf of Mexico region (recreational landings, commercial discards, and research set-aside mortality) (Table 2.21) and the 2014 commercial base annual quota. This results in a non-blacknose SCS TAC for the Gulf of Mexico region of 931.9 mt dw. The Gulf of Mexico non-blacknose SCS TAC and commercial quota would be calculated using the following methodology:

> (Gulf of Mexico non-blacknose SCS TAC) = (recreational Atlantic sharpnose, bonnethead, and finetooth shark landings) + (Atlantic sharpnose, bonnethead, and finetooth shark commercial discards) + (research set aside) + (Gulf of Mexico non-blacknose SCS base annual quota)

- **931.9 mt dw** (Gulf of Mexico non-blacknose SCS TAC) = 66.2 mt dw (recreational Atlantic sharpnose, bonnethead, and finetooth shark landings) + 818.7 mt dw (commercial Atlantic sharpnose, bonnethead, and finetooth shark discards) + 1.5 mt dw (research set-aside) + **45.5 mt dw (Gulf of Mexico non-blacknose SCS base annual quota)**

Table 2.21 Average annual Atlantic sharpnose, bonnethead, and finetooth shark mortality (2008-2012) used to estimate the Atlantic non-blacknose SCS base annual quota and TAC.
Sources: SEDAR 13 and 34. Commercial discard estimates from data reported in SEDAR 34, SEDAR 13, and the Southeast bottom longline and gillnet observer programs. Estimates for the 2012 recreational landings and commercial discards from the shrimp trawl fishery for Atlantic sharpnose and bonnethead sharks were based on the 2011 landings. NMFS used the 2005 recreational landings and commercial discards from the shrimp trawl fishery in SEDAR 13 for finetooth sharks.

Species	Gear		Weight (lb dw)	Weight (mt dw)	Percentage
Atlantic Sharpnose	Recreational Landings		139,761	63.4	7%
	Commercial Discards	Longline and Gillnet	1,366	0.6	< 1%
		Shrimp Trawl	1,177,814	534.3	60%
	Research Set-Aside		3,104	1.4	< 1%
Bonnethead	Recreational Landings		497	0.2	< 1%
	Commercial Discards	Longline and Gillnet	53	< 0.1	< 1%
		Shrimp Trawl	625,499	283.7	32%
	Research Set-Aside		281	0.1	< 1%
Finetooth	Recreational Landings		5,638	2.6	< 1%
	Commercial Discards	Longline and Gillnet	13	< 0.1	< 1%
		Shrimp Trawl	0	0	0%
	Research Set-Aside		0	0	0%
Total			1,954,026	886.4	100%

Alternative D6 Establish a non-blacknose SCS TAC of 954.7 mt dw and increase the quota to the 2014 adjusted annual quota of 68.3 mt dw (150,476 lb dw)

Under Alternative D6, NMFS would establish a non-blacknose SCS TAC of 954.7 mt dw and increase the commercial quota to the 2014 adjusted annual quota of 68.3 mt dw (150,476 lb dw). This alternative would maintain the 2014 quota levels due to uncertainty with the SEDAR 34 stock assessment and comments from the stock assessment peer reviewers, who expressed concern that bonnethead sharks were not split into two different stocks and analyzed in a manner similar to what was done with Atlantic sharpnose sharks. Specifically, due to underharvests in the non-blacknose SCS stock across the Atlantic and Gulf of Mexico in 2012 and 2013, the adjusted Gulf of Mexico non-blacknose SCS quotas for 2013 and 2014 were 67.7 mt dw (149,161 lb dw) and 68.3 mt dw (150,476 lb dw), respectively. Thus, for this alternative, NMFS would establish a commercial quota of 68.3 mt dw, which would maintain landings at 2014 levels, as it is the same as the quota implemented during the 2014 fishing year. NMFS used the same methodology for calculating a TAC as Alternative D5, except added the 2014 adjusted quota of 68.3 mt dw to all the sources of mortality for Atlantic sharpnose, bonnethead, and finetooth sharks in the Gulf of Mexico region (recreational landings, commercial discards, and research set-aside mortality) (Table 2.21) to calculate a TAC of 954.7 mt dw for Gulf of Mexico non-blacknose SCS.

Alternative D6 was preferred in the Draft EA for Amendment 6, but is no longer the preferred alternative. During the public comment period, NMFS received requests to implement the non-blacknose SCS TAC and quota proposed under Alternative D7, and to prohibit retention of blacknose sharks in the Gulf of Mexico to prevent early closure of the non-blacknose SCS fishery. NMFS has acknowledged these concerns by developing a new preferred alternative, Alternative D8, which will address both issues of the limited non-blacknose SCS quota and linkage to a small blacknose shark quota, while also maintaining harvest of non-blacknose SCS at sustainable levels.

Alternative D7 Establish a non-blacknose SCS TAC of 1,064.9 mt dw and increase the commercial quota to 178.5 mt dw (393,566 lb dw)

Under Alternative D7, NMFS would establish a non-blacknose SCS TAC and increase the commercial quota to twice the 2013 landings, which is 178.5 mt dw (393,566 lb dw). In 2013, the final landings for non-blacknose SCS in the Gulf of Mexico region were 89.3 mt dw (196,783 lb dw). NMFS analyzed this quota based on the results of the SEDAR 34 stock assessment. Because projections from the Gulf of Mexico bonnethead and Atlantic sharpnose shark stock assessments indicated that there was a 70 percent chance both stocks could withstand harvest levels almost double current levels, doubling the commercial quota based on recent landings has a relatively low likelihood of negatively impacting Atlantic sharpnose and bonnethead stocks. As described above, NMFS determined that Atlantic sharpnose sharks are not overfished with no overfishing occurring and bonnethead sharks are unknown. NMFS used the same methodology for a TAC as Alternative D5, except added twice the 2013 landings, 178.5 mt dw, to all the sources of mortality for Atlantic sharpnose, bonnethead, and finetooth sharks in the Gulf of Mexico region (recreational landings, commercial discards, and research set-aside mortality) (Table 2.21) to calculate a TAC of 1,064.9 mt dw for Gulf of Mexico non-blacknose SCS.

Alternative D8 *Establish a non-blacknose SCS TAC of 999.0 mt dw, increase the commercial quota to 112.6 mt dw (248,215 lb dw), and prohibit the retention of blacknose sharks in the Gulf of Mexico – Preferred Alternative*

Alternative D8 was developed as a new preferred alternative based on public comment and additional analyses. Commenters requested that NMFS implement Alternative D7, as it represented a higher non-blacknose SCS TAC and quota, because bonnethead sharks do not comprise a large portion of the SCS landings and as such the SCS fishery should not be limited by the bonnethead shark assessment, as well as prohibit retention of blacknose sharks in the Gulf of Mexico to prevent early closure of the non-blacknose SCS fishery. This new alternative incorporates both comments, and falls within the scope of management measures that were either proposed or considered but not further analyzed in the Draft EA.

Under Alternative D8, the preferred alternative, NMFS would establish a non-blacknose SCS TAC of 999.0 mt dw, increase the commercial quota to 112.6 mt dw (248,215 lb dw), and prohibit the retention of blacknose sharks in the Gulf of Mexico. NMFS would also eliminate the quota linkage between the non-blacknose SCS and blacknose shark management groups in the Gulf of Mexico. NMFS used the same methodology to calculate the TAC and quota as outlined for Alternative D7. However, under Alternative D8, NMFS reduced the non-blacknose SCS quota from that originally included under Alternative D7 to account for blacknose shark discards, so that the level of discards would not exceed the 2015 base annual blacknose shark quota of 2.0 mt dw. This was done by calculating the interaction ratio between blacknose and non-blacknose SCS based on landings in 2013 and 2014, which is approximately 1:55 (i.e., 1 blacknose shark per 55 non-blacknose SCS). NMFS then multiplied the interaction ratio by the 2015 base annual quota for blacknose sharks to get the new non-blacknose SCS quota of 112.6 mt dw (55 non-blacknose SCS* 4,513 lb dw of blacknose sharks = 248,215 lb dw of non-blacknose SCS/ 2,204.6 lb = 112.6 mt dw).

2.5 UPGRADING RESTRICTIONS

Alternative E1 No Action: Do not remove current upgrading restrictions for shark limited access permit holders

Under Alternative E1, the No Action alternative, NMFS would not remove the upgrading restrictions in place for shark limited access permit holders. Thus, shark limited access permit holders would continue to be limited to upgrading a vessel or transferring a permit only if it does not result in an increase in horsepower of more than 20 percent or an increase of more than 10 percent overall, gross registered tonnage, or net tonnage from the vessel baseline specifications.

Alternative E2 *Remove current upgrading restrictions for shark limited access permit holders – Preferred Alternative*

Under Alternative E2, the preferred alternative, NMFS would remove the current upgrading restrictions for directed shark limited access permit holders. Currently, an owner may upgrade a

vessel with a directed shark limited access permit or transfer the limited access permit to another vessel only if the upgrade or transfer does not result in an increase in horsepower of more than 20 percent or an increase of more than 10 percent in length overall, gross registered tonnage, or net tonnage from the vessel baseline specifications. This alternative would remove these restrictions and allow directed shark limited access permit holders to upgrade their vessel or transfer the limited access permit to another vessel without the current restrictions related to an increase in horsepower, length overall, or tonnage.

2.6 ALTERNATIVES CONSIDERED BUT NOT FURTHER ANALYZED

This section includes alternatives NMFS considered but decided not to further analyze because the alternatives did not meet the screening criteria, as described below.

Alternative F Commercial Sandbar Shark Fishery Quota

Alternative F would implement a new commercial sandbar fishery quota that would allow commercial fishermen to incidentally land a limited number of sandbar sharks outside of the Atlantic shark research fishery.

In Amendment 2, NMFS prohibited the retention of sandbar sharks in the commercial and recreational fisheries and established, among other things, an Atlantic shark research fishery that allowed limited sandbar landings. The objective of the Atlantic shark research fishery is to manage a very limited sandbar quota within a small, closely-observed research fishery in order to maintain a time series of catch data, to obtain life history data of sandbar and other Atlantic shark species for stock assessments, and to meet NMFS' research needs and objectives. Through this shark research fishery, federal commercial shark fishermen can apply and be selected on an annual basis to assist NMFS in the collection of fishery-dependent data while earning revenue from selling additional sharks, including sandbar sharks. Only the commercial shark vessels selected to participate in the shark research fishery with an observer onboard are authorized to land and sell the available sandbar shark research quota as well as other LCS, SCS, and pelagic shark species. Participants in the shark research fishery are not authorized to possess any prohibited shark species. Commercial shark fishermen not participating in the shark research fishery may only land SCS, pelagic sharks, and LCS other than sandbar sharks. In the shark research fishery, the trip limits and gear restrictions are set every year depending on the number of selected vessels, available quota, number of NMFS-approved observers available, and the scientific and research needs for the year.

Since the Atlantic shark research fishery was implemented in 2008, the status of the sandbar shark stock has improved, going from "overfished with overfishing occurring," to "overfished," according to the results of the 2011 stock assessment (SEDAR 21). Furthermore, the limited numbers of boats that are in the resource-intensive shark research fishery have consistently been unable to catch the entire scientifically-recommended sandbar shark quota. In addition, the allowable annual sandbar quota has effectively increased as of 2013 now that all of the past underharvest has been accounted for (going from 87.9 mt to 116.6 mt). Based upon HMS dealer data from 2008 to 2013, the amount of sandbar shark research landings has declined due to limited observer coverage in recent

years. On average during this time period, only 64 percent of the sandbar shark research quota has been caught, leaving an average of 76,332 lb dw of unharvested sandbar research quota potentially available to fishermen outside the shark research fishery (Table 2.22). Under this alternative, a portion of the remaining sandbar shark research fishery quota could be allocated to federally-permitted commercial shark fishermen. The amount of sandbar shark research quota that would be allocated to each commercial shark permit holder outside the shark research fishery would depend on the unharvested sandbar shark research quota and eligible commercial shark permit holders.

Under this alternative, NMFS explored several different options of distributing the unused sandbar shark research quota. The first would allow only directed shark permit holders to receive an equal allocation of the new commercial sandbar shark quota on an annual basis. Based on the amount of sandbar shark research landings (Table 2.22), shark directed permit holders would potentially be able to land an average of 7 sandbar sharks per year per permit holder under this option. The allocation of sandbar sharks could range between 2 to 17 sandbar sharks per year per shark directed permit holder depending on how much of the unharvested sandbar shark research landings are allocated to create the new commercial sandbar shark quota. The second approach that NMFS explored would allow all directed and incidental shark permit holders to receive an equal allocation from the new commercial sandbar quota. Based on the amount of sandbar shark research landings (Table 2.22), directed and incidental shark permit holders would potentially be able to land an average of 3 sandbar sharks per year per permit holder. However, this allocation of sandbar sharks could range between 1 to 8 sandbar sharks per year per directed and incidental shark permit holder depending on how much of the unharvested sandbar shark research landings are allocated to create the new commercial sandbar shark quota. The final approach NMFS explored would only allow active directed permit holders (active being defined as directed permit holders with valid permits that landed one shark per year based on 2013 HMS electronic dealer reports) to receive an equal allocation from the new commercial sandbar quota. Based on the amount of sandbar shark research landings (Table 2.22), active shark directed permit holders would potentially be able to land on average of 17 sandbar sharks per year per permit holder. This allocation of sandbar sharks could range from 4 to 41 sandbar sharks per year per active directed shark permit holder. Under all three options, NMFS has concerns about monitoring and enforcing such small individual annual retention limits without the monitoring mechanisms that might be possible under a catch share scenario. NMFS is also concerned that changes to the shark research fishery could have negative effects on the status of the sandbar shark stock, which has improved and stabilized since the inception of the shark research fishery in 2008. In addition to the benefits to the sandbar shark stock, the shark research fishery and the current shark management structure appear to be stabilizing the dusky shark population. Management measures implemented in the shark research fishery, such as the limitation on soak times, limits on the number of hooks deployed per set, and dusky shark bycatch limits, allow for important life history data collection of dusky sharks, and would help to ensure the dusky shark rebuilding plan target is achieved.

These Predraft options were presented to the HMS AP in April 2014 and in September 2014. NMFS received mixed views on these management options. Some commenters felt that since the shark research fishery was unable to utilize the sandbar shark quota, some of that unused quota should be returned to the active commercial fishermen outside the research fishery. Others supported allowing a limited number of sandbar sharks, between 5 and 10 sandbar sharks per trip, incidentally

caught outside of the Atlantic shark research fishery on an annual basis. However, the available quota would only provide between 1 and 7 sandbar sharks per vessel *per year*, not per trip, as some HMS AP members thought would be beneficial. Additionally, NMFS received many negative comments from some HMS AP members due to the concerns of reopening a commercial fishery for sandbar sharks and potentially encouraging the targeting of an overfished stock. Those HMS AP members also expressed concern with potential identification issues and impacts to dusky sharks, which are overfished with overfishing occurring. Some HMS AP members felt that allowing fishermen to land sandbar sharks outside the research fishery would be in conflict with measures in Amendment 5b that are being considered to improve the stock status of dusky sharks. Some fishermen felt that the low individual sandbar allocation per permit holder per year was not worth the effort and would not be economically viable. In addition, some commenters would prefer NMFS to wait until the sandbar shark stock is no longer overfished and, at that time, consider reestablishing a commercial quota for all permit holders at a higher trip limit. Due to the comments received, the Agency's concern about monitoring such small individual retention limits (between 3 and 7 sandbar sharks per year), and the benefits to both the sandbar and dusky shark stocks, NMFS has decided not to further analyze the option to expand commercial sandbar shark opportunities to fishermen outside the shark research fishery at this time. NMFS may reexamine the commercial sandbar shark quotas once a new stock assessment has been completed. Until that time, NMFS would continue to only allow commercial sandbar shark landings from those fishermen that are participating in the shark research fishery.

Table 2.22 **Allocation of unused sandbar shark research quota to commercial fishermen outside the shark research fishery.** Note: Calculations are based on an average weight of a sandbar shark of 50 lb dw and eligible directed and/or incidental shark permit holders.

Year	Sandbar Research Quota (lb dw)	Sandbar Research Landings (lb dw)	Percentage of Sandbar Research quota landed	Unused sandbar research quota (lb dw)	Equal sandbar allocation lb dw per permit holder (# sandbar sharks per permit holder)		
					# Directed shark permit holders (219)	# Directed and Incidental shark permit holders (472)	# Active* Directed shark permit holders (90)
2008	193,784	151,497	78	42,287	193 (4)	90 (2)	470 (9)
2009	193,784	176,091	91	17,693	81 (2)	37 (1)	197 (4)
2010	193,784	143,227	74	50,557	231 (5)	107 (2)	562 (11)
2011	193,784	155,714	80	38,070	174 (3)	81 (2)	423 (8)
2012	193,784	68,212	35	125,572	573 (11)	266 (5)	1395 (28)
2013	257,056	73,244	28	183,812	839 (17)	389 (8)	2042 (41)
Average			64	76,332	349 (7)	162 (3)	848 (17)

*Active directed permit holders are defined as those with valid permits that landed one shark based on 2013 HMS electronic dealer reports.

Alternative G Implement separate LCS and SCS retention limits for bottom longline and gillnet gears

Under this alternative, NMFS would implement separate LCS and SCS retention limits for bottom longline and gillnet gears. NMFS received a request to examine the possibility of implementing separate retention limits for LCS and SCS harvested with bottom longline and gillnet gears due to potential differences in size and weights of sharks caught on these two gears. Gillnet fishermen have expressed concern that, because they land smaller sharks than bottom longline fishermen, the small retention limits disadvantage gillnet fishermen and result in bottom longline fishermen landing more, and therefore profiting more, from any particular shark quota.

In evaluating this option, NMFS examined data from the bottom longline and gillnet observer programs from 2008-2013. After looking at the average weights of LCS and SCS caught in both gear types, NMFS found that both bottom longline and gillnet fishermen are catching on average the same size SCS in both gears (Table 2.23). The data also shows that gillnet fishermen are primarily landing SCS. Currently, and with the alternatives considered in this document, there is no retention limit for SCS. Thus, implementing this alternative for SCS would require creating and separating retention limits per gear type for SCS, which would provide minimal benefits to fishermen using bottom longline and gillnet gears, since fishermen using the two gear types currently catch on average the same size SCS, and would cause further restrictions on the fishery that do not currently exist.

Table 2.23 **Average weights in pounds (lb) dressed weight (dw) of shark species caught in the bottom longline (BLL) and gillnet fisheries from 2008-2013.** Source: NMFS BLL and gillnet observer programs (2008-2013). Data has been converted from length (cm FL) to weight (lb dw).

Species	BLL average weight (lb dw)	Gillnet average weight (lb dw)	Difference in weight b/t BLL and Gillnet
Atlantic sharpnose shark	3.0	2.7	0.3
Blacknose shark	4.8	5.0	-0.2
Blacktip shark	10.4	4.6	5.8
Bonnethead shark	3.2	2.0	1.2
Bull shark	48.2	14.8	33.4
Dusky shark (prohibited)	94.1	10.3	83.9
Finetooth shark	7.3	3.1	4.3
Great hammerhead shark	128.3		
Hammerhead sharks	82.4		
Lemon shark	18.5		
Nurse shark	66.9		
Sandbar shark	50.4	5.3	45.1
Scalloped hammerhead shark	40.6	10.3	30.3
Silky shark	10.3		
Spinner shark	17.5	2.8	14.8
Tiger shark	42.5		

With regards to LCS, the observer data showed that gillnet fishermen are catching much smaller LCS than fishermen using bottom longline gear. These smaller LCS are likely juvenile sharks. Therefore, if NMFS were to separate the retention limits for LCS by gear type and increase the limit for gillnet fishermen, gillnet fishermen would be landing a higher number of small LCS. Given the susceptibility of many shark species to overfishing and the number of LCS that have either an unknown or overfished status, NMFS does not want to increase mortality on one particular life stage of any shark species without stock assessment analyses indicating that the species and/or stock can withstand that level of fishing pressure. Furthermore, the data indicate that gillnet fishermen, while they land LCS, do not land large numbers of LCS compared to SCS. In addition, setting different retention limits for bottom longline and gillnet gears could complicate enforcement of the regulations. In this rulemaking, NMFS is considering implementing increased LCS retention limits for fishermen with shark directed limited access permits that are using bottom longline and gillnet gears. NMFS believes that this potential increase in LCS retention limits for fishermen using either gear type would benefit both the bottom longline and gillnet fishermen, without causing disadvantages to either or to the stocks. As a result, NMFS has decided not to further analyze the option of separate retention limits by gear type.

Alternative H Apply the current Commercial Caribbean Small Boat permit shark retention limit of zero to all commercial shark permit holders in the Caribbean

Under this alternative, NMFS would apply the current zero retention limit that is in place for fishermen who hold a Commercial Caribbean Small Boat permit to all shark limited access permit holders in the Caribbean. Thus, those fishermen that currently hold a directed or incidental shark limited access permit would be prohibited from landing sharks in the Caribbean EEZ. At the September 2014 HMS AP meeting, NMFS presented this alternative as a potential management measure. NMFS received mixed comments on the Caribbean issue. Some HMS AP members preferred the zero shark retention limit for all shark permit holders in the Caribbean, while other members requested that NMFS increase the shark retention limits and implement a separate shark quota for permit holders in the Caribbean. In addition, HMS AP members requested NMFS to do more outreach and education on shark identification for fishermen in the Caribbean that are interacting with sharks. Based on these comments, NMFS will be considering the Caribbean region and retention issues and options in a separate rulemaking.

3.0 AFFECTED ENVIRONMENT

This chapter serves several purposes. It describes the affected environment (the fishery, the gears used, the communities involved, *etc*.) and describes 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 shark stocks; the marine ecosystems in the fishery management unit; the social and economic condition of the fishing interests, fishing communities, and fish processing industries; and the best available scientific information concerning the past, present, and possible future condition of shark stocks, ecosystems, and fisheries.

3.1 BIOLOGY AND LIFE HISTORY OF LCS AND SCS

Sharks belong to the class Chondrichthyes (cartilaginous fishes), which also includes rays, skates, and deep water chimaeras (ratfishes). From an evolutionary perspective, sharks are an old group of fishes characterized by skeletons lacking true bones. The earliest known sharks were identified from fossils from the Devonian period, over 400 million years ago. These primitive sharks were small creatures, about 60 to 100 cm long, that were preyed upon by larger armored fishes that dominated the seas.

Relative to other marine fish, sharks have a very low reproductive potential. Several important commercial species, including large coastal carcharhinids, such as sandbar (Casey et al., 1985; Sminkey and Musick, 1995; Heist et al., 1995; 76 FR 62331, October 7, 2011), lemon (Brown and Gruber, 1988), and bull sharks (*Carcharhinus leucas)* (Branstetter and Stiles, 1987), do not reach maturity until 12 to 18 years of age. Various factors determine this low reproductive rate: slow growth, late sexual maturity, one- to two-year reproductive cycles, a small number of young per brood, and specific requirements for nursery areas. These biological factors leave many species of sharks vulnerable to overfishing.

There is extreme diversity among the approximately 350 species of sharks, ranging from tiny pygmy sharks of only 20 cm (7.8 in) in length to the giant whale sharks over 12 meters (39 feet) in length. There are fast-moving, streamlined species such as mako (*Isurus* spp.*)* and thresher sharks (*Alopias* spp.), and sharks with flattened, ray-like bodies, such as angel sharks (*Squatina dumerili)*. The most commonly known sharks are large apex predators including the white (*Carcharodon carcharias*), mako, tiger (*Galeocerdo cuvier*), bull, and great hammerhead (*Sphyrna mokarran*). Some shark species reproduce by laying eggs, while others nourish their embryos through a placenta. While the life span of all shark species in the wild is not known, many species are considered long-lived and may live upwards of 30 to 40 years. The diversity in size, feeding habits, behavior, and reproduction, has contributed greatly to the evolutionary success of sharks.

The most significant reproductive adaptations of sharks are internal fertilization and the production of fully developed young or “pups”. These pups are large at birth, effectively reducing the number of potential predators and enhancing their chances of survival. During mating, the male shark inseminates the female with copulatory organs, known as claspers that develop on the pelvic fins. In most species, the embryos spend the entire developmental period protected within their

mother's body, although some species lay eggs. Most sharks produce a litter with a small number of young, usually ranging from two to 25, although large females of some species can produce litters of 100 or more pups. The production of fully-developed pups requires large quantities of nutrients to nourish the developing embryo. Traditionally, these adaptations have been grouped into three modes of reproduction: oviparity (eggs hatch outside body), aplacental viviparity (eggs hatch inside body), and viviparity (live birth).

Adults usually congregate in specific areas to mate. For some coastal shark species, females travel to specific nursery areas to pup. These nurseries are discrete geographic areas, usually in waters shallower than those inhabited by the adults. Frequently, the nursery areas are in highly productive coastal or estuarine waters where abundant small fishes and crustaceans provide food for the growing pups. These areas also may have fewer large predators, thus enhancing the chances of survival of the young sharks. In temperate zones, the young leave the nursery with the onset of winter; in tropical areas, young sharks may stay in the nursery area for a few years.

Seventy-three species of sharks are known to inhabit the waters along the U.S. Atlantic coast, including the Gulf of Mexico and the waters around Puerto Rico and the U.S. Virgin Islands. Thirty-nine species are managed by HMS. Deep-water sharks were removed from the HMS management unit in 2003. Based on ecology and fishery dynamics, NMFS divided HMS sharks into four species groups or complexes for purposes of HMS management: (1) LCS, (2) SCS, (3) pelagic sharks, and (4) prohibited species (Table 3.1). HMS deepwater sharks were previously removed from Federal management in Amendment 1 to the 1999 FMP. There are no fisheries targeting deepwater sharks. NMFS will continue to include sharks in this group for data reporting under the original 1993 Atlantic Shark FMP. The smoothhound shark complex, which was originally proposed for Federal management under Amendment 3 to the Consolidated HMS FMP, would become federally managed once Amendment 9 to the 2006 Consolidated HMS FMP is finalized.

Table 3.1 Common names of shark species included within the four species management units under Amendment 2.

Species Complex	Shark Species Included
LCS (11)	Sandbar+, silky*, tiger, blacktip, bull, spinner, lemon, nurse, smooth hammerhead*^, scalloped hammerhead*°^, and great hammerhead*^ sharks
SCS (4)	Atlantic sharpnose, blacknose, finetooth, and bonnethead sharks
Pelagic Sharks (5)	Shortfin mako, thresher, oceanic whitetip*^, porbeagle^, and blue sharks
Prohibited Species (19)	Whale^, basking^, sand tiger, bigeye sand tiger, white^, dusky, night, bignose, Galapagos, Caribbean reef, narrowtooth, longfin mako, bigeye thresher, sevengill, sixgill, bigeye sixgill, Caribbean sharpnose, smalltail, and Atlantic angel sharks

*Prohibited from commercial retention on pelagic longline gear and recreationally if swordfish, tunas, and/or billfish are also retained

+ Prohibited from retention with the exception of vessels selected to participate in the shark research fishery

° Distinct population segment (DPS) in the central and southwest Atlantic Ocean listed as threatened under the Endangered Species Act
^ Listed under CITES Appendix II

3.2 STATUS OF THE ATLANTIC LCS AND SCS STOCKS

The thresholds used to determine the status of Atlantic HMS are fully described in Chapter 3 of the 1999 FMP and Amendment 1 to the Billfish FMP, and are presented in Figure 3.1. These thresholds were incorporated into the 2006 Consolidated HMS FMP. These thresholds are based upon the thresholds described in a paper providing technical guidance for implementing National Standard 1 of the Magnuson-Stevens Act (Restrepo *et al*., 1998).

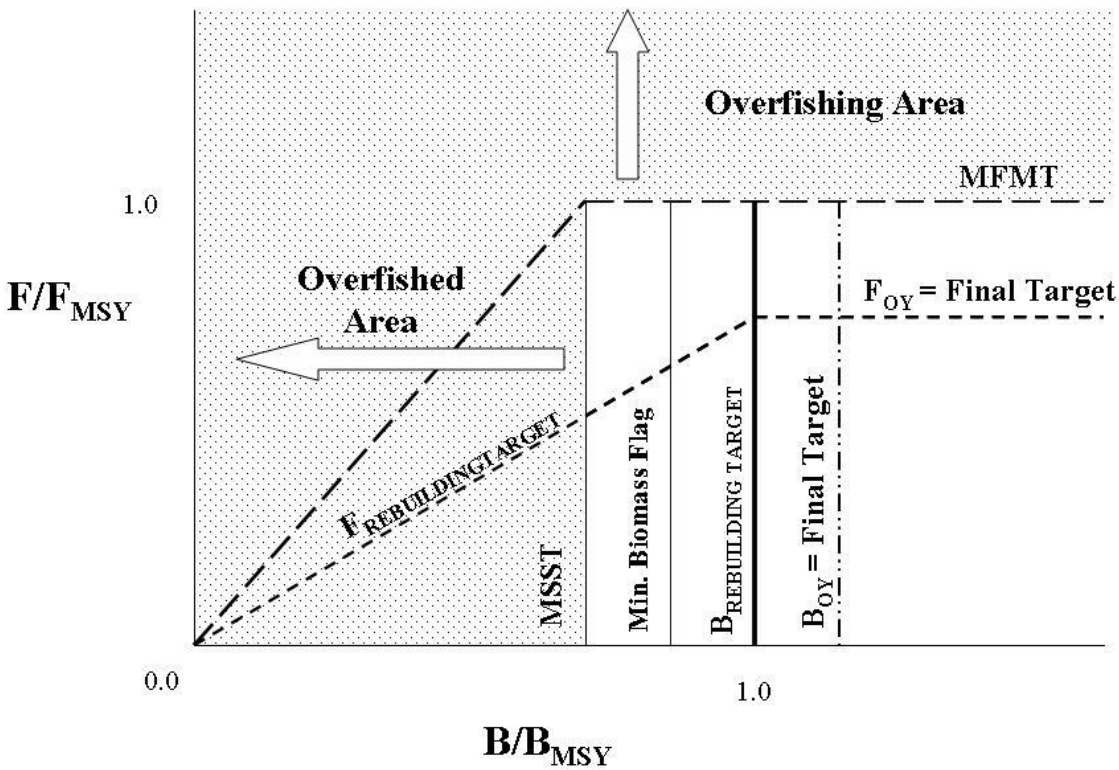


Figure 3.1: Illustration of the status determination criteria and rebuilding terms.

In summary, a species is considered overfished when the current biomass (B) is less than the minimum stock size threshold ($B < B_{MSST}$). The minimum stock size threshold (MSST) is determined based on the natural mortality of the stock and B_{MSY}. MSY is the maximum long-term average yield that can be produced by a stock on a continuing basis. The biomass can be lower than B_{MSY}, and the stock not be declared overfished as long as the biomass is above B_{MSST}.

Overfishing may be occurring on a species if the current fishing mortality (F) is greater than the fishing mortality at MSY (F_{MSY}) ($F > F_{MSY}$). In the case of F, the maximum fishing mortality

threshold (MFMT) is F_{MSY}. Thus, if F exceeds F_{MSY}, the stock is experiencing overfishing. If a species is declared overfished or has overfishing occurring, action to rebuild the stock and/or end overfishing is required by law. A species is considered to be rebuilt when B is equal to or greater than B_{MSY} and F is less than F_{MSY}. A species is considered healthy when B is greater than or equal to the biomass at optimum yield (B_{OY}) and F is less than or equal to the fishing mortality at optimum yield (F_{OY}).

Atlantic shark stock assessments for large coastal sharks and small coastal sharks are generally completed by the Southeast Data, Assessment, and Review (SEDAR) process. The International Commission for the Conservation of Atlantic Tunas' (ICCAT's) Standing Committee on Research and Statistics (SCRS) has assessed blue, shortfin mako, and porbeagle sharks. All SCRS final stock assessment reports can be found at www.iccat.int/assess.htm. In some cases, NMFS also looks at available resources, including peer reviewed literature, for external assessments that, if deemed appropriate, could be used for domestic management purposes. NMFS followed this process in determining the stock status of scalloped hammerhead sharks based on an assessment for the sharks completed by Hayes et al. (2009).

Additional details on stock statuses for the large and small coastal Atlantic sharks can be found in Chapters 1 and 3 of Amendment 5a, Chapter 2 of the 2013 Stock Assessment and Fishery Evaluation (SAFE) Report, as well as in the summary table below (Table 3.2). Results from the most recent 2013 SEDAR stock assessments on Atlantic sharpnose and bonnethead sharks are presented below.

Atlantic Sharpnose sharks

The 2013 assessment was conducted following the SEDAR process as a standard assessment and included data through 2011. There were twenty model runs for this species. Seventeen of the eighteen model runs that considered the species to be a single stock found that the species as a single stock was not overfished and no overfishing was occurring (Base run: F2011/FMSY = 0.34, SSF2011/SSFMSY = 1.73). A sensitivity run that included only those indices that were decreasing found that the species as a single stock may be overfished with overfishing occurring (F2011/FMSY = 1.06, SSF2011/SSFMSY = 0.40).

The scientists at the 2013 assessment could use catch and indices of abundance data that were split between stocks because the scientists at the 2007 assessment had considered such a split and therefore had split overall catch data and indices of abundance between the Gulf of Mexico and Atlantic regions. This split in data allowed the scientists to conduct sensitivity analyses using the biology for each stock with the respective catch data and indices. The Atlantic sensitivity run found the stock was not overfished and no overfishing was occurring (F2011/FMSY = 0.23; SSF2011/SSFMSY = 2.07). The Gulf of Mexico sensitivity run also found the stock was not overfished and no overfishing was occurring (F2011/FMSY = 0.57; SSF2011/SSFMSY= 1.01).

Considering the assessment as a whole, including the multiple sensitivity analyses, the scientists determined that the assessment provided a consistent picture of stock status, especially in

terms of the stock not being overfished. When assessed as a single stock, the status of Atlantic sharpnose sharks was not overfished and no overfishing was occurring. Regarding the Atlantic and Gulf of Mexico sensitivity runs, the scientists found the model fit to the Atlantic catch data was generally good and the model fit to the Gulf of Mexico catch data was very good. In both cases, the model runs found that neither the Atlantic nor the Gulf of Mexico stock was overfished or had experienced overfishing. However, the scientists noted that the Gulf of Mexico stock was likely more depleted than the Atlantic stock as a result of increased exploitation and lower productivity.

Two of the three peer reviewers agreed with the results of the Atlantic sharpnose shark assessment; the third reviewer was concerned about bias in the shrimp trawl data. Specifically, the first peer reviewer stated the results of the analysis that included runs assuming two separate stocks suggest that the two parts of the population are not overexploited and the level of catches that are taken from each of them is below the maximum sustainable yield level. The second reviewer stated that the quantitative estimates of the stock status based only on the Atlantic and Gulf of Mexico stocks are likely more representative of the stock status than the single stock region base case, and that this assessment is of high scientific quality and represents the best available science. The last reviewer also noted that stock status for the different scenarios tested were robust based on the sensitivity analyses; however, this peer reviewer felt the effect of uncertainty in the shrimp bycatch series was not investigated. The reviewer felt that the uncertainty involved in the shrimp bycatch estimates could affect conclusions about overfishing and overfished thresholds. Once the Agency received the peer reviews, Agency scientists explored how incorporating uncertainty in the shrimp bycatch could affect stock status. They found that even with the inclusion of this uncertainty, the stock status remained unchanged.

Based on the generally positive reviews of the peer reviewers, NMFS recommended accepting the entire assessment as the best available science. Further, NMFS recommended splitting the Atlantic sharpnose shark species into two stocks – an Atlantic stock and a Gulf of Mexico stock – and determined that the status of both of these stocks was "not overfished, no overfishing." These statuses are based on the results of the two sensitivity runs that used the respective data and biology for these two stocks and the statements of the peer reviewers that indicate the results of the stock sensitivity runs are likely more representative of the stock status than the single stock base case. Thus, NMFS felt it was appropriate to use the point estimates for the Atlantic and Gulf of Mexico sensitivity runs to calculate the status determination criteria.

The next assessment for Atlantic sharpnose has yet to be scheduled but will include the request for two benchmark assessments, one for each stock.

Bonnethead sharks

The 2013 assessment was conducted following the SEDAR process as a standard assessment and included data through 2011. There were nineteen model runs for this species. Sixteen of the nineteen model runs, including the base run, found that the species – as a single stock – was not overfished and no overfishing was occurring (Base run: $F_{2011}/F_{MSY} = 0.50$, $SSF_{2011}/SSF_{MSY} = 1.27$). The continuity run indicated that overfishing was occurring ($F_{2011}/F_{MSY} = 1.01$, $SSF_{2011}/SSF_{MSY} =$

1.37). The sensitivity run that looked at only decreasing indices indicated the species may be overfished (F_{2011}/F_{MSY} = 0.96, SSF_{2011}/SSF_{MSY} = 0.58). The sensitivity run that looked at only Atlantic biology, described below, found that the species – as a single stock – was overfished with overfishing occurring.

Because the genetic and life history information indicated the stock should be split into two stocks, the scientists included two sensitivity runs to explore this potential state of nature. Because the 2007 benchmark stock assessment did not split the catch data and indices of abundance data between stocks, the 2013 assessment did not split the catch and indices of abundance data between stocks, which is different from what was done in the Atlantic sharpnose shark assessment. Thus, these sensitivity runs used the respective biology for each stock but did *not* split the data or indices between the different stocks. Specifically, the Atlantic sensitivity analysis used the Atlantic stock biology with the combined Gulf of Mexico and Atlantic catch data and indices of abundance; the Gulf of Mexico sensitivity analysis used the Gulf of Mexico stock biology with the combined Gulf of Mexico and Atlantic catch data and indices of abundance. The sensitivity run using the Atlantic biology for the single stock found the stock was overfished and overfishing was occurring (F_{2011}/F_{MSY} = 1.09; SSF_{2011}/SSF_{MSY} = 0.73). The sensitivity run use the Gulf of Mexico biology for the single stock found the stock was not overfished and no overfishing was occurring (F_{2011}/F_{MSY} = 0.45; SSF_{2011}/SSF_{MSY}= 1.48).

The assessment found that, when assessed as single stock, the status of bonnethead sharks was not overfished and no overfishing was occurring. The scientists noted that the 2013 assessment estimated a significantly more productive stock than the 2007 assessment, and concluded that, despite large catches in the 1980s and 1990s, the increased productivity of the stock, combined with the decline in catches in the past decade and the generally stable or increasing indices of relative abundance, makes the single stock of bonnethead shark resilient enough to not be overfished or experiencing overfishing. However, the scientists also stressed that there is strong evidence for two separate stocks and that using the biology corresponding to the Atlantic for the assessment for a single stock led to a different conclusion on stock status (i.e., the stock was overfished and overfishing was occurring). Thus, the scientists strongly recommended that a benchmark assessment for two separate stocks of bonnethead shark be undertaken when possible.

None of the peer reviewers agreed with the determination of bonnethead sharks for the species as a single stock. The reviewers all felt that the species should have been split into two different stocks and analyzed in a manner that is similar to what was done with Atlantic sharpnose sharks. Other than the decision not to split the species into two stocks and the resulting conclusions regarding the stock status, the reviewers felt the model used and the underlying data were appropriate and consistent with standard practices, although one reviewer would have preferred a simpler model be used. One reviewer felt that given that fundamental issue regarding the split, it was difficult to make conclusive statements about the status of both the Gulf of Mexico and Atlantic stocks. That same reviewer further stated that while the model suggests that the stock in the Gulf of Mexico might not be overexploited, it is not conclusive, since it is not known what the effect of the removal of the catch per unit effort indices that reflect relative abundance in the Atlantic would be on the model predictions for the part of the stock in the Gulf of Mexico. A second reviewer found that the

conclusion of the assessment of not overfished and no overfishing was occurring was based on the balance of evidence, across the alternative structural assumptions, and that while it is likely that the single stock and regional stocks are not overfished and not experiencing overfishing, any quantitative estimates are unreliable. This reviewer furthermore found that because the assessment did not split the stock, any inference from this stock assessment may only coincidentally reflect the status of the one, both, or neither of the stocks. The last reviewer was concerned about the potential effect of uncertainty in the shrimp bycatch series.

Because the peer reviewers found the model and underlying data were appropriate and consistent with standard practices, NMFS recommended accepting the underlying data (e.g., catches, indices, genetic information, life history information, etc.) as the best available science and appropriate for management use. In addition, given the agreement between the scientists and peer reviewers that the stocks should be split between the Atlantic and Gulf of Mexico, NMFS further recommended that the species be split into two stocks, an Atlantic stock and a Gulf of Mexico stock. However, given the results of the peer review, including statements that indicated the quantitative estimates from the model are not reliable, NMFS recommended not accepting the stock status from the bonnethead assessment. Instead, NMFS recommended that the status of both stocks should be classified as "unknown."

The next assessment for the bonnethead shark has yet to be scheduled but will include the request for two benchmark assessments, one for each stock.

Table 3.2 **Summary of stock assessment information and the current status of Atlantic HMS as of July 2014.** 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/fisheries_eco/status_of_fisheries/.

Species	Current Relative Biomass Level	B_{MSY}	Minimum Stock Size Threshold	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook – From Status of Stocks for U.S.-Managed Species	Years to Rebuild	Rebuilding Start Date (Rebuilding End Date)
Large coastal shark complex	*Unknown*	*Unknown*	(1-M) B_{MSY}	*Unknown*	*Unknown*	*Unknown*		
Sandbar sharks	SSF_{09}/SSF_{MSY} = 0.51 – 0.72	SSF_{MSY} = 349,330-1,377,800 (numbers of sharks)	301,821 – 1,190,419 (based on SSF_{MSY})	F_{09}/F_{MSY} = 0.29-2.62	0.004-0.06	Overfished; overfishing is not occurring	66	1/1/2005 (2070)
Blacktip sharks - Atlantic stock	*Unknown*	*Unknown*	(1-M) B_{MSY}	*Unknown*	*Unknown*	*Unknown*		
Blacktip sharks - Gulf of Mexico stock	SSF_{2010}/SSF_{MSY} = 2.00-2.66	SSF_{MSY} = 1,570,000 - 6,440,000 (numbers of sharks)	1,327,697 - 5,446,093 (1-M)*SSF_{MSY}	F_{2010}/F_{MSY} = 0.05–0.27	0.021-0.163	Not overfished; overfishing not occurring		
Dusky sharks	SSB_{09}/SSB_{MSY} = 0.41-0.50	*Unknown*	(1-M) B_{MSY}	F_{09}/F_{MSY} = 1.39- 4.35	0.01-0.05	Overfished; overfishing is occurring	100	7/24/2008 (2108)
Scalloped hammerhead sharks	N_{05}/N_{MSY} =0.45	N_{MSY} = 62,000 (numbers of sharks)	(1-M) B_{MSY}	F_{05}/F_{MSY} =1.29	0.11	Overfished; overfishing is occurring	10	7/3/2013 (2023)
Small coastal shark complex	N_{05}/N_{MSY} = 1.69	N_{MSY} = 30,000,000 (numbers of sharks)	21,000,000 (based on N_{MSY})	F_{05}/F_{MSY} = 0.25	0.09	Not overfished; overfishing not occurring		
Bonnethead sharks - Atlantic stock	*Unknown*	*Unknown*	(1-M) B_{MSY}	*Unknown*	*Unknown*	*Unknown*		
Bonnethead sharks - Gulf of Mexico stock	*Unknown*	*Unknown*	(1-M) B_{MSY}	*Unknown*	*Unknown*	Not overfished; overfishing not occurring		

Species	Current Relative Biomass Level	B_{MSY}	Minimum Stock Size Threshold	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook – From Status of Stocks for U.S.-Managed Species	Years to Rebuild	Rebuilding Start Date (Rebuilding End Date)
Atlantic sharpnose sharks- Atlantic stock	SSF_{2011}/SSF_{MSY} = 2.07	SSF_{MSY} = 4.86.E+06 (numbers of sharks)	(1-M) B_{MSY}	F_{2011}/F_{MSY} = 0.23	0.184	Not overfished; overfishing not occurring		
Atlantic sharpnose sharks - Gulf of Mexico stock	SSF_{2011}/SSF_{MSY} = 1.01	SSF_{MSY} = 1.79.E+07 (numbers of sharks)	(1-M) B_{MSY}	F_{2011}/F_{MSY} = 0.57	0.331	Not overfished; overfishing not occurring		
Blacknose sharks - Atlantic stock	SSF_{09}/SSF_{MSY} = 0.43 – 0.64	SSF_{MSY} = 77,577-288,360 (numbers of sharks)	62,294-231,553 (based on SSF_{MSY})	F_{09}/F_{MSY} = 3.26 – 22.53	0.01-0.15	Overfished; overfishing is occurring	30	7/3/2013 (2043)
Blacknose sharks - Gulf of Mexico stock	*Unknown*	*Unknown*	(1-M) B_{MSY}	*Unknown*	*Unknown*	*Unknown*		
Finetooth sharks	N_{05}/N_{MSY} = 1.80	N_{MSY} = 3,200,000 (numbers of sharks)	2,400,000 (based on N_{MSY})	F_{05}/F_{MSY} = 0.17	0.03	Not overfished; overfishing not occurring		
Smoothhound sharks – Atlantic stock	SSF_{2012}/SSF_{MSY} = 2.286	SSF_{MSY} = 4,726	3,701	F_{2012}/F_{MSY} = 0.792	F_{MSY} = 0.129	Not overfished; overfishing not occurring	*N/A*	*N/A*
Smoothhound sharks – Gulf of Mexico stock	N_{2012} = 1.27E+07	N_{MSY} = 7.19E+06	MSST ((1-M)*NMSY) = 5.53E+06	H_{2012}/H_{MSY} = 0.179	H_{MSY} = 0.106	Not overfished; overfishing not occurring	*N/A*	*N/A*

3.3 ATLANTIC LCS AND SCS HABITAT

The Magnuson-Stevens Act requires NMFS to identify and describe essential fish habitat (EFH) for each life stage of managed species (16 U.S.C. § 1855(b)(1), as implemented by 50 C.F.R. § 600.815), and to evaluate the potential adverse effects of fishing activities on EFH, in, including the cumulative effects of multiple fisheries activities (50 C.F.R. § 600.815(a)(2)). Habitats that satisfy the criteria in the Magnuson-Stevens Act have been identified and described as EFH in the 1999 FMP and in Amendment 1 to the 1999 FMP.

Sharks may be found in large expanses of the world's oceans, straddling jurisdictional boundaries. As many shark species are migratory, they are impacted by the condition of the habitats they occupy. Although many of the species frequent other oceans of the world, the Magnuson-Stevens Act only authorizes the description and identification of EFH 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 Exclusive Economic Zone (EEZ). Despite the broad distribution of Atlantic sharks as adults, during the pupping season and throughout their neonate (newborn) life stages, which may vary from a few to several months, they may utilize specific estuaries as pupping and nursery areas.

Shark habitat can be described in four broad categories: (1) coastal, (2) pelagic, (3) coastal-pelagic, and (4) deep-dwelling. Coastal species inhabit estuaries, the nearshore, and waters of the continental shelves, *e.g.*, blacktip, finetooth, bull, lemon, and Atlantic sharpnose sharks. Pelagic species, on the other hand, range widely in the upper zones of the oceans, often traveling over entire ocean basins. Examples include shortfin mako, blue, and oceanic whitetip sharks. Coastal-pelagic species are intermediate in that they occur both inshore and beyond the continental shelves, but have not demonstrated mid-ocean or transoceanic movements. Sandbar sharks are examples of a coastal-pelagic species. Deep-dwelling species, *e.g.*, most cat sharks (*Apristurus* spp.) and gulper sharks (*Centrophorus* spp.), inhabit the dark, cold waters of the continental slopes and deeper waters of the ocean basins. For a detailed description of shark coastal and estuarine habitat, continental shelf and slope area habitat, and pelagic habitat for the Atlantic, Gulf of Mexico, and U.S. Caribbean, please refer to Section 3.3.2 of the 2006 Consolidated HMS FMP.

On June 12, 2009, NMFS published a Notice of Availability of the Final Environmental Impact Statement for Amendment 1 to the 2006 Consolidated HMS FMP (74 FR 28018) (NMFS 2008b). NMFS had completed the five year review and update of EFH for Atlantic HMS. As a result of Amendment 1, EFH was updated for all federally-managed Atlantic HMS. The amendment updated and revised EFH boundaries for HMS, designated a new habitat area of particular concern (HAPC), and analyzed fishing and non-fishing impacts on EFH. As described in Amendment 1 to the Consolidated Atlantic HMS FMP, there is no evidence that physical effects caused by any authorized HMS gears (*i.e.*, handgear) are affecting EFH for targeted or non-targeted species, to the extent that physical effects can be identified on the habitat or the fisheries. As such, the actions analyzed in this EA are not expected to increase gear impacts on any Atlantic HMS EFH beyond those impacts that have already been analyzed in Amendment 1 or any EFH designated by any other FMP for species in the U.S. Atlantic EEZ, which were described as not likely to have an effect on HMS or other

managed species' EFH. Therefore, habitat effects will not be discussed further. Amendment 3 to the 2006 Consolidated HMS FMP designated EFH for the smoothhound shark complex, using ESRI ArcGIS and Hawth's Analysis Tools (www.spatialecology.com) to analyze data from fisheries independent surveys using methodologies established in Amendment 1. EFH designations for Atlantic shark fisheries are available at http://www.nmfs.noaa.gov/sfa/hms/documents/2015_final_efh_review.pdf. On June 29, 2015, NMFS announced the availability of the Final Atlantic HMS EFH 5-Year Review and intent to initiate an amendment to the 2006 Consolidated Atlantic HMS FMP to revise Atlantic HMS EFH descriptions and designations (80 FR 37598; July 1, 2015). The purpose of this review was to gather relevant information and determine whether modifications to existing EFH descriptions and designations are warranted, in compliance with the requirements of the Magnuson-Stevens Act and implementing regulations. During this review, NMFS determined that revisions to EFH descriptions and designations are warranted, and an amendment to the 2006 Consolidated Atlantic HMS FMP will be initiated.

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, Delaware Bay, Chesapeake Bay, MD, and Great Bay, NJ, have been identified as HAPCs for sandbar sharks (NMFS 1999). A 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. A HAPC was also designated for sandbar sharks, with the establishment of a time/area closure off the coast of North Carolina. The sandbar shark HAPC serves as important nursing and pupping grounds. Maps of these areas are available on the HMS Management Division website at http://www.nmfs.noaa.gov/sfa/hms/EFH/index.htm.

3.4 MANAGEMENT HISTORY OF ATLANTIC LCS AND SCS FISHERIES

3.4.1 DOMESTIC SHARK MANAGEMENT

Amendment 6 will examine the Atlantic shark fisheries based on management measures that have been implemented since 2008. In 2008, NMFS implemented Amendment 2 to the 2006 Consolidated HMS FMP, which, as described below, was a major action that changed how the shark fishery operated by implementing a prohibition on the landing and sale of sandbar sharks except for a limited number of shark fishermen participating in a shark research fishery, a reduced trip limit for all directed shark permit holders, and a requirement to land all sharks with fins naturally attached. NMFS used landings data from 2008 onward to conduct analyses for the options that are considered in this document to appropriately reflect those changed operations and the current management of the fisheries. For more information on the complete HMS management history, please refer to the 2006 Consolidated HMS FMP and Amendments 2, 3, and 5a to the 2006 Consolidated HMS FMP.

Amendment 2 to the 2006 Consolidated HMS FMP

On April 10, 2008, NMFS issued the FEIS for Amendment 2 to the 2006 Consolidated HMS FMP (Amendment 2), based on several stock assessments that were completed in 2005/2006. Those stock assessments for dusky (*Carcharhinus obscurus*) and sandbar sharks (*C. plumbeus*) indicated that these species were overfished with overfishing occurring and that porbeagle sharks (*Lamna nasus*) were overfished. In Amendment 2, NMFS implemented management measures consistent with stock assessments for sandbar, porbeagle, dusky, blacktip (*C. limbatus*), and the LCS complex. The implementing regulations were published on June 24, 2008 (73 FR 35778; corrected version published July 15, 2008; 73 FR 40658). Management measures implemented in Amendment 2 included, but were not limited to, establishing rebuilding plans for porbeagle, dusky, and sandbar sharks consistent with stock assessments; implementing commercial quotas and retention limits consistent with stock assessment recommendations to prevent overfishing and rebuild overfished stocks; modifying recreational measures to reduce fishing mortality of overfished/overfishing stocks; modifying reporting requirements; requiring that all Atlantic sharks be offloaded with fins naturally attached; collecting shark life history information via the implementation of a shark research program; and implementing time/area closures recommended by the South Atlantic Fishery Management Council.

Amendment 3 to the 2006 Consolidated HMS FMP

Based on the 2007 SCS SEDAR 13 stock assessment, which was an update to the 2002 SCS stock assessment, NMFS determined blacknose sharks (*C. acronotus*) to be overfished with overfishing occurring in 2008 (73 FR 25665, May 7, 2008). In 2008, ICCAT's SCRS conducted an updated species-specific stock assessment for North Atlantic shortfin mako sharks (*Isurus oxyrinchus*). Based on the results of the ICCAT stock assessment, the United States determined that the stock was experiencing overfishing and was not overfished but was approaching an overfished condition. Based on this stock assessment, NMFS determined that North Atlantic shortfin mako sharks had been experiencing overfishing as of December 31, 2008 (74 FR 29185, July 19, 2009). To address the results of these stock assessments, NMFS released the FEIS for Amendment 3 to the 2006 Consolidated HMS FMP (Amendment 3) to implement management measures to rebuild blacknose sharks and end overfishing of blacknose and shortfin mako shark. This amendment also added smoothhound sharks (smooth dogfish (*Mustelus canis*) and Florida smoothhound (*M. norrisi*)) under NMFS management. The implementing regulations were published on June 1, 2010 (75 FR 30484). Management measures implemented in Amendment 3 included, but were not limited to, establishing a non-blacknose SCS quota of 221.6 mt dw and a blacknose shark quota of 19.9 mt dw. These quotas were linked to ensure both fisheries close when one of the quotas is reached.

Implementation of smoothhound management measures analyzed in Amendment 3 was initially delayed until the 2012 fishing season. However, the later-enacted Shark Conservation Act of 2010 necessitated NMFS re-evaluating some of its shark management measures. Therefore, NMFS delayed the effective date of implementation to fully consider the Shark Conservation Act implications and allow time for Section 7 consultation under the Endangered Species Act to be

completed. The final rule to delay these measures became effective in December 2011 (76 FR 70064, November 10, 2011). The relevant regulatory sections will be re-established, with any needed amendments, in a final rule that implements both the smoothhound shark provisions of the Shark Conservation Act and any requirements of the Section 7 consultation regarding smoothhound sharks.

Amendment 5, 5a, and 5b to the 2006 Consolidated HMS FMP

Based on a stock assessment for scalloped hammerhead sharks (*Sphyrna lewini*), NMFS made the determination on April 28, 2011, that scalloped hammerhead sharks were overfished and experiencing overfishing (76 FR 23794). Following this determination, on October 7, 2011, NMFS published a notice announcing its intent to prepare Amendment 5 to the 2006 Consolidated HMS FMP (Amendment 5) with an Environmental Impact Statement in accordance with the requirements of the National Environmental Policy Act (76 FR 62331). NMFS made stock status determinations for sandbar, dusky, and blacknose sharks based on the results of SEDAR 21. Determinations in the October 2011 notice included that sandbar sharks were still overfished, but no longer experiencing overfishing, and that dusky sharks were still overfished and still experiencing overfishing (i.e., their stock status had not changed). The October 2011 notice also acknowledged that there are two stocks of blacknose sharks, the Atlantic blacknose shark stock and the Gulf of Mexico blacknose shark stock. The determination stated that the Atlantic blacknose shark stock was overfished and experiencing overfishing, and the Gulf of Mexico blacknose shark stock status was unknown.

A Federal Register notice on May 29, 2012 (77 FR 31562), notified the public that NMFS was considering the addition of Gulf of Mexico blacktip sharks to Amendment 5. This addition was proposed because Gulf of Mexico blacktip sharks were undergoing a stock assessment as part of the SEDAR 29 process, and that process would be completed before Amendment 5 was finalized. Therefore, NMFS determined that the addition of Gulf of Mexico blacktip sharks to Amendment 5 would allow NMFS to address new scientific information in the timeliest manner and facilitate administrative efficiency by optimizing our resources. NMFS also expected that this addition would provide better clarity and communicate to the public any possible impacts of the rulemaking on shark fisheries by combining potential management measures resulting from recent shark stock assessments into fewer rulemakings. Since publication of the Federal Register notice announcing the intent to consider the addition of Gulf of Mexico blacktip sharks in Amendment 5, NMFS accepted the results of the stock assessment as final. The results indicated that the Gulf of Mexico blacktip shark stock was not overfished and overfishing is not occurring.

The Notice of Availability of the DEIS for Amendment 5 and the proposed rule published in the Federal Register on December 7, 2012 (77 FR 73029), and November 26, 2012 (77 FR 70552), respectively. The public comment period ended on February 12, 2013.

Decision to Split Amendment 5 into Amendments 5a and 5b

During the comment period, NMFS received numerous comments on the proposed dusky shark measures regarding the data sources used and the analyses of these data. NMFS also received many comments requesting consideration of approaches to dusky shark fishery management that were

significantly different from those NMFS proposed and analyzed in the Amendment 5 proposed rule and DEIS. For example, commenters suggested exemptions to the proposed recreational minimum size increase that would protect dusky sharks but still allow landings of other sharks – such as blacktip sharks or "blue" sharks such as shortfin mako and thresher sharks – and other commenters suggested implementing gear restrictions instead of additional pelagic longline closures.

After reviewing all of the comments received, NMFS concluded that further analyses were needed for dusky shark measures and decided to conduct further analyses on those measures pertaining to dusky sharks in an FMP amendment, EIS, and proposed rule separate from but related to the existing FMP amendment, EIS, and rule for the other shark species.

Amendment 5a

The FMP amendment for non-dusky shark species (i.e., scalloped hammerhead, sandbar, blacknose, and Gulf of Mexico blacktip sharks) included in draft Amendment 5 was renamed "Amendment 5a," and continued to be developed into a final rule and FEIS. The final rule for Amendment 5a to the 2006 Consolidated HMS FMP (Amendment 5a) was published on July 3, 2014 (78 FR 4038) and finalized the shark measures from the November 2012 proposed rule to maintain rebuilding of sandbar sharks; end overfishing and rebuild scalloped hammerhead and Atlantic blacknose sharks; and establish a TAC and commercial quota and recreational measures for Gulf of Mexico blacknose and blacktip sharks (NMFS 2013a). The new management groups, commercial quotas, and quota linkages, which became effective on July 3, 2013, are outlined in Figure 1.1 below. The new recreational minimum size limit for hammerhead (great, scalloped, and smooth) sharks of 78 inches fork length became effective on August 2, 2013.

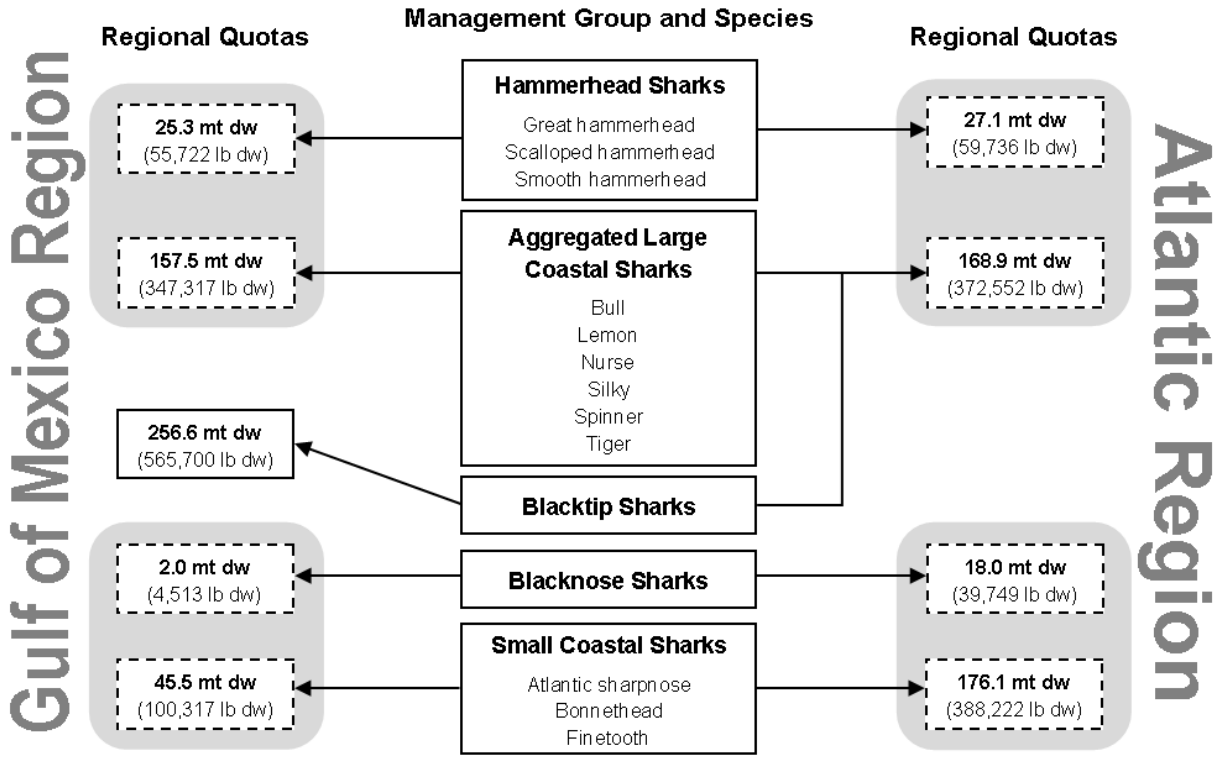


Figure 3.2: Diagram of Management Group, Commercial Quotas, and Quota Linkages Resulting From the Implementation of Amendment 5a to the 2006 Consolidated HMS FMP. Source: NMFS 2013.

Amendment 5b

The future FMP amendment for dusky sharks was renamed "Amendment 5b," and NMFS indicated that it would explore a variety of alternatives to rebuild dusky sharks, and will likely consider alternatives similar to those considered in draft Amendment 5 as well as new alternatives based on comments, including comments received on the dusky shark measures in draft Amendment 5. Currently, NMFS is developing the Draft EIS and proposed rulemaking for Amendment 5b.

Amendment 9

In Amendment 3, NMFS determined that smoothhound sharks were in need of federal conservation and management measures and that they would appropriately be included within the HMS-managed stocks. This determination was made based on the wide geographic distribution and range of smoothhound sharks and the Secretarial management authority over HMS, including "oceanic sharks," in the Magnuson-Stevens Act. The final rule implementing Amendment 3 published in June 2010 (75 FR 30484, June 1, 2010) and delayed the effective date of the smoothhound shark management measures pending approval for the data collection under the Paperwork Reduction Act (PRA) by the Office of Management and Budget (OMB) and to provide time for implementation of a permit requirement, for NMFS to complete a BiOp under section 7 of the ESA, and for fishermen to change business practices, particularly as it related to keeping the fins

attached to the carcass through offloading. OMB approved the PRA data collection in May of 2011 and NMFS met informally with smoothhound shark fishermen along the east coast in the fall of 2010.

In January 2011, the President signed the Shark Conservation Act of 2010 (SCA). The SCA requires that all sharks landed in the United States be landed with their fins naturally attached to the carcass, but included a limited exception for smooth dogfish (*Mustelus canis*). In August 2011, NMFS published a final rule regarding trawl gear (August 10, 2011, 76 FR 49368; HMS Trawl Rule). The HMS Trawl Rule, among other things, allowed for the retention of smoothhound sharks caught incidentally with trawl gear, provided that total smoothhound shark catch on board or offloaded does not exceed 25 percent of the total catch by weight. In November 2011, NMFS published a rule (76 FR 70064, November 10, 2011) that delayed the effective date for all smoothhound shark management measures in both Amendment 3 and the 2011 trawl rule indefinitely to provide time for NMFS to consider the smooth dogfish-specific provisions in the SCA and for NMFS to finalize a Biological Opinion on the federal actions in Amendment 3, among other things.

Amendment 9 to the 2006 Consolidated HMS FMP (Amendment 9) considers management measures in the shark fisheries and could affect fishermen who fish for smoothhound sharks (e.g., smooth dogfish, Florida smoothhound, and Gulf smoothhound) and fishermen who fish for sharks with gillnet gear. The proposed rule for Amendment 9 published on August 7, 2014 (79 FR 46217), and addresses a number of issues including: establishing an effective date for previously-adopted smoothhound shark management measures finalized in Amendment 3 and in the 2011 HMS Trawl Rule; adjusting the commercial quota for the smoothhound shark fishery; implementing the smooth dogfish-specific provisions of the SCA; implementing the 2012 Shark Biological Opinion; and implementing Atlantic shark gillnet vessel monitoring system requirements.

3.4.2 EXISTING STATE REGULATIONS

Table 3.3 outlines the existing state regulations in Atlantic, Gulf of Mexico, and Caribbean states/territories, as of November 1, 2014, with regard to shark species. While the HMS Management Division updates this table periodically, persons interested in the current regulations for any state should contact that state directly.

Table 3.3 **State Rules and Regulations Pertaining to Atlantic Sharks, as of November 1, 2014.** Please note that state regulations are subject to change. Please contact the appropriate state personnel to ensure that the regulations listed below remain current. FL = Fork Length; CL = Carcass Length; TL = Total Length; DW = Dressed Weight; and SCS = Small Coastal Sharks; LCS = Large Coastal Sharks.

State	Cite Reference	Regulatory Details	Contact Information
ME	Sharks - Code ME R. 13-188 ' 50.01, 50.04 and 50.10	Sharks –Commercial harvest of sharks (except spiny dogfish) in state waters prohibited; finning prohibited; sharks harvested elsewhere but landed in Maine, or sharks landed recreationally, must be landed with head, fins, and tail naturally attached to the carcass; porbeagle cannot be landed commercially after federal quota closes dealers who purchase sharks must obtain a federal dealer permit. Recreational anglers must possess a federal HMS angling permits.	ME Department of Marine Resources Phone: (207) 624-6550 Fax: (207) 624-6024
NH	Sharks - FIS 603.20	Sharks – See list for prohibited sharks (http://gencourt.state.nh.us/rules/state_agencies/fis600.html) – no take, landings, or possession of prohibited shark species; NH Wholesale Marine Species License and a Federal Dealer permit required for all dealers purchasing listed sharks; Porbeagle sharks can only be taken by recreational fishing; Head, fins and tail must remain attached to all shark species through landing	NH Fish and Game Douglas Grout Phone: (603) 868-1095 Fax: (603) 868-3305
MA	Sharks – 322 CMR 6.37	Sharks – ASMFC Coastal Shark Plan (no shark species may be landed with tails or fins removed 322 CMR 6.37(3)(d)) All MA commercial and recreational fishing regulations are available online at: http://www.mass.gov/dfwele/dmf/commercialfishing/cmr_index.htm	MA Division of Marine Fisheries Jared Silva Phone: (617) 626-1534 Fax: (617) 626-1509

State	Cite Reference	Regulatory Details	Contact Information
RI	Sharks - RIMFC Regulations part VII 7.24	Sharks – ASMFC Coastal Shark Plan RI commercial fishing license and/or landing permit required to harvest and/or land HMS species All RI commercial and recreational marine fisheries regulations are available online at: http://www.dem.ri.gov/pubs/regs/regs/fishwild/rimftoc.htm RIMFC Regulations part VII 7.24 are available online at: http://www.dem.ri.gov/pubs/regs/regs/fishwild/rimf7.pdf	RI Dept of Environment Management, Div of Fish and Wildlife Eric Schneider Phone: (401) 423-1933
CT	Sharks – Regulations of Connecticut State Agencies § 26-159a-1; Connecticut General Statutes §26-142a(d) Declarations: 10-03, 10-05, 10-07	Sharks – Prohibited species same as federal regulations; No commercial fishing for large coastal sharks; No commercial small coastal shark fishing until further notice	CT Department of Environmental Protection David Simpson Phone: (860) 434-6043 Fax: (860) 434-6150
NY	Sharks - NY Environmental Conservation ' 13-0338; State of New York Codes, Rules and Regulations (Section 40.7)	Sharks – ASMFC Coastal Shark Plan	NY Department of Environmental Conservation Stephen W. Heins Phone: (631) 444-0435 Fax: (631) 444-0449

State	Cite Reference	Regulatory Details	Contact Information
NJ	Sharks - NJ Administrative Code, Title 7. Department of Environmental Protection, NJAC 7:25-18.1 and 7:25-18.12(d)	Sharks – ASMFC Coastal Shark Plan	NJ Fish and Wildlife Russ Babb Phone: (609)748-2020 Fax: (609) 748-2032
DE	Sharks - DE Code Regulations 3541	Sharks – ASMFC Coastal Shark Plan	DE Division of Fish and Wildlife John Clark Phone: (302) 739-9914
MD	Sharks - Code of Maryland Regulations 08.02.12.03 and 08.02.22.01-.04	Sharks – Recreational catch required to be tagged; ASMFC Coastal Shark Plan; all recreationally harvested sharks must have heads, tails, and fins attached naturally to the carcass through landing; all commercially harvested sharks other than smoothhounds must have tails and fins attached naturally to carcass through landing; smoothhound sharks harvested commercially may have dorsal, pectoral and caudal fins removed (caudal fins may not exceed 4% of total dressed weight of smoothhound shark carcasses on board; dorsal and pectoral fins may not exceed 8% of total dressed weight of smoothhound shark carcasses on board)	MD Department of Natural Resources Gina Hunt Phone: (410) 260-8326

State	Cite Reference	Regulatory Details	Contact Information
VA	Sharks - 4 VA Administrative Code 20-490-10	Sharks – ASMFC Coastal Shark Plan	VA Marine Ressources Commission Robert O'Reilly Phone: (757) 247-2247 Fax: (757) 247-2002
NC	Sharks -NC Administrative Code tit. 15A, NCAC, 03M .0512 Compliance with Fishery Management Plans	Sharks – Director may impose restrictions for size, seasons, areas, quantity, etc. via proclamation; ASMFC Coastal Shark Plan; additionally: longline in the shark fishery shall not exceed 500 yds or have more than 50 hooks	NC Division of Marine Fisheries Randy Gregory Phone: (252) 726-7021 Fax: (252) 726-0254
SC	Sharks -SC Code Ann. ' 50-5-2725, 2730	Sharks – Defer to federal regulations; Gillnets may not be used in the shark fishery in state waters; State permit required for shark fishing in state waters	SC Department of Natural Resources Wallace Jenkins Phone: (843) 953-9835 Fax: (843) 953-9386
GA	Sharks - GA Code Ann. ' 27-4-130.1; GA Comp. R. & Regs. ' 391-2-4-.04	Sharks – Commercial/Recreational: 1/person/boat for sharks from the Small Shark Composite (bonnethead, sharpnose, and spiny dogfish, min size 30” FL; All other sharks - 1 shark/person or boat, whichever is less, min size 54” FL Prohibited Species: same as federal, plus silky sharks; All species must be landed head and fins intact; Sharks may not be landed in Georgia if harvested using gillnets; ASMFC Coastal Shark Plan	GA Department of Natural Resources Carolyn Belcher Phone: (912) 264-7218 Fax: (912) 262-3143

State	Cite Reference	Regulatory Details	Contact Information
FL	Sharks - FL Administrative Code 68B-44	Sharks – Commercial/recreational: min size – 54" except no min. size on blacknose, blacktip, bonnethead, smooth dogfish, finetooth, Atlantic sharpnose; Commercial/recreational possession limit – 1 shark/person/day, max; 2 sharks/vessel on any vessel with 2 or more persons on board; Allowable gear – hook and line only; State waters close to commercial harvest when adjacent federal waters close; Federal permit required for commercial harvest, so federal regulations apply in state waters unless state regulations are more restrictive; Finning, removing heads and tails, and filleting prohibited (gutting allowed); Prohibited species same as federal regulations plus prohibition on harvest of lemon, sandbar, tiger, great hammerhead, smooth hammerhead, and scalloped hammerhead sharks, direct and continuous transit through state waters to place of landing for lemon, sandbar, tiger, great hammerhead, smooth hammerhead, and scalloped hammerhead sharks legally caught in federal waters is allowed.	FL Fish and Wildlife Conservation Commission Martha Bademan Phone: (850) 487-0554 Fax: (850) 487-4847

State	Cite Reference	Regulatory Details	Contact Information
AL	Sharks - AL Administrative Code r.220-3-.30, r.220-3-.37, and r.220-2-.77	Sharks – Recreational: bag limit – 1 sharpnose/person/day and 1 bonnethead/person/day; no min size; great hammerhead, smooth hammerhead, scalloped hammerhead 1/person/day - 78" FL; all other sharks – 1/person/day; min size – 54" FL or 30" dressed; Commercial - no size limit no possession limit on any non-prohibited species. Restrictions of chumming and shore-based angling if creating unsafe bathing conditions; Prohibited species: Atlantic angel, basking, bigeye sand tiger, bigeye sixgill, bigeye thresher, bignose, Caribbean reef, Caribbean sharpnose, dusky, Galapagos, largetooth sawfish, longfin mako, narrowtooth, night, sandtiger, smalltooth sawfish, smalltail, sevengill, sixgill, spotted eagle ray, whale, white Sandbar (unless fisherman possess a federal shark research fishery permit), Silky (unless fisherman possess a Federal Atlantic shark fisheries permit). Commercial-state waters close, by species, when federal season closes; no shark fishing on weekends, Memorial Day, Independence Day, or Labor Day; Regardless of open or closed season, gillnet fishermen targeting other fish may retain sharks with a dressed weight not exceeding 10% of total catch	AL Department of Conservation and Natural Resources, Marine Resources Division Major Scott Bannon Phone: (251) 861 2882 www.outdooralabama.com

State	Cite Reference	Regulatory Details	Contact Information
LA	Sharks - LA Administrative Code Title 76, Pt. VII, Ch. 3, § 357	Sharks – Recreational: min size – 54" FL, except Atlantic sharpnose and bonnethead which have no size limit; bag limit - 1 sharpnose or bonnethead/person/day, all other sharks, except sandbar, silky and all prohibited sharks – 1 fish/person/day in aggregate including SCS, LCS, and pelagic sharks; Commercial: 33/vessel/day limit (36/vessel/day by mid-2013); no min size; Com & rec harvest prohibited: Apr 1 - Jun 30; Prohibited species: same as federal regulations; Fins must remain naturally attached to carcass though off-loading. Commercial shark fishing requires annual state shark permit. Owners/operators of vessels other than those taking sharks in compliance with state or federal commercial permits are restricted to no more than one shark from either the large coastal, small coastal, or pelagic group per vessel per trip within or without Louisiana waters.	LA Department of Wildlife and Fisheries Jason Adriance Phone: (504) 284-2032 or 225 765-2889 Fax: (504) 284-5263 or (225) 765-2489
MS	Tunas/Billfish/Sharks - MS Code Title-22 part 7	Sharks – Recreational: min size - LCS/Pelagics 37" TL; SCS 25" TL; bag limit - LCS/Pelagics 1/person (possession limit) up to 3/vessel (possession limit); SCS 4/person (possession limit); Commercial and prohibited species – same as federal regulations; Prohibition on finning	MS Department of Marine Resources Kerwin Cuevas Phone: (228) 374-5000

State	Cite Reference	Regulatory Details	Contact Information
TX	Billfish/Swordfish/Sharks - TX Administrative Code Title 31, Part 2, Parks and Wildlife Code Title 5, Parks and Wildlife Proclamations 57.971, 57.973 and 57.981	Sharks – Commercial/recreational: bag limit - 1 shark/person/day; Commercial/recreational possession limit is twice the daily bag limit (i.e., 2 sharks/person/day); min size 24" TL for Atlantic sharpnose, blacktip, and bonnethead sharks and 64" TL for all other lawful sharks. Prohibited species: same as federal regulations	TX Parks & Wildlife Department Mark Lingo Phone: (956) 350-4490 Fax: (956) 350-3470
Puerto Rico	Regulation #7949 Article 13 – Commercial Fishing Limits Article 18 – Recreational Fishing Limits	Illegal to sell, offer for sale, or traffic in any billfish or marlin, either whole or processed, captured in jurisdictional waters of Puerto Rico. Swordfish or billfish, tuna, and shark are covered under the federal Atlantic HMS regulations (50 CFR, Part 635); Fishers who capture these species are required to comply with said regulation; billfish captured incidentally with long line must be released by cutting the line close to the fishhook, avoiding the removal of the fish from the water; in the case of tuna and swordfish, fishers shall obtain a permit according to the requirements of the federal government; Year-round closed season on nurse sharks. http://www.drna.gobierno.pr/biblioteca/reglamentos_folder/Reglamento%20de%20Pesca%20de%20Puerto%20Rico%20-%207949	Puerto Rico Department of Natural and Environmental Resources Craig Lilyestrom Phone: (787) 772-2022

State	Cite Reference	Regulatory Details	Contact Information
U.S. Virgin Islands	V.I.C., Title 12, Chapter 9A.	Federal regulations and federal permit requirements apply in territorial waters. http://caribbeanfmc.com/pdfs/booklet%20usvi%20Commercial%202009.pdf	6291 Estate Nazareth St. Thomas, VI 00802 Phone: (340) 775-6762 45 Mars Hill Complex Frederiksted, St. Croix, VI 00840 Phone: (340) 773-1082

3.4.3 INTERNATIONAL SHARK MANAGEMENT

3.4.3.1 ICCAT Shark Measures

ICCAT was established at a Conference of Plenipotentiaries, which prepared and adopted the International Convention for the Conservation of Atlantic Tunas, signed in Rio de Janeiro, Brazil, in 1966. ICCAT recommendations are binding instruments for Contracting Parties, while ICCAT resolutions are non-binding and express the will of the Commission. All ICCAT recommendations and resolutions are available on the ICCAT website at http://www.ICCAT.es. Under the Atlantic Tunas Convention Act (ATCA), 16 U.S.C. §§ 971 et seq., the Secretary has authority to promulgate regulations as "necessary and appropriate" to implement ICCAT measures. ICCAT generally manages tuna and tuna-like fisheries and bycatch in those fisheries but also conducts research and has adopted measures related to shark species caught within the Convention area that are associated with other ICCAT species.

The first binding measure passed by ICCAT dealing specifically with sharks, *Recommendation 04-10 Concerning the Conservation of Sharks Caught in Association with Fisheries Managed by ICCAT*, included: reporting of shark catch data by Contracting Parties, a ban on shark finning, research on gears and shark nursery areas, a request for Contracting Parties to live-release sharks that are caught incidentally, a review of management alternatives from the 2004 assessment on blue and shortfin mako sharks, and a commitment to conduct another stock assessment of selected pelagic shark species no later than 2007.

Since 2007, a number of ICCAT recommendations have been adopted relevant to Atlantic LCS and SCS. In 2010, ICCAT adopted ICCAT Recommendations 10-07 and 10-08, which prohibit the retention, transshipping, landing, storing, or selling of hammerhead sharks in the family *Sphyrnidae* (except for *Sphyrna tiburo*) and oceanic whitetip sharks (*Carcharhinus longimanus*) caught in association with ICCAT fisheries. At the 2011 meeting, ICCAT adopted Recommendation 11-08, which prohibits retention, transshipping, or landing of any part or whole carcass of silky shark (*Carcharhinus falciformis*) caught in association with ICCAT fisheries. Finally in 2012, ICCAT adopted Recommendation 12-05, *Recommendation by ICCAT on Compliance with Existing Measures on Shark Conservation and Management*, which requires that Contracting Parties, Cooperating non-Contracting Parties, Entities, or Fishing Entities CPCs submit details on the implementation of and compliance with ICCAT shark conservation and management measures before the 2013 annual meeting.

NMFS published a final rule (76 FR 53652, August 29, 2011) that implemented ICCAT Recommendations 10-07 and 10-08, which prohibit the retention, transshipping, landing, storing or selling of hammerhead sharks in the family *Sphyrnidae* (except for bonnethead sharks, *Sphyrna tiburo*) and oceanic whitetip sharks (*Carcharhinus longimanus*) caught in association with fisheries managed by ICCAT. This final rule, which became effective on September 28, 2011, prohibits the retention of hammerhead and oceanic whitetip sharks by Atlantic HMS commercially-permitted vessels that have pelagic longline (PLL) gear on board, and recreational fishermen fishing with a

General Category permit when participating in a HMS tournament or fishing under an HMS Angling or Charter/Headboat permit where tunas, swordfish, and/or billfish are also retained. Commercial shark bottom longline (BLL), gillnet, or handgear fisheries, and shark recreational fisheries when tunas, swordfish, and billfish are not retained, were not impacted by this rule because they are not considered ICCAT fisheries (i.e., fisheries that target tunas, swordfish, and/or billfish) and thus can continue to retain oceanic whitetip and hammerhead sharks

In 2012, NMFS published a final rule to implement ICCAT Recommendation 11-08, which prohibits retaining, transshipping, or landing silky sharks (*Carcharhinus falciformis*) caught in association with ICCAT fisheries (77 FR 60632, October 4, 2012). In order to facilitate domestic enforcement and compliance, we also prohibited storing, selling, and purchasing the species, consistent with the similar regulations finalized last year regarding oceanic whitetip and most hammerhead sharks. This rule prohibits retention of silky sharks by vessels with PLL gear onboard and also prohibits retention of silky sharks by vessels that are issued both an HMS Charter/Headboat permit and a commercial shark permit when tuna, swordfish, or billfish are on board the vessel.

3.4.3.2 Domestic Implementation of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES is an international treaty designed to control and regulate international trade of certain animal and plant species that are now or potentially may be threatened with extinction and are affected by trade. These species are included in Appendices to CITES, which are available on the CITES Secretariat's website at http://www.cites.org/eng/app/appendices.php. Currently, 177 countries, including the United States, are Parties to CITES. The Convention calls for meetings of the Conference of the Parties, held every two to three years, at which the Parties review treaty implementation, make provisions enabling the CITES Secretariat in Switzerland to carry out its functions, consider amendments to the lists of species in Appendices I and II, consider reports presented by the Secretariat, and make recommendations for the improved effectiveness of CITES. Any country that is a Party to CITES may propose for these meetings amendments to Appendices I and II and resolutions, decisions, and agenda items for consideration by all the Parties.

At the fifteenth regular meeting of the Conference of the Parties to CITES (CoP15) the United States submitted a proposal to include oceanic whitetip and hammerhead sharks (great, scalloped, and smooth hammerhead sharks) in Appendix II; however, the proposal was rejected. At the sixteenth regular meeting of the Conference of the Parties to CITES (CoP16), which took place in March 2013, the United States again co-proposed, with Colombia and Brazil, listing oceanic whitetip sharks for Appendix II listing. This measure was adopted by consensus. At CoP16, Brazil, Costa Rica, Croatia, Denmark (on behalf of the European Union), Ecuador, Honduras, and Mexico also sponsored a proposal supported by the United States to list great, scalloped, and smooth hammerhead sharks on Appendix II; this proposal was also adopted. Thus, oceanic whitetip sharks, and great, scalloped, and smooth hammerhead sharks are now listed on Appendix II, which imposes certain trade-related requirements.

Appendix II includes species that are not currently threatened, but may become so without trade control. Regulated trade is allowed, provided that the exporting country issues a permit based on findings that the specimens were legally acquired, and the trade will not be detrimental to the survival of the species or its role in the ecosystem. Once these listings go into effect, any U.S. fishermen or dealer who wishes to export oceanic whitetip sharks, great, scalloped, or smooth hammerhead sharks, or porbeagle sharks will have to obtain a CITES permit in order to export or re-export these products.

3.4.3.3 Endangered Species Act Listing of Scalloped Hammerhead Sharks

NMFS issued a final determination to list four separate distinct population segments (DPSs) of the scalloped hammerhead shark (*Sphyrna lewini*) under the ESA (79 FR 38214, July 3, 2014). For additional details refer to Section 3.7.2 of this document.

3.5 DESCRIPTION OF THE ATLANTIC LCS AND SCS FISHERIES

While shark fishermen generally target particular species, the non-selective nature of many fishing gears warrants analysis and management on a gear-by-gear basis. For this reason, shark fishery data are analyzed separately by gear type. Additionally, bycatch and safety issues are also better addressed separately by gear type.

A revised list of authorized fisheries and fishing gear became effective December 1, 1999 (64 FR 67511, December 2, 1999). The rule applies to all U.S. marine fisheries, including Atlantic HMS. As stated in the rule, "no person or vessel may employ fishing gear or participate in a fishery in the exclusive economic zone (EEZ) not included in this List of Fisheries (LOF) without giving 90 days' advance notice to the appropriate Fishery Management Council (Council) or, with respect to Atlantic HMS, the Secretary of Commerce (Secretary)." Authorized gear types routinely used in Atlantic shark fisheries include:

- PLL fishery – longline (commercial)
- Shark gillnet fishery – gillnet (commercial)
- Shark BLL fishery – longline (commercial)
- Shark handgear fishery - rod and reel, handline, bandit gear (commercial)
- Shark recreational fishery – rod and reel, handline (recreational)

Commercial landings of Atlantic LCS and SCS are presented below in Tables 3.4 – 3.7. Additional information on all gear type, recent catch, landings and discard data of Atlantic LCS and SCS can be found in Section 3.5 of Amendment 5a or in the 2014 SAFE Report.

Table 3.4 Commercial Landings of Large Coastal Sharks in the Atlantic Region (lb dw, 2008-2013)

Large Coastal Sharks	2008	2009	2010	2011	2012	2013
Basking[2]	0	0	0	0	0	0
Bignose[1]	0	0	0	0	0	0
Bigeye sand tiger[2]	0	0	0	0	0	0
Blacktip	258,035	229,267	246,617	176,136	215,403	256,277
Bull	43,200	61,396	56,901	49,927	24,504	33,980
Caribbean reef[1]	0	0	0	0	0	0
Dusky[1]	0	0	0	14	172	0
Galapagos[1]	0	0	0	0	0	0
Hammerhead, great	0	0	0	0	371	7,406
Hammerhead, scalloped	0	0	0	0	15,800	27,229
Hammerhead, smooth	0	4,025	7,802	110	3,967	1,521
Hammerhead, unclassified	21,631	62,825	43,345	35,618	9,617	0
Lemon	22,530	30,909	25,316	45,448	21,563	16,791
Narrowtooth[1]	0	0	0	0	0	0
Night[1]	0	0	0	0	0	0
Nurse	10	0	71	0	81	0
Sandbar	63,035	54,141	84,339	94,295	46,446	46,868
Sand tiger[2]	0	0	18	20	66	0
Silky	306	1,386	1,049	992	29	186
Spinner	1,265	20,022	13,544	4,113	10,643	26,892
Tiger	14,119	15,172	43,145	36,425	23,245	16,561
Whale[2]	0	0	0	0	0	0
White[2]	117	0	0	0	0	0
Unclassified, assigned to large coastal	187,670	70,894	2,229	50,711	53,705	0
Unclassified LCS fins	26,707	33,173	20,545	21,535	15,370	0
Total, excluding fins	611,918	550,037	524,376	493,809	425,612	433,711
	(278 mt dw)	(249 mt dw)	(238 mt dw)	(224 mt dw)	(193 mt dw)	(197 mt dw)

[1] Prohibited in the commercial fishery as of June 21, 2000. [2] Prohibited as of April 1997.

Source: 2008-2012 Cortés pers. comm.; 2013 eDealer reports

Table 3.5 Commercial Landings of Large Coastal Sharks in the Gulf of Mexico Region (lb dw, 2008-2013)

Large Coastal Sharks	2008	2009	2010	2011	2012	2013
Basking[2]	0	0	0	0	0	0
Bignose[1]	0	0	0	0	109	0
Bigeye sand tiger[2]	0	0	0	0	0	0
Blacktip	326,280	374,573	654,942	384,662	405,015	531,440
Bull	144,356	150,094	165,894	178,595	255,892	279,379
Caribbean reef[1]	0	0	0	0	0	0
Dusky[1]	0	0	0	0	0	0
Galapagos[1]	0	0	0	0	0	0
Hammerhead, great	156	1,430	6,339	49	99	28,591
Hammerhead, scalloped	0	0	0	0	33,216	1,101
Hammerhead, smooth	0	0	0	0	0	0
Hammerhead, unclassified	35,332	95,678	51,149	68,709	8,005	0
Lemon	30,897	54,984	21,081	38,132	29,362	12,869
Narrowtooth[1]	0	0	0	0	0	0
Night[1]	0	0	0	208	0	0
Nurse	48	147	0	27	11	0
Sandbar	26,740	113,717	54,914	46,040	23,854	37,582
Sand tiger[2]	0	0	0	0	0	0
Silky	4,488	4,087	270	643	0	1,714
Spinner	122,395	17,028	78,951	66,996	49,647	68,576
Tiger	17,089	7,874	8,825	21,594	26,209	14,062
Whale[2]	0	0	0	0	0	0
White[2]	0	0	0	27	0	0
Unclassified, assigned to large coastal	131,724	163,320	0	169,651	188,566	0
Unclassified LCS fins	23,938	35,142	45,425	40,768	40,693	0
Total, excluding fins	839,505	982,932	1,042,365	975,333	1,019,985	975,314
	(381 mt dw)	(446 mt dw)	(473 mt dw)	(442 mt dw)	(463 mt dw)	(442 mt dw)

[1] Prohibited in the commercial fishery as of June 21, 2000. [2] Prohibited as of April 1997.

Source: 2008-2012 Cortés pers. comm.; 2013 eDealer reports

Table 3.6 Commercial Landings of Small Coastal Sharks in the Atlantic Region (lb dw, 2008-2013)

Small Coastal Sharks	2008	2009	2010	2011	2012	2013
Atlantic angel*	91	0	96	11	171	0
Blacknose	117,197	90,023	30,287	28,373	37,873	33,382
Bonnethead	61,549	53,912	9,069	28,284	19,907	22,845
Finetooth	26,872	63,359	76,438	52,318	15,922	19,452
Sharpnose, Atlantic	261,788	262,508	211,190	214,382	345,625	183,524
Sharpnose, Caribbean*	0	0	0	0	0	38
Unclassified, assigned to small coastal	23,077	34,429	851	36,639	492	0
Unclassified SCS fins	0	0	0	0	0	0
Total, excluding fins	490,574	504,231	327,931	360,007	419,990	259,241
	(223 mt dw)	(229 mt dw)	(149 mt dw)	(163 mt dw)	(191 mt dw)	(118 mt dw)

*Prohibited in the commercial fishery as of June 21, 2000.

Source: 2008-2012 Cortés pers. comm.; 2013 eDealer reports

Table 3.7 Commercial Landings of Small Coastal Sharks in the Gulf of Mexico Region (lb dw, 2008-2013)

Small Coastal Sharks	2008	2009	2010	2011	2012	2013
Atlantic angel*	0	0	0	0	0	0
Blacknose	17,058	61,682	4,204	3,900	14,379	2,009
Bonnethead	388	3,444	2,672	12,986	2,601	4,436
Finetooth	53,961	95,705	45,001	159,558	130,278	60,118
Sharpnose, Atlantic	77,861	43,217	17,958	53,723	100,253	116,133
Sharpnose, Caribbean*	0	0	0	0	0	0
Unclassified, assigned to small coastal	0	0	0	0	0	0
Unclassified SCS fins	0	0	0	0	0	0
Total, excluding fins	149,268	204,048	69,835	230,167	247,511	182,696
	(68 mt dw)	(93 mt dw)	(32 mt dw)	(104 mt dw)	(112 mt dw)	(83 mt dw)

*Prohibited in the commercial fishery as of June 21, 2000.

Source: 2008-2012 Cortés pers. comm.; 2013 eDealer reports

3.6 SOCIAL AND ECONOMIC ASPECTS OF THE ATLANTIC LCS AND SCS FISHERIES

3.6.1 SOCIAL

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 and NEPA require an assessment of potential social impacts of actions on fisheries. 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 (MSA, sec. 303(a)(9)). According to National Standard 8 of the Magnuson-Stevens Act, conservation and management measures should, consistent with conservation requirements, "take into account the importance of fishery resources to fishing communities by utilizing economic and social data [based on the best available information] in order to (A) provide for the sustained participation of such communities, (B) to the extent practicable, minimize adverse economic impacts on such communities." NEPA also 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 . . . " (NEPA, sec 102(2)(A)). Moreover, agencies need to address the aesthetic, historical, 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, if necessary and possible, mitigate regulatory impacts on affected constituents.

NMFS (2001) guidelines for social impact assessments specify that the following elements are utilized in the development of FMPs and FMP amendments:

1. 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.

2. The cultural issues of attitudes, beliefs, and values of fishermen, fishery-related workers, other stakeholders, and their communities.

3. 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.

4. 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.

5. The historical dependence on and participation in the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution and rights.

From the 255 communities identified as involved in the 2001 commercial fishery, Amendment 1 to the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks focused on specific towns based on shark landings data, the size of the shark fishing fleet, the relationship between the geographic communities and the fishing fleets, and the existence of other community studies. While the recreational fishery is an important component in the shark fishery, participation and landings were not documented in a manner that allowed community identification. Wilson et al. (1998) selected only the recreational fisheries found within the commercial fishing communities for a profile, due to the lack of community-based data for the sport fishery. The study also investigated the social and cultural characteristics of fishing communities in five states and one U.S. territory: Massachusetts, New Jersey, North Carolina, Florida, Louisiana, and Puerto Rico. These areas were selected because they each had important fishing communities that could be affected by the 1999 FMP and Atlantic Billfish Amendment, and because they are fairly evenly spread along the Atlantic and Gulf coasts and the Caribbean.

The 2006 Consolidated HMS FMP used information from the Wilson et al. (1998) study along with information gathered under contract with the Virginia Institute of Marine Science (VIMS) at the College of William and Mary to re-evaluate several of the baseline communities (Kirkley 2005). The VIMS study gathered a profile of basic sociological information for the principal states involved with the Atlantic shark fishery. A detailed description of additional information used in the community profiles analysis can be found in Section 9.2.2 of the 2006 Consolidated HMS FMP.

As of 2014, 78 percent of shark permit holders are located in Florida, Louisiana, New Jersey, and North Carolina. Communities in these states are expected potentially to be the most affected by the measures finalized in Amendment 5a. In addition to the community profile information found in the 2006 Consolidated HMS FMP, NMFS is considering additional information in assessing community impacts, including a report by MRAG Americas, Inc., and Jepson (2008) titled "Updated Profiles for HMS Dependent Fishing Communities," which can be found in Appendix E of Amendment 2. This report includes updated community profiles and new social impacts assessments for HMS fishing communities along the Atlantic and Gulf of Mexico coasts. Community profile information along with demographic information from the 2010 U.S. Census can be found in the 2011 and 2012 SAFE Reports. The primary purpose of this section is to provide the baseline economic data and economic impact analysis for the Regulatory Impact Review (RIR) in Chapter 6 and the Initial Regulatory Flexibility Analysis (IRFA) in Chapter 7. It also provides relevant data for Community Profiles described in Chapter 9. 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 2, 3, 4, 7, 8, and 9. Note that all dollars are reported in nominal dollars, consistent with methods used in the 2006 Consolidated HMS FMP.

3.6.2 NUMBER OF VESSELS AND PERMIT HOLDERS

In order to examine the baseline universe of entities potentially affected by the preferred alternatives, NMFS analyzed the number of permits that were issued as of October 2014 in conjunction with HMS fishing activities. NMFS used October 2014 permit data for all the analyses, as it provides recent information on permit holders and corresponds to the most recent data used in most of the analyses. The actual number of permit holders changes throughout the year, because some permits expire at the end of each permit holder's birth month.

As of October 2014, there were a total of 464 commercial permit holders in the Atlantic shark fisheries (206 directed and 258 incidental permits). Table 3.8 provides a summary of these permit holders since 2008. Unless otherwise discussed, the reference period for most of the analyses begins at 2008 because a number of significant regulatory changes went into effect in that year. Specifically, Amendment 2 established, among other things, new commercial shark quotas, required all fins remain naturally attached through landing for commercial fishermen, reduced the commercial retention limit, and prohibited the retention of sandbar shark for any commercial or recreational fishermen outside of the shark research fishery. Including years before Amendment 2 could distort the analyses, because the fisheries were much different before the Amendment 2 management measures went into effect. Further detail regarding commercial permit holders is provided below.

Table 3.8 Number of shark limited access and shark dealer permit holders between 2008 and 2015.

State	Directed Shark	Incidental Shark	Shark Dealers
ME	2	5	1
MA	3	8	7
RI	1	3	2
CT	-	1	-
NY	10	12	5
PA	1	2	-
NJ	21	26	8
DE	1	2	-
MD	2	2	3
VA	-	2	3
NC	16	11	17
SC	8	8	9
GA	2	2	1
FL	115	125	29
AL	4	2	3
MS	-	1	-
LA	17	32	8
TX	3	13	-
Annual Totals			
2015	206	258	96
2014	206	258	96
2013	220	265	97
2012	215	271	92
2011	217	262	117
2010	215	265	108
2009	223	285	106
2008	214	285	128

As of May 2015, there were a total of 96 Atlantic shark dealer permit holders. Table 3.8 provides a summary of Atlantic shark dealer permit holders by year from 2008 to 2015. Detail regarding shark dealer permit holders is provided in the 2014 SAFE Report for Atlantic Highly Migratory Species. All dealer permit holders are required to submit reports providing data about their businesses and transactions. Before January 1, 2013, all shark dealers were required to submit bi-weekly dealer reports on all HMS they purchased. To facilitate quota monitoring, "negative reports" for sharks are also required from dealers when no purchases have been made, allowing us to determine who has not purchased fish versus who has neglected to report. Since January 1, 2013, all shark dealers have been required to report all HMS they purchased or a negative report on a weekly basis.

In 2014, there were a total of 5 Atlantic shark research fishery permit holders. Table 3.9 provides a summary of Atlantic shark research fishery permit holders by year from 2008 to 2014. As described above, NMFS prohibited the retention of sandbar sharks and established, among other things, an Atlantic shark research fishery in Amendment 2 to the 2006 Consolidated HMS FMP. The

objective of the Atlantic shark research fishery is to manage a limited sandbar quota within a small, closely observed research fishery in order to maintain a time series of catch data, to obtain life history data of sandbar and other Atlantic shark species for stock assessments, and to meet NMFS' research needs and objectives. Through this shark research fishery, federal commercial shark fishermen can apply and a few are selected on an annual basis to assist NMFS in the collection of fishery-dependent data while earning revenue from selling additional sharks, including sandbar sharks. Since the Atlantic shark research fishery was implemented in 2008, the status of the sandbar shark stock has improved, going from "overfished with overfishing occurring," to "overfished," according to the results of SEDAR 21. Furthermore, the limited numbers of boats that can be managed through the resource-intensive shark research fishery have consistently been unable to catch the entire scientifically-recommended sandbar shark quota. Thus, NMFS has considered reducing the sandbar shark research fishery quota to allow a higher retention limit for commercial fishermen targeting LCS.

Table 3.9 Number of Atlantic shark research fishery permit holders from 2008-2014.

Year	Atlantic shark research
2008	11
2009	7
2010	9
2011	10
2012	5
2013	6
2014	5

3.6.3 ECONOMICS

As described in earlier chapters, most of the analyses in this document use data through 2013. While the number of permits sold in and ex-vessel prices for 2014 are available at this time for inclusion in our analyses, landings data from 2014 from all data sources included in this Final EA are not included because they are currently unavailable, as they are still being entered and quality controlled at the time of writing this document. Table 3.10 reports 2014 ex-vessel prices by shark species group and region.

Table 3.10 **Average 2014 ex-vessel price and gross annual revenue for each shark management group.** Source: 2014 eDealer reports. The shark fin weight for each management group is 5 percent of the shark management group quotas.

Region	Species	2014 Annual Quotas (lb dw)	Average Ex-Vessel Meat Price	Gross Annual Meat Revenue	Shark Fin Weight (lb dw)	Average Ex-Vessel Fin Price	Gross Annual Fin Revenue
Gulf of Mexico	Blacktip Shark	565,700	$0.50	$282,850	28,285	$9.53	$269,556
	Aggregated LCS	347,317	$0.54	$187,551	17,366	$10.04	$174,353
	Hammerhead Shark	55,722	$0.48	$26,747	2,786	$10.21	$28,446
	Non-Blacknose SCS	100,317	$0.36	$36,114	5,016	$5.84	$29,293
	Blacknose Shark	4,513	$0.86	$3,881	226	$5.84	$1,318
Atlantic	Aggregated LCS	372,552	$0.75	$279,414	18,628	$4.19	$78,050
	Hammerhead Shark	59,736	$0.57	$34,050	2,987	$2.33	$6,959
	Non-Blacknose SCS	388,222	$0.74	$287,284	19,411	$4.00	$77,644
	Blacknose Shark	39,749	$0.78	$31,004	1,987	$4.00	$7,950
No Region	Shark Research Fishery (Aggregated LCS)	110,230	$0.58	$64,301	5,512	$7.68	$42,38
	Shark Research Fishery (Sandbar only)	257,056	$0.69	$177,369	12,853	$10.12	$130,070
	Blue shark	601,856	$0.67	$403,244	30,093	$2.34	$70,417
	Porbeagle shark	3,748	$1.41	$5,285.68	187	$2.34	$624.58
	Other Pelagic sharks	1,075,856	$1.41	$1,516,957	53,793	$2.34	$125,875
	Total			**$3,336,052**			**$1,000,556**

Additional information on the social and economic aspects of commercial and recreational fisheries for the Atlantic LCS and SCS can be found in the 2013 SAFE Report and Section 3.7 of Amendment 5a.

3.7 PROTECTED SPECIES INTERACTIONS IN ATLANTIC LCS AND SCS FISHERIES

This section examines the interaction between protected species and Atlantic HMS fisheries managed under the 2006 Consolidated HMS FMP. As a point of clarification, interactions are different than bycatch. Interactions take place between fishing gears and marine mammals and seabirds, while bycatch consists of the incidental take and discard of non-targeted finfish, shellfish, mollusks, crustaceans, sea turtles, and any other marine life other than marine mammals and seabirds. This section examines impacts of the HMS Atlantic shark fisheries and HMS gears on species protected under the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). Additionally, the interaction of seabirds and longline fisheries are considered under the auspices of the United States "National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries" (NPOA – Seabirds) and the Migratory Bird Treaty Act (MBTA).

3.7.1 INTERACTIONS AND THE MARINE MAMMAL PROTECTION ACT

NMFS relies on both fishery-dependent and fishery-independent data to produce stock assessments for marine mammals in the Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea. Draft stock assessment reports are typically published in January and final reports are typically published in the fall. Final 2012 stock assessment reports can be obtained on the web at: http://www.nmfs.noaa.gov/pr/sars/region.htm.

The following list of species outlines the marine mammal species that occur off the Atlantic and Gulf Coasts that are or could be of concern with respect to potential interactions with HMS fisheries.

Common Name	**Scientific Name**
Atlantic spotted dolphin	*Stenella frontalis*
Blue whale	*Balaenoptera musculus*
Bottlenose dolphin	*Tursiops truncatus*
Common dolphin	*Delphinis delphis*
Fin whale	*Balaenoptera physalus*
Harbor porpoise	*Phocoena phocoena*
Humpback whale	*Megaptera novaeangliae*
Killer whale	*Orcinus orca*
Long-finned pilot whale	*Globicephela melas*
Minke whale	*Balaenoptera acutorostrata*
Northern bottlenose whale	*Hyperoodon ampullatus*
Northern right whale	*Eubalaena glacialis*
Pantropical spotted dolphin	*Stenella attenuata*
Pygmy sperm whale	*Kogia breviceps*
Risso's dolphin	*Grampus griseus*
Sei whale	*Balaenoptera borealis*
Short-beaked spinner dolphin	*Stenella clymene*
Short-finned pilot whale	*Globicephela macrorhynchus*
Sperm whale	*Physeter macrocephalus*
Spinner dolphin	*Stenella longirostris*
Striped dolphin	*Stenella coeruleoalba*
White-sided dolphin	*Lagenorhynchus acutus*

Under MMPA requirements, NMFS produces an annual List of Fisheries (LOF) that classifies domestic commercial fisheries, by gear type, relative to their rates of incidental mortality or serious injury of marine mammals. The LOF includes three classifications:

1. Category I fisheries are those with frequent serious injury or mortality to marine mammals;
2. Category II fisheries are those with occasional serious injury or mortality; and

3. Category III fisheries are those with remote likelihood of serious injury or mortality to marine mammals.

The final 2015 MMPA LOF was published on December 29, 2014 (79 FR 77919). The Atlantic Ocean, Caribbean, and Gulf of Mexico large PLL fishery is classified as Category I (frequent serious injuries and mortalities incidental to commercial fishing), and the southeastern Atlantic shark gillnet fishery is classified as Category II (occasional serious injuries and mortalities). The following Atlantic HMS fisheries are classified as Category III (remote likelihood or no known serious injuries or mortalities): Atlantic tuna purse seine; Gulf of Maine and Mid-Atlantic tuna, shark and swordfish, hook-and-line/harpoon; southeastern Mid-Atlantic and Gulf of Mexico shark BLL; and Mid-Atlantic, southeastern Atlantic, and Gulf of Mexico pelagic hook-and-line/harpoon fisheries. Commercial passenger fishing vessel (charter/headboat) fisheries are subject to Section 118 and are listed as a Category III fishery. Recreational vessels are not categorized, since they are not considered commercial fishing vessels.

Fishermen participating in Category I or II fisheries are required to register under the MMPA and to accommodate an observer aboard their vessels if requested. Vessel owners or operators, or fishermen, in Category I, II, or III fisheries must report all incidental mortalities and serious injuries of marine mammals during the course of commercial fishing operations to NMFS. There are currently no regulations requiring recreational fishermen to report takes, nor are they authorized to have incidental takes (i.e., they are illegal).

3.7.2 BYCATCH AND THE ENDANGERED SPECIES ACT

Sea Turtles

NMFS has taken several significant steps to reduce sea turtle bycatch and bycatch mortality in domestic longline fisheries. On December 12, 2012, following consultation under section 7(a)(2) of the Endangered Species Act (ESA), NMFS determined that the continued authorization of the Atlantic shark and smoothhound shark fisheries is not likely to jeopardize the continued existence of hawksbill, green, Kemp's ridley, leatherback, and loggerhead sea turtles. No sea turtles were observed in shark gillnet fisheries in 2012 or 2013. In the shark bottom longline research fishery, there were two interactions with loggerhead sea turtles in 2012 and three interactions with loggerhead sea turtles in 2013.

Smalltooth sawfish

NMFS designated critical habitat for smalltooth sawfish in September 2009 (74 FR 45353, September 2, 2009). NMFS believes that smalltooth sawfish takes in the shark gillnet fishery are rare, given the low reported number of takes and high rate of observer coverage. The fact that there were no smalltooth sawfish caught during 2001, when 100 percent of the fishing effort was observed, indicates that smalltooth sawfish takes (observed or total) most likely do not occur on an annual basis. The 2012 Shark BiOp determined that the continued operation of the Atlantic shark and smoothhound fisheries may result in up to 12 smalltooth sawfish takes (9 non-lethal, 3 lethal) annually. The non-

lethal takes of up to nine smalltooth sawfish annually is not expected to have any measurable impact on the reproduction, numbers, or distribution of this species and is not expected to appreciably reduce the likelihood of survival and recovery of smalltooth sawfish. Therefore, NMFS determined that the continued authorization of the Atlantic shark fisheries, including the new smoothhound fishery, was not likely to jeopardize the continued existence of the United States DPS of smalltooth sawfish. No smalltooth sawfish were observed in shark gillnet fisheries in 2012 or 2013. In the shark bottom longline research fishery, there was one interaction with a smalltooth sawfish in 2012 and two interactions in 2013.

Atlantic Sturgeon

Five separate DPSs of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) were listed under the ESA, effective April 6, 2012 (77 FR 5914; February 12, 2012). From north to south, the DPSs are Gulf of Maine, New York Bight, Chesapeake Bay, Carolina, and South Atlantic. The New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs are listed as endangered, and the Gulf of Maine DPS is listed as threatened. NMFS determined that each of the DPSs was significant, based on their persistence in a unique ecological setting, and the loss of a DPS would result in a significant gap in the range of the species and constitute an important loss of genetic diversity. The 2012 Shark BiOp determined that the continued operation of the Atlantic shark and smoothhound shark fisheries were not expected to appreciably reduce the likelihood of survival and recovery of the 5 DPSs of Atlantic sturgeon. Therefore, NMFS determined that the continued authorization of the Atlantic shark fisheries, including the new smoothhound fishery, is also not likely to jeopardize the continued existence of the Gulf of Maine, New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon.

Scalloped Hammerhead Sharks

In July 2014, NMFS issued a final determination to list four separate DPSs of the scalloped hammerhead shark (*Sphyrna lewini*) under the ESA (79 FR 38214; July 3, 2014). The DPSs are Central and Southwest Atlantic, Indo-West Pacific, Eastern Atlantic, and Eastern Pacific. The Eastern Atlantic and Eastern Pacific DPSs are listed as endangered, and the Central and Southwest Atlantic and the Indo-West Pacific DPSs are listed as threatened. NMFS determined that each of the DPSs was significant and distinct based on genetic, behavioral, and physical factors, and in some cases, differences in the control of exploitation of the species across international boundaries. The primary factors responsible for the decline of these DPSs are overfishing, due to both landings and bycatch, and a lack of adequate regulatory mechanisms to protect the species. This represents the first federally managed shark species to be listed under ESA.

The Central and Southwest Atlantic DPS of scalloped hammerhead sharks occurs within the boundary of Atlantic HMS commercial and recreational fisheries. Following this listing, NMFS requested reinitiation of ESA section 7 consultation for the 2006 Consolidated Atlantic HMS FMP activities, as amended and as previously consulted on in the 2001 Atlantic HMS, the 2012 directed shark and smoothhound fishery, and the 2004 PLL biological opinions, to assess potential adverse effects of certain gear types on the Central and Southwest DPS of scalloped hammerhead sharks.

NMFS recently reinitiated consultation for PLL gear and associated fishery management actions to address new information on levels of leatherback and loggerhead sea turtle take, including mortality rates and population status, and the scalloped hammerhead shark DPS listings. NMFS prepared a biological evaluation as supplemental information for the reinitiated consultation on PLL gear and to support the request for ESA section 7 consultation for all other HMS gear types and the potential effects on the Central and Southwest DPS of scalloped hammerhead shark and threatened coral species.

Corals

On August 27, 2014, NMFS published a final rule to list the following 20 coral species as threatened: five in the Caribbean, including Florida and the Gulf of Mexico (*Dendrogyra cylindrus*, *Orbicella annularis*, *Orbicella faveolata*, *Orbicella franksi*, and *Mycetophyllia ferox*); and 15 in the Indo-Pacific (*Acropora globiceps*, *Acropora jacquelineae*, *Acropora lokani*, *Acropora pharaonis*, *Acropora retusa*, *Acropora rudis*, *Acropora speciosa*, *Acropora tenella*, *Anacropora spinosa*, *Euphyllia paradivisa*, *Isopora crateriformis*, *Montipora australiensis*, *Pavona diffluens*, *Porites napopora*, and *Seriatopora aculeata*) (79 FR 53852, September 10, 2014). Two Caribbean species currently listed as threatened (*Acropora cervicornis* and *Acropora palmata*) still warranted listing as threatened. NMFS requested reinitiation of ESA section 7 consultation for the seven Caribbean species of corals occurring within the boundary of Atlantic HMS with the scalloped hammerhead shark consultation.

3.7.3 INTERACTIONS WITH SEABIRDS

The NPOA-Seabirds was released in February 2001 and calls for detailed assessments of longline fisheries, and, if a problem is found to exist within a longline fishery, for measures to reduce seabird bycatch within two years. Because interactions appear to be relatively low in Atlantic HMS fisheries, the adoption of immediate measures is unlikely.

Gannets, gulls, greater shearwaters, and storm petrels are occasionally hooked by Atlantic PLLs. These species and all other seabirds are protected under the MBTA. The majority of longline interactions with seabirds occur as the gear is being set. The birds eat the bait and become hooked on the line. The line then sinks and the birds are subsequently drowned.

Bycatch of seabirds in the shark BLL fishery has been virtually non-existent. A single pelican has been observed killed from 1994 through 2012. No expanded estimates of seabird bycatch or catch rates for the BLL fishery have been made due to the rarity of seabird takes.

4.0 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

This chapter considers and describes probable and potential impacts of each of the considered alternatives. The alternatives that are preferred by NMFS at this time are identified, and justification for this preference is explained.

4.1 PERMIT STACKING

As described in Section 2.0, the following three alternatives consider implementation of permit stacking for the commercial shark fisheries. Permit stacking would allow fishermen to use multiple shark directed permits concurrently on one vessel, which would result in aggregated and thus, higher trip limits. Under Alternatives A2 and A3, in order to allow shark directed permits to be stacked, NMFS would need to consider removing the shark permit upgrade restrictions. This would allow the swordfish, shark, and tuna limited access permit (triple pack permit) holders to stack their directed shark permits and would not affect the current swordfish permit upgrading restrictions. At this time, NMFS prefers alternative A1, the No Action alternative.

Alternative A1: *No Action – Do not implement permit stacking – Preferred Alternative*

Alternative A2: Implement permit stacking for directed limited access permit holders where each permit holder could place a maximum of 2 directed permits on a vessel; those 2 permits would allow the permit holder to harvest a maximum of 2 retention limits per trip (e.g., 72 LCS other than sandbar sharks per trip).

Alternative A3: Implement permit stacking for directed limited access permit holders where each permit holder could place a maximum of 3 directed permits on a vessel; those 3 permits would allow the permit holder to harvest a maximum of 3 retention limits per trip (e.g., 108 LCS other than sandbar sharks per trip).

4.1.1 ECOLOGICAL IMPACTS

Under alternative A1, the preferred alternative, NMFS would not implement permit stacking for the shark directed limited access permit holders. Instead, under the No Action alternative, NMFS would continue to allow only one directed limited access permit per vessel and thus one retention limit. Therefore, shark fishermen would continue to be limited by the current retention limit of 36 LCS per trip. Because NMFS would leave the current permit structure in place under this alternative and because the LCS quotas are not being modified, it is likely that the No Action alternative would have neutral short- and long-term ecological impacts to the LCS stocks.

Under alternative A2, NMFS would allow fishermen to use a maximum of 2 shark directed permits concurrently on one vessel, which would result in aggregated, and thus higher, trip limits. Under the current LCS retention limit of 36 LCS, this would mean that a vessel with 2 stacked permits would have a LCS retention limit of 72 LCS per trip. NMFS believes that it is likely that the

permit stacking and subsequent retention limit increase under Alternative A2 would have neutral ecological impacts on the LCS stocks because the quotas for the LCS fishery would remain unchanged and the LCS fishery would continue to be limited by these quotas. In addition, NMFS does not expect total effort and fishing mortality to increase if the retention limits increase, because the LCS quotas are not being modified in this rulemaking. Although, in the short term, this alternative could potentially lead to negative ecological impacts if fishermen increase the number of hooks per set substantially in order to catch the retention limit and end up discarding additional dead sharks as a result. If this happened, it would likely only happen in the short term, as fishermen adjust their fishing practices to the adjusted trip limit. In the long term, it is also likely that any indirect ecological impacts would be neutral because the aggregated LCS quotas are not being modified in this action.

Under alternative A3, NMFS would allow fishermen to use a maximum of 3 shark directed permits concurrently on one vessel, which would result in aggregated, and thus higher, trip limits. Under the current LCS retention limit of 36 LCS, this would mean that a vessel with 3 stacked permits would have a LCS retention limit of 108 LCS per trip. As for alternative A2, NMFS believes that the retention limit increase under alternative A3 would result in neutral ecological impacts to the LCS stocks. Because LCS quotas are not being modified in this rulemaking, fishermen would continue to be limited in the total amount of sharks that could be harvested, and the season would be closed once 80 percent of the quota is met. Therefore, NMFS does not expect total effort and fishing mortality to increase under this alternative. Although, in the short term, this alternative could potentially lead to minor adverse ecological impacts if fishermen increase the number of hooks per set substantially in order to catch the retention limit and end up discarding additional dead sharks as a result. In the long term, NMFS also expects indirect ecological impacts to be neutral under alternative A3 because the aggregated LCS quotas are not being modified in this action.

4.1.2 SOCIAL AND ECONOMIC IMPACTS

Under Alternative A1, the preferred alternative, NMFS would not implement permit stacking for the shark directed limited access permit holders. Instead, under the No Action alternative, NMFS would continue to allow only one directed limited access permit per vessel and thus one retention limit. Therefore, shark fishermen would continue to be limited by the current retention limit of 36 LCS per trip. The current retention limit of 36 LCS per trip would result in potential trip revenues of $1,184 (1,224 lb of meat, 61 lb of fins) per vessel, assuming an ex-vessel price of $0.58 for meat and $7.68 for fins (Table 4.1). It is likely that this alternative would have neutral direct socioeconomic impacts in the short term. This alternative could possibly have minor adverse socioeconomic impacts in the long term, because if fishermen are unable to retain an increased number of LCS per trip by stacking permits, the profitability of each trip could decline over time, due to declining prices for shark products and increasing prices for gas, bait, and other associated costs. The No Action alternative could also have neutral indirect impacts to those supporting the commercial shark fisheries, since the retention limits, and thus current fishing efforts, would not change under this alternative.

Table 4.1 **Average 2014 ex-vessel prices and trip gross revenues for the fleet by retention limit. Shark fins are assumed to be 5 percent of the carcass weight.** Note: NMFS used an average weight of 34 lb dw for all LCS species, since the large coastal shark management group was assessed in SEDAR 11 as a group that included blacktip, bull, tiger, spinner, hammerhead, silky, nurse, and lemon sharks. The average weight is the combination of all of the large coastal sharks that were caught using bottom longline gear. The ex-vessel prices for meat and fins are a combination of the regional prices.

Alternative	Retention Limit (Number of LCS per Trip)	Average Weight (lb dw)	Landings per Trip (lb dw)	Average Ex-Vessel Price	Average Trip Gross Revenues
A1	36	Meat: 34	1,224	$0.58	$714
		Fins: 1.7	61	$7.68	$470
		Total	1,285		$1,184
A2	72	Meat: 34	2,448	$0.58	$1,428
		Fins: 1.7	122	$7.68	$940
		Total	2,570		$2,368
A3	108	Meat: 34	3,672	$0.58	$2,142
		Fins: 1.7	184	$7.68	$1,410
		Total	3,856		$3,552

Under Alternative A2, NMFS would allow fishermen to use a maximum of 2 shark directed permits concurrently on one vessel, which would result in aggregated, and thus higher, trip limits. Under the current LCS retention limit of 36 LCS, this would mean that a vessel with 2 stacked permits would have a LCS retention limit of 72 LCS per trip. This new retention limit would result in potential trip revenues of $2,368 (2,448 lb of meat, 122 lb of fins) per vessel, assuming an ex-vessel price of $0.58 for meat and $7.68 for fins (Table 4.1), which is an increase of $1,184 per trip compared to the status quo alternative. For fishermen that currently have two directed limited access permits, this alternative would have direct, short-term minor beneficial socioeconomic impacts because these fishermen would be able to stack their permits and avail themselves of the retention limit of 72 LCS per trip. The higher retention limit is likely to make each trip more profitable for fishermen, as well as more efficient, if they decide to take fewer trips and in turn save money on gas, bait, and other associated costs. This alternative could also have indirect, minor beneficial socioeconomic impacts to entities supporting the commercial shark fisheries, such as fishing tackle manufacturers and suppliers, bait suppliers, fuel providers, and shark dealers, because the increased efficiency and profitability in the fisheries could also lead to increases in potential employment, personal income, and sales for the entities supporting the fisheries. However, the current number of directed permits in the Atlantic region is 136, and 130 of those permits have different owners. In the Gulf of Mexico, of the 83 directed shark permits, 73 have different owners. Therefore, it is unlikely that many of the current directed shark permit holders would be able to benefit from this alternative in the short-term. In addition, the cost of one directed shark permit can run anywhere between $2,000 and $5,000, which could be difficult for many shark fishermen to afford. For fishermen that do not currently have more than one directed shark permit, this alternative could have long-term minor beneficial impacts if these fishermen are able to acquire an additional permit and offset the cost of the additional permit by taking advantage of the potential economic benefits of the higher retention limits. Nevertheless, this alternative is unlikely to have beneficial socioeconomic impacts for the shark fishery as whole because only shark fishermen that could afford to buy multiple shark permits

would benefit from the higher retention limit and higher revenues whereas those shark fishermen that cannot afford to buy a second directed shark permit would be at a disadvantage, unable to economically benefit from the higher retention limits. Given the current make-up of the shark fishery, which primarily consists of small business fishermen with only one permit, and the cost of the additional permit, this could potentially lead to inequity and unfairness among the directed shark permit holders if those fishermen that currently have multiple directed permits or that could afford to buy an additional directed permit gain an economic advantage.

Under Alternative A3, NMFS would allow fishermen to use a maximum of 3 shark directed permits concurrently on one vessel, which would result in aggregated, and thus higher, trip limits. Under the current LCS retention limit of 36 LCS, this would mean that a vessel with 3 stacked permits would have a LCS retention limit of 108 LCS per trip. This new retention limit would result in potential trip revenues of $3,552 (3,672 lb of meat, 184 lb of fins) per vessel, assuming an ex-vessel price of $0.58 for meat and $7.68 for fins (Table 4.1), which is an increase of $2,368 per trip compared to the status quo alternative. For fishermen who do not currently have more than one directed shark permit, this alternative could have larger long-term beneficial socioeconomic impacts than Alternative 2, if these fishermen are able to acquire two additional permits and offset the cost of the additional permits by taking advantage of the potential economic benefits of retaining up to 108 LCS per trip. However, for the same reasons discussed for Alternative A2, this alternative is unlikely to have socioeconomic benefits for those shark fishermen that cannot afford to buy two additional directed permits, and thus would be unable to economically benefit from a higher retention limit. Thus, given the current make-up of the shark fishery, Alternative A3 could potentially lead to more inequity and unfairness among the directed shark permit holders than Alternative A2, especially if those fishermen that currently have multiple directed permits or that could afford to buy additional directed permits gain an economic advantage under this alternative.

4.1.3 CONCLUSION

After analyzing the ecological and socioeconomic impacts of alternative A1, the No Action alternative, and the permit stacking alternatives, NMFS prefers the No Action alternative. The ecological impacts of all three permit stacking alternatives were neutral. However, there are potential adverse socioeconomic impacts and inequities associated with permit stacking in the shark fishery. NMFS believes that while permit stacking may have beneficial socioeconomic impacts for those fishermen that already have multiple directed shark permits or that could afford to buy additional permits, permit stacking could possibly disadvantage those fishermen that are unable to buy additional permits. Permit stacking could possibly lead to inequity among directed shark permit holders, because only shark fishermen that could afford to buy multiple shark permits would benefit from the higher retention limit and higher revenues, whereas those shark fishermen that cannot afford to buy additional directed shark permits would be at a disadvantage, unable to economically benefit from the higher retention limits. Because the majority of fishermen in the shark fishery have only one permit and because of the cost of purchasing additional permits, permit stacking would not benefit most shark fishermen in the short-term and could possibly lead to inequity. For the shark fishery, NMFS prefers to look at options that would benefit all participants, such as increased trip limits across the entire aggregated LCS fishery. Additionally, NMFS received overall support for not

implementing permit stacking under Alternative A1, especially from the North Carolina Division of Marine Fisheries (NCDMF), South Carolina Department of Natural Resources (SCDNR), Virginia Marine Resources Commission (VAMRC), the Mid-Atlantic Fishery Management Council (MAFMC), and the Florida Fish and Wildlife Conservation Commission (FWC). Therefore, for these reasons NMFS prefers Alternative A1, the No Action alternative, at this time.

4.2 COMMERCIAL RETENTION LIMITS

As described in Section 2.2, the following four alternatives consider adjusting the commercial retention limit for shark directed permit holders. NMFS prefers to adjust the commercial retention limit for shark directed permit holders, based on public comment. To increase the retention limit, NMFS would use a portion of the unharvested sandbar shark research fishery quota to account for dead discards that might occur with a higher LCS retention limit. As described above, the sandbar research fishery quota is based on the number of directed shark trips that interact with sandbar sharks and the potential dead discards of this species. During the public comment period for the Draft EA, commenters, including commercial fishermen and Atlantic HMS AP members, were supportive of increasing the commercial retention limit and reducing the sandbar shark research fishery quota, although, as described below, some commenters were concerned about the impacts of increasing the retention limit too much.

Alternative B1: No Action – No changes to current LCS retention limits for directed shark permit holders

Alternative B2 *Increase the LCS retention limit for directed permit holders to a maximum of 55 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 90.7 mt dw (199,943 lb dw); set the default LCS retention limit for directed permit holders to 45 LCS other than sandbar sharks per trip – Preferred Alternative*

Alternative B3 Increase the LCS retention limit for directed permit holders to a maximum of 72 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 82.7 mt dw (182,290 lb dw)

Alternative B4 Increase the LCS retention limit for directed permit holders to a maximum of 108 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 65.7 mt dw (144,906 lb dw)

4.2.1 ECOLOGICAL IMPACTS

Alternative B1 would not change the current commercial LCS retention limit for directed shark permit holders. This alternative would have short- and long-term neutral ecological impacts on the LCS fisheries. The current commercial LCS retention limit of 36 LCS other than sandbar sharks per trip was previously analyzed in Amendment 2. In Amendment 2, because sandbar sharks were

experiencing overfishing and in order to ensure too many sandbar sharks were not discarded dead while fishing for other LCS, NMFS reduced the commercial LCS retention limit from 4,000 lb per trip to 36 sharks per trip for directed permit holders[5]. This reduction in the retention limit along with other measures in Amendment 2 have had a positive impact on the sandbar shark stock, since the 2011 sandbar stock assessment indicated that the stock is no longer experiencing overfishing. However, due to limited resources available to fund observed trips, the sandbar quota in the research fishery has not been fully harvested in recent years. For instance, the shark research fishermen landed only 37 mt dw (81,628 lb dw), or 32 percent, of the available sandbar shark quota in 2013 and 54.2 mt dw (119,527 lb dw), or 46 percent, of the available sandbar shark quota in 2014. As such, NMFS believes that it is appropriate to reconsider the LCS trip limit to ensure commercial fishermen have an opportunity to harvest the available various LCS management group quotas in an efficient manner while not negatively affecting sandbar sharks.

Alternative B2, the preferred alternative, would increase the LCS retention limit to a maximum of 55, and a default of 45, as described below, LCS other than sandbar sharks per trip for shark directed permit holders and reduce the sandbar shark research fishery quota to 90.7 mt dw (199,943 lb dw). To determine the impacts of this alternative, NMFS used the methodology described in Section 2.2 to calculate how many sandbar sharks would potentially be discarded dead by vessels harvesting the 55 LCS retention limit. Because harvesting additional LCS per trip could result in additional sandbar sharks being discarded dead, NMFS would use a portion of the unharvested sandbar shark research fishery quota to offset these additional dead discards and reduce the sandbar shark research fishery quota accordingly. Thus, overall, NMFS does not expect the mortality of sandbar sharks to increase as a result of the increased trip limit under this alternative. Since the sandbar shark research fishery quota was previously analyzed in Amendment 2, and would be reduced to 90.7 mt dw in order to account for potential discards under a retention limit of 55 LCS per trip, this alternative would have short- and long-term neutral ecological impacts. In addition, NMFS believes that the retention limit increase under Alternative B2 would result in neutral direct and indirect ecological impacts to the different LCS management groups and other non-target species because the quotas for the different LCS management groups are not being modified in this rulemaking. In addition, fishermen would continue to be limited by the total amount of LCS that could be harvested, as well as by seasonal closures once 80 percent of the quota is reached. Although, as explained in Alternative A2, if fishermen increase the number of hooks per set substantially in order to catch the increased retention limit, they could end up discarding additional dead sharks as a result. If this happened, it would likely only happen in the short term as fishermen adjust their fishing practices to the adjusted trip limit. As described in Table 4.2, the increased retention limit of 55 LCS other than sandbar sharks per trip could result in 1,870 lb dw of LCS per trip. Since this is far less than the historical LCS retention limit of 4,000 lb dw, NMFS does not

[5] In Amendment 2, NMFS implemented, among other things, a 5-year retention limit reduction due to large overharvests in 2007. This resulted in a retention limit of 33 non-sandbar LCS per vessel per trip for directed shark permit holders from 2008-2012. In 2013, the retention limit increased to current levels of 36 non- sandbar LCS per vessel per trip for directed shark permit holders.

expect fishermen to re-enter the fishery because of an increase in retention limit from 36 LCS to 55 LCS per trip.

Lastly, as part of Alternative B2, NMFS would set the default commercial retention limit to 45 LCS other than sandbar sharks per trip based in response to the concerns raised during the public comment period. Some commenters were concerned that the higher retention limit would increase participation in the fishery and cause the quotas to be harvested faster, especially since the commercial quotas are not increasing. Furthermore, commenters felt that an increase in the commercial retention limit could result in permit holders who have not participated in recent years re-entering the commercial shark fishery or selling their permits to fishermen who want to enter the commercial shark fishery. Because new or returning fishermen do not have the same experience in avoiding sandbar sharks while also avoiding other prohibited species such as dusky sharks as the current fishermen, NMFS shares the concerns of these commenters that increasing the retention limit too much may have negative results, including increased sandbar shark discards. NMFS believes that setting the default retention limit at 45 LCS per trip would help alleviate these concerns. Additionally, if NMFS found that the LCS quotas were being harvested too quickly or too slowly, these retention limits could be adjusted on an inseason basis, using current regulations, to account for spatial and temporal differences, and other factors, in the Atlantic shark fisheries. This action would continue to have short- and long-term neutral ecological impacts since the lower retention limit of 45 LCS per trip would result in fewer discards of sandbar sharks, but NMFS would keep the sandbar shark research fishery quota at the level that corresponds to the 55 LCS per trip retention limit. NMFS can adjust the commercial retention limit anywhere from 0 to 55 LCS per trip before the next fishing season or mid-season. Therefore, NMFS does not expect total effort and fishing mortality to increase under the increased retention limit considered in this alternative.

Alternative B3 would increase the LCS retention limit to a maximum of 72 LCS other than sandbar sharks per trip for shark directed permit holders and reduce the sandbar shark research fishery quota to 82.7 mt dw (182,290 lb dw). This alternative uses the same retention limit calculation methodology used for the retention limits in Alternative B2, but the potential discard rate of sandbar sharks would be higher with a retention limit of 72 LCS per trip and the sandbar shark research fishery quota would be smaller at 82.7 mt dw. As described in Table 4.2, the increased retention limit to 72 LCS other than sandbar sharks per trip could result in 2,448 lb dw of LCS per trip. This increased retention limit is closer to the historical retention limit of 4,000 lb dw and could cause fishermen to re-enter the fishery because of the higher trip limit. If this occurs, these fishermen may not have fished under the non-sandbar LCS regulations and might not be able to avoid catching sandbar sharks while fishing for the other LCS species, which could lead to increased discards and potential adverse impacts to sandbar sharks. Also, as explained above, if fishermen increase the number of hooks per set substantially in order to catch the increased retention limit, they could end up discarding additional dead sharks as a result. This is more likely under this alternative than under alternative B2 given the larger difference in retention limits, but, as with Alternative B2, it would likely only happen in the short term as fishermen adjust their fishing practices to the adjusted retention limit. Overall, NMFS expects this alternative would have short- and long-term direct and indirect neutral ecological impacts, since NMFS expects that the increased retention limit would not increase total fishing mortality, since the non-sandbar LCS quotas are not changing.

Alternative B4 would increase the LCS retention limit to a maximum of 108 LCS other than sandbar sharks per trip for shark directed permit holders and reduce the sandbar shark research fishery quota to 65.7 mt dw (144,906 lb dw). NMFS expects this alternative to have short- and long-term neutral ecological impacts since LCS quotas are not being modified in this rulemaking and fishermen would continue to be limited by the total amount of LCS that could be harvested, as well as by seasonal closures once 80 percent of the quota is met. Similar to Alternatives B2 and B3, this alternative used the same methodology to calculate retention limits. Under Alternative B4, a retention limit of 108 LCS could have a higher sandbar shark discard rate than the retention limits considered in alternatives B2 and B3. The increased retention limit in Alternative B4 could result in 3,672 lb dw of non-sandbar LCS per trip (Table 4.2), which is very similar to the historical retention limit of 4,000 lb dw and would likely cause shark fishermen to re-enter the fishery and an increase in effort. If these shark fishermen re-enter the fishery and have not fished under the current regulations, they may not know how to avoid sandbar sharks when fishing for the other LCS species and could cause more sandbar shark discards. Also, as explained above, if fishermen increase the number of hooks per set substantially in order to catch the increased retention limit, they could end up discarding additional dead sharks as a result. This is more likely under this alternative than under the previous alternatives given the larger difference in retention limits and the likelihood of shark fishermen re-entering the shark fishery, but, as with Alternatives B2 and B3, it would likely only happen in the short term as fishermen adjust their fishing practices to the adjusted retention limit. In addition, the reduced sandbar shark research quota of 65.7 mt dw could have impacts to the entire shark research fishery, since this quota is less closer to 2014 sandbar shark research landings, which could cause the research fishery to close early, potentially impeding NMFS' ability to collect the necessary scientific data. Therefore, NMFS does not prefer this alternative, since data collection in the Atlantic shark research fishery could be impacted by the reduced sandbar shark research fishery quota considered under this alternative and due to the potential for adverse impacts from the re-entry of latent effort in the shark fishery.

4.2.2 SOCIAL AND ECONOMIC IMPACTS

Alternative B1 would not change the current commercial LCS retention limit for directed shark permit holders. The retention limit would remain at 36 LCS other than sandbar sharks per trip for directed permit holders. This retention limit would result in potential trip revenues of $1,184 (1,224 lb of meat, 61 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins (Table 4.2). It is likely that this alternative would have short-term neutral socioeconomic impacts, since the retention limits would not change under this alternative. However, not adjusting the retention limit would have long-term minor adverse socioeconomic impacts, due to the expected continuing decline in prices for shark products and increase in gas, bait, and other associated costs, which would lead to declining profitability of individual trips. In recent years, there have been changes in federal and state regulations, including the implementation of Amendment 5a and state bans on the possession, sale, and trade of shark fins, which have impacted shark fishermen. In addition to federal and state regulations, there have also been many international efforts to prohibit shark finning at sea, as well as campaigns targeted at the shark fin soup markets. All of these efforts have impacted the market and demand for shark fins. In addition, NMFS has seen a steady decline in ex-vessel prices for shark fins in all regions since 2010 (NMFS 2014).

Table 4.2 **Average 2014 ex-vessel prices and trip gross revenues for the fleet by retention limit. Shark fins are assumed to be 5 percent of the carcass weight.** Note: NMFS used an average weight of 34 lb dw for all LCS species since the large coastal shark management group was assessed in SEDAR 11 as a group that included blacktip, bull, tiger, spinner, hammerhead, silky, nurse, and lemon sharks. The average weight is the combination of all of the large coastal sharks that were caught using bottom longline gear. The ex-vessel prices for meat and fins are a combination of the regional prices.

Alternative	Retention Limit (Number of LCS per Trip)	Average Weight (lb dw)	Landings per Trip (lb dw)	Median Ex-Vessel Price	Average Trip Gross Revenues
B1	36	Meat: 34	1,224	$0.58	$714
		Fins: 1.7	61	$7.68	$470
		Total	1,285		$1,184
B2	45	Meat: 34	1,530	$0.58	$893
		Fins: 1.7	77	$7.68	$588
		Total	1,607		$1,488
	55	Meat: 34	1,870	$0.58	$1,091
		Fins: 1.7	94	$7.68	$718
		Total	1,964		$1,809
B3	72	Meat: 34	2,448	$0.58	$1,428
		Fins: 1.7	122	$7.68	$940
		Total	2,570		$2,368
B4	108	Meat: 34	3,672	$0.58	$2,142
		Fins: 1.7	184	$7.68	$1,410
		Total	3,856		$3,552

Alternative B2, the preferred alternative, would increase the LCS retention limit to a maximum of 55 LCS other than sandbar sharks per trip for shark directed permit holders and reduce the sandbar shark research fishery quota to 90.7 mt dw (199,943 lb dw). NMFS would also set the default LCS retention limit to 45 LCS other than sandbar sharks per trip for shark directed permit holders, but could adjust the retention limits to account for spatial, temporal, and other differences in the shark fisheries. This alternative would allow shark directed permit holders to retain 19 more LCS per trip than the current retention limit if the retention limit were increased to 55 LCS other than sandbar sharks per trip during the fishing season. Under a retention limit of 55 LCS other than sandbar sharks per trip, the potential trip revenues would be $1,809 (1,870 lb of meat, 94 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins (Table 4.2). Under the 45 LCS other than sandbar sharks per trip, the potential trip revenues would be lower at $1,488 (1,530 lb of meat, 77 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins (Table 4.2). This alternative would have short- and long-term direct minor beneficial socioeconomic impacts under both commercial retention limits, since shark directed permit holders could land more sharks per trip when compared to the current retention limit of 36 LCS per trip. The higher retention limit is likely to make each trip more profitable for fishermen, as well as more efficient, if they decide to take fewer trips, and in turn save money on fuel, bait, and other associated costs. The indirect impacts, which are those experienced by entities supporting the commercial shark fisheries, but not necessarily directly involved in the capture of the species, would likely be beneficial, because the more profitable shark trips could lead to increased sales, income, and employment for the entities supporting the shark fisheries. Regarding the shark research fishery, this alternative could cause an average annual loss of $68,307, since the sandbar research fishery quota would be reduced by 57,113 lb dw. This potential lost income for the research fishery could be positive for commercial fishermen, since the increased

retention limit could make trips more profitable. NMFS estimates that this reduction in the sandbar research fishery quota would have neutral socioeconomic impacts, based on current limited resources available to fund observed trips in the fishery and the current harvest level of the sandbar research fishery quota (Table 4.3). In 2014, the vessels participating in the Atlantic shark research fishery landed 54.2 mt dw (119,527 lb dw), or 46 percent, of the available sandbar shark quota. Under the new sandbar shark quota with the Atlantic shark research fishery, the 2014 landings would result in 60 percent of the new sandbar shark quota being landed. If available resources increase in the future for more observed trips in the fishery, then this alternative could have minor adverse socioeconomic impacts if the full quota is caught and the fishery has to close earlier in the year.

Table 4.3 Average sandbar shark research fishery 2014 ex-vessel prices, and average annual gross and loss revenues for the shark research fishery fleet under the different alternatives. Shark fins are assumed to be 5 percent of the carcass weight.

Alternatives	Species	Annual Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues	Average Annual Loss Revenues
B1	Sandbar shark	257,056	$0.69	$177,369	$0
	Fins	12,853	$10.12	$130,070	
	Totals			$307,439	
B2	Sandbar shark	199,943	$0.69	$137,961	$68,307
	Fins	9,997	$10.12	$101,171	
	Totals			$239,132	
B3	Sandbar shark	182,290	$0.69	$125,780	$89,420
	Fins	9,115	$10.12	$92,239	
	Totals			$218,019	
B4	Sandbar shark	144,906	$0.69	$99,985	$134,131
	Fins	7,245	$10.12	$73,322	
	Totals			$173,308	

Alternative B3 would increase the LCS retention limit to a maximum of 72 LCS other than sandbar sharks per trip for shark directed permit holders and reduce the sandbar shark research fishery quota to 82.7 mt dw (182,290 lb dw). This alternative would double the current retention limit. This new retention limit would result in potential trip revenues of $2,368 (2,448 lb of meat, 124 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins (Table 4.2). This alternative would have short- and long-term minor beneficial socioeconomic impacts, since shark directed permit holders could land twice as many LCS per trip. Shark directed trips would become more profitable, but more permit holders could become active in order to avail themselves of this higher trip limit, and potentially causing a derby fishery and bringing the price of shark products even lower. Thus, NMFS needs to balance providing the flexibility of increasing the efficiency of trips and the associated socioeconomic benefits with the negative socioeconomic impacts of derby fishing and lower profits. This alternative could have neutral impacts for fishermen participating in the Atlantic shark research fishery, since the 2014 landings (54.2 mt dw; 119,527 lb dw) would result in 66 percent of the new sandbar shark quota being landed. Under Alternative B3, the new sandbar shark quota could result in average annual lost revenue of $89,420 (Table 4.3) for those fishermen participating in the shark research fishery, but the income could be recouped by the increased retention limit outside the shark research fishery. If available resources increase in the future for more observed trips in the fishery, then this alternative still would have neutral socioeconomic

impacts, since the observed trips would be distributed throughout the year, to ensure the research fishery remains open and obtains biological and catch data all year round.

Alternative B4 would increase the LCS retention limit to a maximum of 108 LCS other than sandbar sharks per trip for shark directed permit holders and reduce the sandbar shark research fishery quota to 65.7 mt dw (144,906 lb dw). This alternative would allow shark directed permit holders to retain three times as many LCS per trip as the current retention limit. This new retention limit would result in potential trip revenues of $3,552 (3,672 lb of meat, 184 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins (Table 4.2). This alternative could have short- and long-term moderate beneficial socioeconomic impacts, since shark directed permit holders could land three times the current LCS retention limit. This increased retention limit could result in 3,672 lb dw of LCS per trip (Table 4.2), which could bring the fishery almost back to historical levels of 4,000 lb dw LCS per trip. While a retention limit of 108 LCS per trip would make each trip more profitable and potentially require fishermen to take fewer trips per year, this large increase in the retention limit would likely result in more permit holders becoming active in the LCS fishery. Thus, the shark fishery could return to a derby fishery, with quotas being caught at a faster rate and the fishing season shortened. Additionally, in order to increase the retention limit to 108 LCS per trip, the sandbar shark research quota would need to be reduced to an amount comparable to the 2014 landing in the shark research fishery, which could have minor adverse impacts on fishermen in the shark research fishery, who would lose quota, and thus revenue.

4.2.3 CONCLUSION

NMFS prefers an increase in retention limit from 36 to 55 LCS per trip with a default of 45 LCS per trip, since the higher retention limit would have neutral direct and indirect ecological impacts to the LCS stocks and other non-target species. Also, the corresponding reduction in the sandbar shark research fishery quota to 90.7 mt dw would allow the shark research fishery to continue at current levels without impeding the collection of important scientific data, while also allowing it some room to grow. The change in the preferred alternative between the Draft EA and this document is consistent with concerns raised during the public comment period. In addition, Alternative B2 would provide fishermen with additional flexibility to increase efficiencies and could result in beneficial direct and indirect socioeconomic impacts due to more profitable shark fishing trips. NMFS does not prefer the No Action alternative since this alternative would not account for changes in the market or provide additional flexibility to Atlantic shark fishermen. NMFS does not prefer Alternative B3 due to the possibility of adverse impacts from latent effort returning to the fishery. NMFS does not prefer Alternative B4 due to the potential for adverse impacts from the re-entry of latent effort in the shark fishery and because data collection in the Atlantic shark research fishery could be adversely impacted by the reduced sandbar shark research fishery quota of 65.7 mt dw.

4.3 ATLANTIC REGIONAL AND SUB-REGIONAL QUOTAS

The following alternatives consider establishing sub-regional quotas for LCS and SCS, as well as potentially removing SCS quota linkages within newly designated sub-regions within the Atlantic Region, adjusting the non-blacknose SCS regional quotas based on recent stock assessments, and

creating a management boundary to modify the blacknose and non-blacknose SCS quota linkage. NMFS prefers Alternatives C7 and C8.

Alternative C1 No Action: Do not implement sub-regional quotas in the Atlantic region; do not adjust the non-blacknose SCS quota to reflect the results of the 2013 assessments for Atlantic sharpnose and bonnethead sharks; do not adjust the quota linkages in the Atlantic region; do not prohibit the harvest of blacknose sharks in the Atlantic region or any portion of the Atlantic region.

Alternative C2 Apportion the Atlantic regional commercial quotas for certain LCS and SCS management groups along 33° 00' N. lat. (approximately at Myrtle Beach, South Carolina) into northern and southern sub-regional quotas.

Alternative C3 Apportion the Atlantic regional commercial quotas for certain LCS and SCS management groups along 34° 00' N. lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas.

Alternative C4 Apportion the Atlantic regional commercial quotas for certain LCS and SCS management groups along 34° 00' N. lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas and maintain SCS quota linkages in the southern sub-region of the Atlantic region; remove the SCS quota linkages in the northern sub-region of the Atlantic region and prohibit the harvest and landings of blacknose sharks in the North Atlantic region

Alternative C5 Establish an Atlantic non-blacknose SCS TAC of 353.2 mt dw and adjust the non-blacknose SCS commercial quota to 128 mt dw (282,238 lb dw).

Alternative C6 Establish a non-blacknose SCS TAC of 401.3 mt dw and maintain the current commercial base annual quota of 176.1 mt dw (388,222 lb dw)

Alternative C7 *Establish a non-blacknose SCS TAC of 489.3 mt dw and increase the commercial quota to 264.1 mt dw (582,333 lb dw) – Preferred Alternative*

Alternative C8 *Do not implement sub-regional quotas in the Atlantic region; establish a management boundary in the Atlantic region along 34° 00' N. latitude (approximately at Wilmington, North Carolina) for the SCS fishery; maintain the SCS quota linkages south of the 34° 00' N. latitude; and prohibit the harvest and landings of blacknose sharks north of the 34° 00' N. latitude - Preferred Alternative*

4.3.1 ECOLOGICAL IMPACTS

Alternative C1, the No Action alternative, would not change current management of the Atlantic shark fisheries. Currently, the regional base quotas for each management group are as follows: aggregated LCS (168.9 mt dw; 372,552 lb dw), hammerhead sharks (27.1 mt dw; 59,736 lb dw), blacknose sharks (18.0 mt dw; 39,749 lb dw), and non-blacknose SCS (176.1 mt dw; 388,222 lb dw). Additionally, existing quota linkages would also be maintained between the aggregated LCS and hammerhead shark management groups, as well as between the non-blacknose SCS and blacknose shark management groups. The harvest of blacknose sharks would be allowable throughout the entire Atlantic region. This alternative would have neutral short- and long-term direct ecological impacts to all the species in the LCS and SCS management groups because current quotas would be maintained. By taking no action, there would be no expected changes to fishing pressure, dynamics within the fisheries themselves, or the number of expected interactions with non-target, incidentally caught species.

Alternative C2 would apportion the Atlantic regional quotas for certain LCS and SCS management groups along 33° 00' N. lat. (approximately at Myrtle Beach, South Carolina) into northern and southern sub-regional quotas. The percentage of the total regional quota apportioned to each sub-region would be based on historical landings (see Tables Table 2.5 and Table 2.7). This alternative would likely result in both direct short- and long-term, neutral ecological impacts on LCS and SCS. Establishing sub-regional quotas would have no impact on the current level of fishing pressure, catch rates, or distribution of fishing effort, but instead represents an administrative change in how quotas are monitored throughout the Atlantic region. Because sub-regional quotas are estimated from historical landings, and thus on typical fishing activity within sub-regions, there would be no expected ecological differences in how fishermen from the various Atlantic states interact with LCS and SCS, as compared to current conditions. Similarly, both indirect short- and long-term neutral ecological impacts would be expected for Alternative C2, because with anticipated fishing activities remaining the same as status quo, no increases in potential bycatch or increased interactions with non-target, incidentally caught species are expected. While establishing sub-regional quotas would allow season openings for LCS and SCS to vary within the Atlantic region, preferred season opening dates largely reflect the preferred time period during which fishermen within sub-regions were already most active. Thus, establishing sub-regional quotas would result in fishermen interacting with the typical suite of non-target, incidentally caught species during the time of year when they were normally most active. Under this alternative, the quota for blacknose sharks in the northern sub-region would be 1.1 mt dw, which would be difficult for NMFS to monitor and could possibly lead to quota overharvests.

Alternative C3 would apportion the Atlantic regional quotas for certain LCS and SCS management groups along 34° 00' N. lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas. The percentage of the total regional quota apportioned to each sub-region would be based on historical landings (see Tables Table 2.9 and Table 2.11). While Alternative C3 considers a different boundary between the northern and southern sub-regions than Alternative C2, Alternative C3 is similar to Alternative C2 in that the alternative represents an administrative change in how quotas are monitored throughout the Atlantic region. Establishing sub-

regional quotas based on historical landings and typical fishing activity within sub-regions, as well as formalizing already existing preferences in season opening dates for LCS and SCS between sub-regions, should result in neutral ecological impacts, for the same reasons discussed in Alternative C2. Thus, we similarly would expect both direct and indirect short- and long-term neutral ecological impacts on LCS and SCS, as well as on bycatch and non-target, incidentally caught species. Under this alternative the quota for blacknose sharks in the northern sub-region would be 0.8 mt dw, which would be difficult for NMFS to monitor and could possibly lead to quota overharvests.

Alternative C4 would apportion the Atlantic regional quotas for certain LCS and SCS management groups along 34° 00' N. lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas and adjust the non-blacknose SCS quota based on the results of the 2013 assessments for Atlantic sharpnose and bonnethead sharks. The percentage of the total regional quota apportioned to each sub-region would be based on historical landings (see Tables 2.9 and 2.11). Alternative C4 would also maintain SCS quota linkages in the southern sub-region of the Atlantic region, remove the SCS quota linkages in the northern sub-region of the Atlantic region, and prohibit the harvest of blacknose sharks in the northern Atlantic sub-region. In the southern Atlantic sub-region, no changes would be made in the existing quota linkages between blacknose and non-blacknose SCS. Thus, within the southern Atlantic sub-region, Alternative C4 would likely result in both direct and indirect short- and long-term, neutral ecological impacts on SCS, since current conditions would be maintained. In contrast, in the northern Atlantic sub-region, quota linkages would be removed between blacknose and non-blacknose SCS. While quota linkages are normally maintained to mitigate incidental mortality of species caught together, only approximately five percent of blacknose shark landings in the Atlantic region can be attributed to fishing activities in the northern Atlantic sub-region. Thus due to the difficulties associated with managing a small quota based on 0.8 mt dw (or 5 percent of blacknose shark landings), harvest of blacknose sharks would be prohibited in the northern Atlantic sub-region under this alternative. Prohibiting harvest of blacknose in the northern Atlantic sub-region would reduce the likelihood of overharvesting blacknose sharks by quickly exceeding the quota, and eliminate the need to monitor a small quota. Thus, Alternative C4 would likely result in both direct and indirect short- and long-term neutral ecological impacts on SCS within the northern Atlantic sub-region.

Alternative C5 would establish a non-blacknose SCS TAC of 353.2 mt dw and reduce the non-blacknose SCS commercial quota to 128 mt dw (282,238 lb dw). In this alternative, NMFS would limit the non-blacknose SCS commercial quota to levels consistent with the 2013 bonnethead shark stock assessment. Based on this assessment, NMFS determined that the status of this stock is unknown. In order to calculate the non-blacknose SCS commercial quota from this TAC, as described in Section 2.3, NMFS subtracted all sources of mortality (e.g., the recreational bonnethead landings, the commercial bonnethead discards, and the research set-aside quota) to calculate a non-blacknose SCS commercial quota of 128 mt dw. Using this methodology to calculate the total non-blacknose SCS commercial is conservative, since it does not factor in the status of the other species in the non-blacknose SCS management group or the level of fishing mortality that these other species can withstand at a sustainable level. In other words, this approach uses bonnethead sharks as the limiting factor. Given that the Atlantic sharpnose stock assessment found that this species is not overfished with no overfishing occurring and the projections indicated that there was a 70 percent

chance that Atlantic sharpnose would not become overfished or experience overfishing at current harvest levels, it is likely that the non-blacknose SCS commercial quota and overall TAC considered under this alternative is unnecessarily low. The non-blacknose SCS commercial quota considered under this alternative would have direct and indirect minor short-term and moderate long-term beneficial ecological impacts to the species in this management group, as the quota would be based on the results of the most recent stock assessments for both the bonnethead and Atlantic sharpnose sharks and would likely keep fishing mortality capped below current levels, while not increasing interactions with blacknose sharks.

Alternative C6 would establish a non-blacknose SCS TAC of 401.3 mt dw and maintain the current non-blacknose SCS commercial base quota of 176.1 mt dw (388,222 lb dw*)*. For this alternative, NMFS used the current Atlantic non-blacknose SCS commercial base annual quota of 176.1 mt dw to determine the new Atlantic TAC for this species group. The calculations for both the TAC and commercial quota are described in Section 2.3. In addition, the projections that were run for Atlantic sharpnose and bonnethead sharks in SEDAR 34 indicated that there was a 70 percent chance that both species would not become overfished or experience overfishing at current harvest levels. Thus, because this non-blacknose SCS TAC and commercial quota takes into account all sources of mortality for both species, and maintains the commercial base annual quota, which would maintain both species at current levels, NMFS believes that Alternative C6 would have direct and indirect short- and long-term neutral ecological impacts to the Atlantic stock of Atlantic sharpnose and bonnethead sharks. In addition, because NMFS only carries over underharvested quota if all species in the management group are not overfished with no overfishing occurring, the commercial quota would be maintained at 176.1 mt dw and could not be adjusted for underharvests until all three species (finetooth, bonnethead, and Atlantic sharpnose) have a healthy status. This commercial quota would likely keep fishing mortality capped at current levels and not increase interactions with blacknose sharks and would help to account for the unknown status of Atlantic bonnethead sharks.

Alternative C7, one of the preferred alternatives, would establish a non-blacknose SCS TAC of 489.3 mt dw and increase the commercial base quota to 264.1 mt dw (582,333 lb dw). For this alternative, NMFS used the 2014 non-blacknose SCS commercial adjusted quota of 264.1 mt dw to calculate the TAC (see Section 2.3). NMFS believes that this TAC and commercial quota accurately reflect the stock status of finetooth, bonnethead, and Atlantic sharpnose sharks and would keep blacknose shark interactions at current levels. Capping the non-blacknose SCS quota at a higher level could potentially encourage more fishermen to fish for non-blacknose SCS, which could potentially increase interactions with blacknose sharks. However, it is likely that setting the non-blacknose SCS commercial quota at 264.1 mt dw would have direct and indirect neutral short and long-term ecological impacts to both non-blacknose SCS and blacknose sharks, because the quota linkage would still be in place south of 34° 00’ N. lat. to prevent overharvest of blacknose sharks. In addition, the projections that were run for Atlantic sharpnose and bonnethead sharks in SEDAR 34 indicated that there was a 70 percent chance that both species would not become overfished or experience overfishing at current harvest levels and could withstand harvest above current levels.

Based on public comment, Alternative C7 is now the preferred alternative. As described in Alternative C6, NMFS received unanimous support for an increase in the non-blacknose SCS TAC and commercial quota levels, with some commenters specifically requesting the higher non-

blacknose SCS TAC and commercial quota in Alternative C7 in the Draft EA. NMFS believes that a higher non-blacknose SCS TAC and commercial quota would have minimal impacts on the non-blacknose SCS management group, given that the results of the stock assessment showed that both species would not become overfished or experience overfishing at current harvest levels and could withstand harvest above current levels. NMFS preferred Alternative C6 in the proposed rule to be cautious regarding the "unknown" status of bonnethead sharks. However, based on public comments and after reviewing the combined Gulf of Mexico and Atlantic non-blacknose SCS landings in 2014, NMFS found that bonnethead sharks represented only 6 percent of landings, and therefore, limiting the quota based on bonnethead sharks would be overly conservative. Thus, the higher non-blacknose SCS commercial quota under Alternative C7 would continue to allow fishermen to land these species at current levels, while maintaining the Atlantic sharpnose and bonnethead stocks at sustainable levels, without unnecessarily limiting the quota, and thus limiting economic gains, due to bonnethead sharks. Regarding finetooth sharks, while results from the SEDAR 13 stock assessment for finetooth sharks should be viewed cautiously, NMFS does not anticipate this quota would negatively impact the finetooth shark stock. The quota under Alternative C7 is significantly lower than the maximum non-blacknose SCS quota put in place (332.4 mt dw), which still provided for sustainable harvest of non-blacknose SCS. This combined with the fact that finetooth sharks represented only 21 percent of combined Gulf of Mexico and Atlantic non-blacknose SCS landings in 2014, compared to Atlantic sharpnose representing 73 percent, further supports that this quota would have minimal impacts on the finetooth shark stock. The higher non-blacknose SCS commercial quota under the new preferred Alternative C7 will continue to allow fishermen to land these species at current levels, while maintaining the Atlantic sharpnose, bonnethead, and finetooth shark stocks at sustainable levels. Therefore, NMFS prefers Alternative C7 in the Final EA.

Alternative C8, one of the preferred alternatives, would maintain the current aggregated LCS (168.9 mt dw; 372,552 lb dw) and hammerhead shark (27.1 mt dw; 59,736 lb dw) regional quotas in the Atlantic region, establish a management boundary at 34° 00' N. lat. for the SCS fishery, and prohibit the retention of blacknose sharks north of the management boundary at 34° 00' N. lat. In addition, NMFS would remove the quota linkage between non-blacknose SCS and blacknose sharks north of 34° 00' N. lat. and maintain this quota linkage south of 34° 00' N. lat. In order to account for blacknose shark discard mortality north of 34° 00' N. lat., NMFS would reduce the Atlantic blacknose shark quota from 18 mt dw (39,749 lb dw) to 17.2 mt dw (37,921 lb dw). The calculations for the commercial quotas are described in Section 2.3. This alternative would have neutral short- and long-term direct ecological impacts to all the species in the LCS and SCS management groups because the current quotas and the quota linkage between blacknose and non-blacknose SCS management groups south of the 34° 00' N. lat. would be maintained. By not changing the quotas and maintaining the quota linkage south of the 34° 00' N. lat., where most blacknose sharks are caught, there would be no expected changes to fishing pressure, dynamics within the fisheries themselves, or the number of expected interactions with non-target, incidentally caught species. As in Alternative C4, removing the quota linkage between blacknose and non-blacknose SCS management groups and prohibiting landings of blacknose sharks north of 34° 00' N. lat. would likely result in both direct and indirect short- and long-term neutral ecological impacts on blacknose and non-blacknose SCS management groups north of 34° 00' N. lat. While quota linkages are normally maintained to mitigate incidental mortality of species caught together, only a small

percentage of blacknose shark landings (less than 5 percent) occur north of 34° 00' N. lat. Prohibiting harvest of blacknose sharks north of the management boundary at 34° 00' N. lat. and reducing the Atlantic blacknose shark quota to account for blacknose shark discard mortality in this area would eliminate the likelihood of exceeding what would be a small blacknose shark quota in the northern sub-region, and would eliminate the need to monitor a small quota. Thus, overall Alternative C8 would likely result in direct and indirect short-term neutral ecological impacts.

4.3.2 SOCIAL AND ECONOMIC IMPACTS

Alternative C1, the No Action alternative, would not change the current management of the Atlantic shark fisheries. This alternative would likely result in short-term direct neutral socioeconomic impacts, as the shark fisheries would continue to operate under current conditions, with shark fishermen continuing to fish at current rates. Based on the 2014 ex-vessel prices in Table 4.4, the annual gross revenues for the entire fleet from aggregated LCS and hammerhead shark meat in the Atlantic region would be $313,464, while the shark fins would be $85,009. Thus, total average annual gross revenues for aggregated LCS and hammerhead shark landings in the Atlantic region would be $398,473 ($313,464 + $85,009), which is 9 percent of the entire revenue for the shark fishery. For the non-blacknose SCS and blacknose shark landings, the annual gross revenues for the entire fleet from the meat would be $318,289, while the shark fins would be $85,594. The total average annual gross revenues for non-blacknose SCS and blacknose shark landings in the Atlantic region would be $403,883 ($318,289 + $85,594) (Table 4.4), which is 9 percent of the entire revenue for the shark fishery. However, this alternative would likely result in long-term minor adverse socioeconomic impacts. Negative impacts would be partly due to the continued negative effects of federal and state regulations related to shark finning and sale of shark fins, which have resulted in declining ex-vessel prices of fins since 2010, as well as continued changes in shark fishery management measures. Additionally, under the current regulations, fishermen operating in the south of the Atlantic region drastically impact the availability of quota remaining for fishermen operating in the north of the Atlantic region. If fishermen in the south fish early in the year and NMFS does not adjust the LCS retention limit, they have the ability to land a large proportion of the quota before fishermen in the north have the opportunity to fish, due to time/area closures and seasonal migrations of LCS and SCS, potentially resulting in indirect long-term minor adverse socioeconomic impacts. However, NMFS would intend to use existing regulations to monitor the LCS quotas and adjust the retention limit as needed to ensure equitable fishing opportunities throughout the region. This approach could result in some minor beneficial impacts over the long-term. Indirect short-term socioeconomic impacts resulting from any of the actions in Alternative C1 would likely be neutral because the measures would maintain the status quo with respect to shark landings and fishing effort. However, this alternative would likely result in indirect long-term minor beneficial socioeconomic impacts. Beneficial socioeconomic impacts and increased revenues associated with ensuring equitable fishing opportunities through trip limit adjustments experienced by fishermen within Atlantic shark fisheries would carry over to the dealers and supporting businesses they regularly interact with.

Table 4.4 Average aggregated LCS, hammerhead shark, non-blacknose SCS, and blacknose shark 2014 ex-vessel prices and annual gross revenues for the fleet in the Atlantic region based on 2015 base annual quotas. Shark fins are assumed to be 5 percent of the carcass weight.

Species	2015 Base Annual Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
Aggregated LCS	372,552	$0.75	$279,414
Fins	18,628	$4.19	$78,050
Hammerhead shark	59,736	$0.57	$34,050
Fins	2,987	$2.33	$6,959
Total LCS Meat	432,288		$313,464
Total LCS Fin	21,614		$85,009
Non-Blacknose SCS	388,222	$0.74	$287,284
Fins	19,411	$4.00	$77,644
Blacknose shark	39,749	$0.78	$31,004
Fins	1,987	$4.00	$7,950
Total SCS Meat	427,971		$318,289
Total SCS Fin	21,399		$85,594

Alternative C2 would apportion the Atlantic regional quotas for certain LCS and SCS management groups along 33° 00’ N. Latitude (approximately at Myrtle Beach, South Carolina) into northern and southern sub-regional quotas. Establishing sub-regional quotas could allow for flexibility in seasonal openings within the Atlantic region. Different seasonal openings within sub-regions would allow fishermen to maximize their fishing effort during periods when sharks migrate into local waters or when regional time/area closures are not in effect. Different seasonal openings within sub-regions would benefit the economic interests of North Carolina and Florida fishermen, the primary constituents impacted by the timing of seasonal openings for LCS and SCS in the Atlantic, by placing them in separate sub-regions with separate sub-regional quotas. However, drawing the regional boundary between the northern and southern Atlantic sub-regions along 33° 00’ N. Lat. could create conflicting economic interests among fishermen in South Carolina and North Carolina, since splitting the State of South Carolina could create issues surrounding season opening dates in the northern region. Fishermen in South Carolina could prefer a season opening date, based on when which sharks arrive in coastal waters, at a time period during which the Mid-Atlantic Shark Closure Area is closed to fishermen off North Carolina waters. As a result, North Carolina fishermen would be unable to maximize fishing efforts and accrue revenue until the closed area was open. While North Carolina fishermen would be unable to maximize fishing efforts until the Mid-Atlantic Shark Closure area opened, Alternative C2 would still likely result in direct, short-term minor beneficial impacts due to flexibility in season opening dates between sub-regions allowing fishermen to maximize their fishing effort, and thereby maximize revenue, during periods when sharks migrate into local waters, and ultimately, direct, long-term moderate beneficial impacts as increased revenues from increased landings each fishing season would continue to accrue annually.

Under this alternative, the northern Atlantic sub-region would receive 21.0 percent of the total aggregated LCS quota (35.4 mt dw; 78,236 lb dw) and 34.9 percent of the total hammerhead shark quota (9.5 mt dw; 20,848 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for aggregated LCS and hammerhead shark meat in the northern Atlantic sub-region would be $70,560,

while the shark fins would be $18,819. Thus, total average annual gross revenues for aggregated LCS and hammerhead shark landings in the northern Atlantic sub-region would be $89,379 ($70,560 + $18,819) (Table 4.5). When compared to the other alternatives, the northern Atlantic sub-region would have minor beneficial socioeconomic impacts under Alternative C2, because this alternative would result in the highest total average annual gross revenues for aggregated LCS and hammerhead sharks. In the southern Atlantic sub-region, fishermen would receive 79.0 percent of the total aggregated LCS quota (133.5 mt dw; 294,316 lb dw) and 65.1 percent of the total hammerhead shark quota (17.6 mt dw; 38,888 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for aggregated LCS and hammerhead shark meat in the southern Atlantic sub-region would be $242,903, while the shark fins would be $66,190. The total average annual gross revenues for aggregated LCS and hammerhead shark landings in the southern Atlantic sub-region would be $309,093 ($242,903 + $66,190) (Table 4.5). When compared to the other alternatives, the southern Atlantic sub-region would have minor adverse socioeconomic impacts under Alternative C2, because this alternative would result in lower total average annual gross revenues for aggregated LCS and hammerhead sharks.

Table 4.5 Average aggregated LCS and hammerhead shark 2014 ex-vessel prices and annual gross revenues for the fleet by region based on potential sub-regional quotas. Shark fins are assumed to be 5 percent of the carcass weight.

Species	Potential Sub-Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
North Atlantic Region			
Aggregated LCS	78,236	$0.75	$58,677
Fins	3,912	$4.19	$16,390
Hammerhead shark	20,848	$0.57	$11,883
Fins	1,042	$2.33	$2,429
Total Meat	99,084		$70,560
Total Fin	4,954		$18,819
South Atlantic Region			
Aggregated LCS	294,316	$0.75	$220,737
Fins	14,716	$4.19	$61,659
Hammerhead shark	38,888	$0.57	$22,166
Fins	1,944	$2.33	$4,530
Total Meat	333,204		$242,903
Total Fin	16,660		$66,190

Under Alternative C2, NMFS would determine the blacknose shark quota for each sub-region using the percentage of landings associated with blacknose sharks within each sub-region and the new non-blacknose SCS quotas in conjunction with Alternatives C5, C6, and C7. The northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota, while the southern Atlantic sub-region would receive 66.5 percent of the total non-blacknose SCS quota in this alternative. For the blacknose sharks, the northern Atlantic sub-region would receive 6.2 percent of the total blacknose shark quota (1.1 mt dw; 2,464 lb dw), while the southern Atlantic sub-region would receive 93.8 percent of the total blacknose shark quota (16.9 mt dw; 37,285 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for blacknose shark meat in the northern Atlantic

sub-region would be $1,953, while the shark fins would be $493. Thus, total average annual gross revenues for blacknose shark landings in the northern Atlantic sub-region would be $2,446 ($1,953 + $493) (Table 4.6). Based on the 2014 ex-vessel prices, the annual gross revenues for blacknose shark meat in the southern Atlantic sub-region would be $29,082, while the shark fins would be $7,457. The total average annual gross revenues for blacknose shark landings in the southern Atlantic sub-region would be $36,539 ($29,082 + $7,457) (Table 4.6). Under this alternative, the quota for blacknose sharks in the northern sub-region would be 1.1 mt dw, which would be very difficult for NMFS to monitor and possibly lead to quota overharvests. This small blacknose quota also could lead to the non-blacknose SCS season being closed very early and thus fishermen losing revenues if they are not able to land the non-blacknose SCS quota.

Table 4.6 Average blacknose shark 2014 ex-vessel prices and annual gross revenues for the fleet by region based on potential sub-regional quotas. Shark fins are assumed to be 5 percent of the carcass weight.

Species	Potential Sub-Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
North Atlantic Region			
Blacknose shark	2,464	$0.78	$1,922
Fins	123	$4.00	$493
South Atlantic Region			
Blacknose shark	37,285	$0.78	$29,082
Fins	1,864	$4.00	$7,457

Alternative C3 would apportion the Atlantic regional quotas for certain LCS and SCS management groups along 34° 00’ N. lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas. Establishing sub-regional quotas could allow for flexibility in seasonal openings within the Atlantic region. Different seasonal openings within sub-regions would allow fishermen to maximize their fishing effort during periods when sharks migrate into local waters or when regional time/area closures are not in place. Flexibility in seasonal opening dates within sub-regions could also potentially allow for year-round fisheries. Under this alternative, while the majority of landings from North Carolina would be considered within the northern Atlantic sub-region, a subset would be considered in the southern Atlantic sub-region. Since one of the objectives of establishing sub-regional quotas is to increase economic benefits to North Carolina and Florida fishermen, the primary constituents impacted by the timing of seasonal openings for LCS and SCS in the Atlantic, Alternative C3 would be more beneficial than the scenario under Alternative C2, because drawing the regional boundary between the northern and southern Atlantic sub-regions along 34° 00’ N. lat. this would avoid negative impacts associated with the boundary in Alternative C2. If the boundary between sub-regions was at 34° 00’ N. lat., this would give fishermen in North Carolina more control over opening dates for the shark fisheries, which would allow them greater opportunities to maximize fishing efforts and revenue once the Mid-Atlantic Shark Closed Area is open to fishing. Alternative C3 would still likely result in direct, short-term minor beneficial impacts, due to fishermen maximizing their fishing effort, and thereby maximizing revenue, during periods when sharks migrate into local waters, and ultimately, direct, long-term moderate beneficial impacts, as increased revenues from increased landings each fishing season would continue to accrue annually.

Under this alternative, the northern Atlantic sub-region would receive 18.4 percent of the total aggregated LCS quota (31.0 mt dw; 68,550 lb dw) and 34.9 percent of the total hammerhead shark quota (9.5 mt dw; 20,848 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for aggregated LCS and hammerhead shark meat in the northern Atlantic sub-region would be $63,296, while the shark fins would be $14,697. Thus, total average annual gross revenues for aggregated LCS and hammerhead shark landings in the northern Atlantic sub-region would be $77,993 ($63,296 + $14,697) (Table 4.7). In the southern Atlantic sub-region, fishermen would receive 81.6 percent of the total aggregated LCS quota (137.9 mt dw; 304,002 lb dw) and 65.1 percent of the total hammerhead shark quota (17.6 mt dw; 38,888 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for aggregated LCS and hammerhead shark meat in the southern Atlantic sub-region would be $250,168, while the shark fins would be $68,219. The total average annual gross revenues for aggregated LCS and hammerhead shark landings in the southern Atlantic sub-region would be $318,387 ($250,168 + $68,219) (Table 4.7)

Table 4.7 Average aggregated LCS and hammerhead shark 2014 ex-vessel prices and annual gross revenues for the fleet by region based on potential sub-regional quotas. Shark fins are assumed to be 5 percent of the carcass weight

Species	Potential Sub-Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
North Atlantic Region			
Aggregated LCS	68,550	$0.75	$51,413
Fins	2,928	$4.19	$12,268
Hammerhead shark	20,848	$0.57	$11,883
Fins	1,042	$2.33	$2,429
Total Meat	89,770		$63,296
Total Fin	4,488		$14,697
South Atlantic Region			
Aggregated LCS	304,002	$0.75	$228,002
Fins	15,200	$4.19	$63,689
Hammerhead shark	38,888	$0.57	$22,166
Fins	1,944	$2.33	$4,530
Total Meat	342,891		$250,168
Total Fin	17,145		$68,219

As in Alternative C2, NMFS would determine the blacknose shark quota for each sub-region using the percentage of landings associated with blacknose sharks within each sub-region in Alternative C3 and the new non-blacknose SCS quotas in conjunction in Alternatives C5, C6, and C7. Under Alternative C3, the northern Atlantic sub-region would receive 32.9 percent of the total non-blacknose SCS quota, while the southern Atlantic sub-region would receive 67.1 percent of the total non-blacknose SCS quota. For the blacknose sharks, the northern Atlantic sub-region would receive 4.6 percent of the total blacknose shark quota (0.8 mt dw; 1,828 lb dw), while the southern Atlantic sub-region would receive 95.4 percent of the total blacknose shark quota (16.7 mt dw; 37,921 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for blacknose shark meat in the northern Atlantic sub-region would be $1,426, while the shark fins would be $366. Thus, total

average annual gross revenues for blacknose shark landings in the northern Atlantic sub-region would be $1,792 ($1,426 + $366) (Table 4.8). Based on the 2014 ex-vessel prices, the annual gross revenues for blacknose shark meat in the southern Atlantic sub-region would be $29,578, while the shark fins would be $7,584. The total average annual gross revenues for blacknose shark landings in the southern Atlantic sub-region would be $37,162 ($29,578 + $7,584) (Table 4.8).

Table 4.8 Average blacknose shark 2014 ex-vessel prices and annual gross revenues for the fleet by region based on potential sub-regional quotas. Shark fins are assumed to be 5 percent of the carcass weight.

Species	Potential Sub-Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
North Atlantic Region			
Blacknose shark	1,828	$0.86	$1,426
Fins	91	$4.00	$366
South Atlantic Region			
Blacknose shark	37,921	$0.86	$29,578
Fins	1,896	$4.00	$7,584

Alternative C4 would apportion the Atlantic regional quotas for certain LCS and SCS management groups along 34° 00’ N. lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas, maintain SCS quota linkages in the southern sub-region of the Atlantic region, remove the SCS quota linkages in the northern sub-region of the Atlantic region, and prohibit the harvest and landings of blacknose sharks in the northern Atlantic sub-region. The socioeconomic impacts of apportioning the Atlantic regional quotas for LCS and SCS along 34° 00’ N. lat. into northern and southern sub-regional quotas would have the same impacts as described in alternative C3 above (Tables Table 4.7 and Table 4.8). Removing quota linkages within the northern Atlantic sub-region would have beneficial impacts, as active fishermen in the northern Atlantic sub-region would be able to continue fishing for non-blacknose SCS without the fishing activities in the southern Atlantic sub-region, where the majority of blacknose sharks are landed, impacting the timing of the non-blacknose SCS fishery closure. This could allow fishermen in the northern Atlantic to increase their landings before the fishery closes and to maximize their fishing effort at times when fishing would be most profitable for them, thereby maximizing revenue, and the increased revenues from increased landings would continue to accrue with each fishing year. Economic advantages associated with removing quota linkages, allowing the northern Atlantic sub-region to land a larger number of non-blacknose SCS, would outweigh the income lost from prohibiting landings of blacknose sharks for fishermen in the northern sub-region ($1,426; Table 4.8), particularly given the minimal landings of blacknose sharks attributed to the northern sub-region. In the southern Atlantic region, no socioeconomic impacts are expected by maintaining the quota linkages (status quo) already in place for SCS. Thus, by removing quota linkages in the northern Atlantic region, in combination with apportioning the Atlantic regional quota at 34° 00’ N. lat. to allow fishermen to maximize their fishing effort, and thereby maximize revenue, during periods when sharks migrate into local waters or when regional time/area closures are not in place, Alternative C4 would result in overall direct and indirect, short- and long-term moderate beneficial socioeconomic impacts.

Alternative C5 would establish a non-blacknose SCS TAC of 353.2 mt dw and reduce the non-blacknose SCS commercial quota to 128 mt dw (282,238 lb dw) (Table 4.9). When combined with the other alternatives to establish sub-regional non-blacknose SCS quotas, the economic impacts of Alternative C5 would vary based on the alternative. Under Alternative C2, the northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota (42.9 mt dw; 94,550 lb dw) and the southern Atlantic sub-region would receive 65.5 percent of the total non-blacknose SCS quota (85.1 mt dw; 187,668 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $69,967, while the shark fins would be $18,910. Thus, total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $88,877 ($69,967 + $18,910) (Table 4.10). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $138,889, while the shark fins would be $37,538. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $176,427 ($138,889 + $37,538) (Table 4.10). Under Alternatives C3 and C4, the northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota (42.1 mt dw; 92,856 lb dw), while the southern Atlantic sub-region would receive 67.1 percent of the total non-blacknose SCS quota (85.9 mt dw; 189,382 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $68,714, while the shark fins would be $18,571. The total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $87,285 ($68,714 + $18,571) (Table 4.10). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $140,142, while the shark fins would be $37,876. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $178,018 ($140,142 + $37,876) (Table 4.10).

Table 4.9 Average non-blacknose SCS 2014 ex-vessel prices and annual gross revenues for the fleet under each alternative. Shark fins are assumed to be 5 percent of the carcass weight.

Alternative	Type of Shark Product	Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
C5	Meat	282,238	$0.74	$208,856
	Fins	14,112	$4.00	$56,448
C6	Meat	388,222	$0.74	$287,284
	Fins	19,411	$4.00	$77,644
C7 (Preferred Alternative)	Meat	582,333	$0.74	$430,926
	Fins	29,117	$4.00	$116,467

Table 4.10 Average non-blacknose SCS 2014 ex-vessel prices and annual gross revenues for the fleet by potential sub-region alternative based on potential sub-regional quota of 128 mt dw (282,238 lb dw). Shark fins are assumed to be 5 percent of the carcass weight.

Alternative	Percentage of Landings	Species	Potential Sub-Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
C2	33.5	*North Atlantic Region*			
		Non-Blacknose SCS	94,550	$0.74	$69,967
		Fins	4,727	$4.00	$18,910
	66.5	*South Atlantic Region*			
		Non-Blacknose SCS	187,688	$0.74	$138,889
		Fins	9,384	$4.00	$37,538
C3 and C4	32.9	*North Atlantic Region*			
		Non-Blacknose SCS	92,856	$0.74	$68,714
		Fins	4,643	$4.00	$18,571
	67.1	*South Atlantic Region*			
		Non-Blacknose SCS	189,382	$0.74	$140,142
		Fins	9,469	$4.00	$37,876

In Alternative C5, the non-blacknose SCS commercial quota would be to 128 mt dw, while the current non-blacknose SCS commercial base quota is 176.1 mt dw and the current adjusted quota is 264.1 mt dw to account for underharvested quota in the previous fishing year. The non-blacknose SCS commercial quota considered under this alternative is almost thirty percent less than the current base quota and less than half of the current adjusted quota for this management group. Given that the status of Atlantic sharpnose sharks and finetooth sharks is not overfished with no overfishing occurring and the status of bonnethead sharks is unknown, the quota considered under this alternative may be unnecessarily low, and thus unnecessarily limiting to the participants of the non-blacknose SCS fisheries. Therefore, NMFS believes this alternative would have short- and long-term minor adverse socioeconomic impacts due to the quota being capped at a lower level than what is currently being landed in the non-blacknose SCS fisheries, leading to a loss in annual revenue for these shark fishermen. In addition, the adverse impacts would be compounded by the unknown stock status of bonnethead, which would prevent NMFS from carrying forward underharvested quota. Thus, the commercial quota of 128 mt dw would not be adjusted and the fishermen would be limited to this amount each year, which could lead to shorter seasons and reduced flexibility, potentially affecting fishermen's decisions to participate.

When Alternative C6 is combined with the other alternatives to establish sub-regional non-blacknose SCS quotas, the economic impacts of Alternative C6 would vary based on the sub-regional quotas. Under Alternative C2, the northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota (59.0 mt dw; 130,054 lb dw) and the southern Atlantic sub-region would receive 66.5 percent of the total non-blacknose SCS quota (117.1 mt dw; 258,168 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $96,240, while the shark fins would be $26,011. Thus, total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $122,251 ($96,240 + $26,011) (Table 4.11). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $191,044, while the shark fins would be $51,634. The total average annual gross revenues for non-blacknose

SCS landings in the southern Atlantic sub-region would be $242,678 ($191,044 + $51,634) (Table 4.11). Under Alternatives C3 and C4, the northern Atlantic sub-region would receive 32.9 percent of the total non-blacknose SCS quota (57.9 mt dw; 127,725 lb dw), while the southern Atlantic sub-region would receive 67.1 percent of the total non-blacknose SCS quota (118.2 mt dw; 260,497 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $94,517, while the shark fins would be $25,545. The total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $120,062 ($94,517 + $25,545) (Table 4.11). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $192,768, while the shark fins would be $52,099. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $244,867 ($192,768 + $52,099) (Table 4.11).

Table 4.11 Average non-blacknose SCS 2014 ex-vessel prices and annual gross revenues for the fleet by potential sub-region alternative based on potential sub-regional quota of 176.1 mt dw (388,222 lb dw). Shark fins are assumed to be 5 percent of the carcass weight.

Alternative	Percentage of Landings	Species	Potential Sub-Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
C2	33.5	*North Atlantic Region*			
		Non-Blacknose SCS	130,054	$0.74	$96,240
		Fins	6,503	$4.00	$26,011
	66.5	*South Atlantic Region*			
		Non-Blacknose SCS	258,168	$0.74	$191,044
		Fins	12,908	$4.00	$51,634
C3 and C4	32.9	*North Atlantic Region*			
		Non-Blacknose SCS	127,725	$0.74	$94,517
		Fins	6,386	$4.00	$25,545
	67.1	*South Atlantic Region*			
		Non-Blacknose SCS	260,497	$0.74	$192,768
		Fins	13,025	$4.00	$52,099

Alternative C6 would establish a non-blacknose SCS TAC of 401.3 mt dw and maintain the current commercial base annual quota of 176.1 mt dw (388,222 lb dw). Because this alternative would maintain the non-blacknose SCS commercial quota, it is likely to have short-term neutral socioeconomic impacts. Recent non-blacknose SCS landings have been below 176.1 mt dw, thus, this commercial quota could allow for increased landings and additional revenue if the entire quota is caught, which could have beneficial socioeconomic impacts. However, since the quota of 176.1 mt dw would not be adjusted for underharvests due to the status of bonnethead sharks, the fishermen would be capped at a lower quota than is possible in the current non-blacknose SCS fisheries if there is underharvest, potentially leading to long-term minor adverse socioeconomic impacts. NMFS does not expect fishing effort to dramatically increase for non-blacknose SCS in the southern region of the Atlantic, since landings would continue to be limited by blacknose shark landings and the linkage between these two groups.

Alternative C7, a preferred alternative, would establish a non-blacknose SCS TAC of 489.3 mt dw and increase the commercial quota to 264.1 mt dw (582,333 lb dw), which is equal to the 2014

adjusted non-blacknose SCS quota. Based on the 2014 ex-vessel prices in Table 4.9, the annual gross revenues for the entire fleet from non-blacknose SCS meat in the Atlantic region would be $430,926 while the shark fins would be $116,467. Thus, total average annual gross revenues for non-blacknose shark landings in the Atlantic region would be $547,393 ($430,926 + $116,467), which is 12 percent of the entire revenue for the shark fishery. The economic impacts of Alternative C7 would vary when combined with Alternatives C2 through C4 to establish sub-regional non-blacknose SCS quotas as considered in the Draft EA, and a new preferred Alternative C8 that would maintain the status quo of a regional quota for the blacknose and non-blacknose SCS management groups and would establish a management boundary to modify the blacknose and non-blacknose SCS quota linkage. Under Alternative C2, the northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota (88.4 mt dw; 195,082 lb dw) and the southern Atlantic sub-region would receive 66.5 percent of the total non-blacknose SCS quota (175.7 mt dw; 387,251 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $144,360, while the shark fins would be $39,016. Thus, total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $183,376 ($144,360 + $39,016) (Table 4.12). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $286,566, while the shark fins would be $77,450. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $364,016 ($286,566 + $77,450) (Table 4.12). Under Alternatives C3 and C4, the northern Atlantic sub-region would receive 32.9 percent of the total non-blacknose SCS quota (86.9 mt dw; 191,588 lb dw), while the southern Atlantic sub-region would receive 67.1 percent of the total non-blacknose SCS quota (177.2 mt dw; 390,745 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $141,775, while the shark fins would be $38,318. The total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $180,093 ($141,775 + $38,318) (Table 4.12). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $289,152, while the shark fins would be $78,149. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $367,301 ($289,152 + $78,149) (Table 4.12). Under the new preferred Alternative C8, the commercial quota for the non-blacknose SCS fishery would be the commercial quota implemented under Alternative C7,with a non-blacknose SCS quota of 264.1 mt dw (582,333 lb dw) for the Atlantic region.

Table 4.12 Average non-blacknose SCS 2014 ex-vessel prices and annual gross revenues for the fleet by potential sub-region alternative based on potential sub-regional quota of 264.1 mt dw (582,333 lb dw). Shark fins are assumed to be 5 percent of the carcass weight.

Alternative	Percentage of Landings	Species	Potential Sub-Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
C2	33.5	*North Atlantic Region*			
		Non-Blacknose SCS	195,082	$0.74	$144,360
		Fins	9,754	$4.00	$39,016
	66.5	*South Atlantic Region*			
		Non-Blacknose SCS	387,251	$0.74	$286,566
		Fins	19,363	$4.00	$77,450
C3 and C4	32.9	*North Atlantic Region*			
		Non-Blacknose SCS	191,588	$0.74	$141,775
		Fins	9,579	$4.00	$38,318
	67.1	*South Atlantic Region*			
		Non-Blacknose SCS	390,745	$0.74	$289,152
		Fins	19,537	$4.00	$78,149

The quota considered under Alternative C7 is an increase compared to the non-blacknose SCS commercial quotas under Alternatives C5 or C6. Since underharvested quota can no longer be carried forward, this quota would provide a buffer, potentially providing for landings to increase in the future, and thus, providing some beneficial socioeconomic impacts in the long-term due to the potential to gain additional revenue. The increased landings could result in additional revenues of up to $302,526 in total average annual gross revenue for non-blacknose shark landings relative to Alternative C6, the preferred alternative in the Draft EA. However, recent landings of non-blacknose SCS have been less than half of the commercial quota under this alternative (in part because of increasing blacknose landings), so it is unlikely that fishermen would catch this entire quota in the short-term (unless this alternative is combined with alternative C8), meaning the alternative would have neutral socioeconomic impacts. When combined with Alternative C8, the increased quota in Alternative C7 could have positive economic impacts for fishermen.

Alternative C8, one of the preferred alternatives, would maintain the current aggregated LCS (168.9 mt dw; 372,552 lb dw) and hammerhead shark (27.1 mt dw; 59,736 lb dw) regional quotas in the Atlantic region, establish a management boundary for the SCS fishery, and prohibit the retention of blacknose sharks north of the management boundary at 34° 00’ N. lat. Based on historical landings and 2014 ex-vessel prices, the annual gross revenues for blacknose meat in the Atlantic region south of 34° 00’ N. lat. would be $29,578, while the blacknose shark fins would be $7,584. Thus, total average annual gross revenues for blacknose landings south of 34° 00’ N. lat. would be $37,162 (29,578 + $7,584). No socioeconomic impacts are expected from maintaining the current LCS and hammerhead regional quotas structure as fishermen would continue to fish at current rates and would not be limited by sub-regional quotas. However, NMFS would intend to use existing regulations to monitor the LCS quotas and adjust the retention limit as needed to ensure equitable fishing opportunities throughout the region. This approach could result in some minor beneficial impacts over the long-term. Establishing a management boundary and removing quota linkages north of 34° 00’ N. lat. in this alternative would have beneficial impacts for fishermen north of the management boundary, as active fishermen in the area above 34° 00’ N. lat. would be able to

continue fishing for non-blacknose SCS without being constrained by the fishing activities south of 34° 00' N. lat., where the majority of blacknose sharks are landed. Given the fact that in recent years the SCS fishery has closed before the non-blacknose SCS quota has been harvested, fishermen north of the management boundary who would be able to continue to fish after the fisheries are closed south of the management boundary could have substantial economic gains under this alternative. Economic benefits associated with removing quota linkages between non-blacknose SCS and blacknose sharks, allowing fishermen north of the management boundary to land a larger number of non-blacknose SCS, would outweigh for the fishermen north of the boundary the income lost from prohibiting landings of blacknose sharks. This is in part due to the minimal landings of blacknose sharks north of 34° 00' N. lat. and the request of fishermen in the Atlantic to remove the linkage between the two management groups in order to continue fishing for non-blacknose SCS when the blacknose quota is reached. In the area south of 34° 00' N. lat., no change in socioeconomic impacts is expected by maintaining the quota linkages already in place for the SCS fishery as this alternative is essentially status quo. Fishermen south of the management boundary line would be able to continue fishing for non-blacknose SCS based upon how successful they are at avoiding blacknose sharks. If blacknose shark bycatch remains low, fishermen would have the opportunity to continue fishing the non-blacknose SCS quota. Thus, by implementing management measures considered in Alternative C8, this alternative would result in overall direct and indirect, short- and long-term minor beneficial socioeconomic impacts.

Table 4.13 Average blacknose shark 2014 ex-vessel prices and annual gross revenues for the fleet by region based on potential regional quota along management boundary. Shark fins are assumed to be 5 percent of the carcass weight.

Alternative	Percentage of Landings	Species	Potential Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
C8	4.6	*North of 34° 00' N. Latitude (approximately at Wilmington, NC)*			
		Blacknose shark	0*	$0.86	$0
		Fins	0	$4.00	$0
	95.4	*South of 34° 00' N. Latitude (approximately at Wilmington, NC)*			
		Blacknose shark	37,921	$0.86	$29,578
		Fins	1,896	$4.00	$7,584

*Prohibiting landings of blacknose sharks north of 34° 00' N. Latitude

4.3.3 CONCLUSION

Cumulatively, Alternatives C7 and C8 would have positive impacts on the current state of shark fisheries in the Atlantic region. The higher non-blacknose SCS commercial quota under Alternative C7 would continue to allow fishermen to land these species at current levels, while maintaining the Atlantic sharpnose and bonnethead stocks at sustainable levels, consistent with the recent stock assessment, without unnecessarily limiting the quota due to bonnethead sharks. Creating a management boundary at 34° 00' N. lat., prohibiting harvest and landings of blacknose sharks north of this management boundary, and maintaining quota linkages between these two management groups south of this management boundary in Alternative C8 would allow fishermen north of the management boundary to maximize fishing opportunities and additional revenue from harvesting

more of the non-blacknose SCS quota without being constrained by the fishing activities south of 34° 00' N. lat., where the majority of blacknose sharks are landed. Fishermen south of 34° 00' N. lat. would experience the status quo and likely not see any social or economic benefits; they will need to continue to avoid blacknose sharks, consistent with the rebuilding plan, in order to land non-blacknose SCS. Therefore, because of the neutral ecological impacts expected to shark species as well as non-target, incidental species and bycatch, and the minor beneficial socioeconomic impacts expected by these combined measures, NMFS prefers these alternatives at this time.

NMFS does not prefer the remaining alternatives at this time for a variety of reasons. Alternative C1, the status quo alternative, does not address some of the issues facing the Atlantic shark fisheries and the current purpose of Amendment 6 to increase flexibility for shark fishermen. While neutral ecological impacts on Atlantic shark species and non-target species are anticipated from Alternatives C2 and C3, they do not take into consideration quota linkages between non-blacknose SCS and blacknose sharks. Public comments raised concerns on the landings data and quotas in Alternative C4. Under Alternative C5, the non-blacknose SCS TAC and commercial quota would be limited by the results of the bonnethead shark stock assessment and not take the results of the Atlantic sharpnose stock assessment or status of finetooth sharks into account. While the quota under Alternative C6 would maintain non-blacknose SCS stocks at sustainable levels, Alternative C6 would unnecessarily limit the potential revenue that could be gained from the increased non-blacknose SCS quota relative to preferred Alternative C7, which would also maintain non-blacknose SCS stocks at sustainable levels based on the stock assessments. As such, the quota under Alternative C6 would not offset of loss of revenue as a result of the prohibition of blacknose sharks north of 34° 00' N. lat. in the Atlantic region. Overall, the preferred alternatives (C7 and C8) take into consideration public comment and are a hybrid of management measures previously preferred in the Draft EA relative to the remaining alternatives.

4.4 GULF OF MEXICO REGIONAL AND SUB-REGIONAL QUOTAS

The following alternatives consider establishing sub-regional quotas for LCS, as well as potentially removing LCS quota linkages within newly designated sub-regions within the Gulf of Mexico Region, adjusting the SCS quota based on recent stock assessments, and prohibiting retention of blacknose sharks in the Gulf of Mexico. Eastern and western sub-regions would be designated within the current Gulf of Mexico region. At this time, NMFS prefers Alternatives D3 and D8.

Alternative D1 No Action: Do not implement sub-regional quotas in the Gulf of Mexico region; do not adjust the non-blacknose SCS quota to reflect the results of the 2013 assessments for Atlantic sharpnose and bonnethead sharks; do not adjust the quota linkages in the Gulf of Mexico region; do not prohibit the harvest of hammerhead sharks in the Gulf of Mexico region or any portion of the Gulf of Mexico region.

Alternative D2 Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks along 89° 00' W. longitude into western and eastern sub-regional quotas.

Alternative D3 *Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks into western and eastern sub-regional quotas along 88° 00' W. longitude – Preferred Alternative*

Alternative D4 Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks along 89° 00' W. longitude into western and eastern sub-regional quotas and maintain the LCS quota linkages for aggregated LCS and hammerhead sharks in the eastern sub-region of the Gulf of Mexico region; remove the linkage in the western sub-region of the Gulf of Mexico region and prohibit the harvest and landing of hammerhead sharks in that sub-region.

Alternative D5 Establish a non-blacknose SCS TAC of 931.9 mt dw and maintain the current commercial base annual non-blacknose SCS quota of 45.5 mt dw (100,317 lb dw)

Alternative D6 Establish a non-blacknose SCS TAC of 954.7 mt dw and increase the quota to the current adjusted annual quota of 68.3 mt dw (150,476 lb dw)

Alternative D7 Establish a non-blacknose SCS TAC of 1,064.9 mt dw and increase the commercial quota to 178.5 mt dw (393,566 lb dw).

Alternative D8 *Establish a non-blacknose SCS TAC of 999.0 mt dw, increase the commercial quota to 112.6 mt dw (248,215 lb dw), and prohibit the retention of blacknose sharks in the Gulf of Mexico – Preferred Alternative*

4.4.1 ECOLOGICAL IMPACTS

Alternative D1, the no action alternative, would maintain the current regional quotas and quota linkages in the Gulf of Mexico region and continue to allow harvest of hammerhead sharks throughout the entire Gulf of Mexico region. Currently the regional quotas for each management group are as follows: aggregated LCS (157.2 mt dw; 347,317 lb dw), hammerhead sharks (25.3 mt dw; 55,722 lb dw), and blacktip sharks (256.6 mt dw; 565,700 lb dw), non-blacknose SCS (45.5 mt dw; 100,317 lb dw), and blacknose sharks (2.0 mt dw; 4,513 lb dw). Additionally, existing quota linkages would also be maintained between the aggregated LCS and hammerhead shark management groups, with the blacktip shark management group remaining unlinked, and linkages between the non-blacknose SCS and blacknose shark management groups. The harvest of hammerhead sharks would be allowable throughout the entire Gulf of Mexico region. This alternative would have neutral short- and long-term direct ecological impacts since the current quotas and quota linkages would be maintained. By taking no action, there would be no expected changes to fishing pressure, dynamics within the fisheries themselves, or number of expected interactions with non-target, incidentally caught species.

Alternative D2 would apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks along 89° 00' W. long. into western and eastern sub-regional quotas. The percentage of the total regional quota apportioned to each sub-region would be based on historical landings (see Table 2.18). This alternative would likely result in both direct short- and long-term neutral ecological impacts on LCS. Establishing sub-regional quotas would have no impact on the current level of fishing pressure, catch rates, or distribution of fish effort, as the regional quotas are not increasing, but instead largely represents an administrative change in how quotas are monitored throughout the Gulf of Mexico region. Because sub-regional quotas are estimated from historical landings, and thus on typical fishing activity within sub-regions, there would be no expected ecological differences in how fishermen from the various states along the Gulf of Mexico interact with LCS, as compared to current conditions. Similarly, both indirect short- and long-term neutral ecological impacts would be expected for Alternative D2 because, with fishing activities remaining the same as status quo, no increase in bycatch or interactions with non-target, incidentally caught species are expected. While establishing sub-regional quotas would allow season openings for LCS to vary within the Gulf of Mexico region, preferred season opening dates largely reflect the preferred time period during which fishermen within sub-regions were already most active. Thus, establishing sub-regional quotas would result in fishermen interacting with the typical suite of non-target, incidentally caught species during the time of year when they were normally most active.

Alternative D3, one of the preferred alternatives, would apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks into western and eastern sub-regional quotas at an alternate location to that described in Alternative D2. The percentage of the total regional quota apportioned to each sub-region would be based on historical landings (see Table 2.20). While Alternative D3 considers a different boundary between the eastern and western sub-regions than Alternative D2, Alternative D3 is similar to Alternative D2 in that the sub-regions represent an administrative change in how quotas are monitored throughout the Gulf of Mexico region. Establishing sub-regional quotas based on historical landings and typical fishing activity within sub-regions, as well as formalizing already existing preferences in season opening dates for LCS between sub-regions, should result in neutral ecological impacts, for the same reasons discussed in Alternative D2. Thus, NMFS similarly would expect both direct and indirect short- and long-term neutral ecological impacts on LCS, as well as on bycatch and non-target, incidentally caught species.

Based on public comment, additional analyses, and further review, Alternative D3 is now the preferred alternative. During the public comment period for the Draft EA for Amendment 6, NMFS received general support for the sub-regional quotas, but commenters requested that the boundary between the eastern and western sub-region be placed at 88° 00' W. long. instead of the proposed 89° 00' W. long. The commenters felt that the 88° 00' W. long. line was a more appropriate boundary between the sub-regions, as it would provide better geographic separation between the major stakeholders in the Gulf of Mexico, in order to prevent active shark fishermen in the western sub-region from utilizing both sub-regional quotas to the detriment of active fishermen in the eastern sub-region. Additionally, NMFS received comments to provide a small hammerhead shark quota to the western Gulf of Mexico sub-region (i.e., not prohibit retention of hammerhead sharks), since in recent years higher numbers of hammerhead sharks were reported caught in the area that would now be

defined as the western sub-region. Based on these comments, NMFS revised the data source to calculate the hammerhead shark sub-regional quotas. Under Alternative D3, NMFS would maintain the linkage between the aggregated LCS and hammerhead shark management groups within each sub-region and no longer prohibit landings of hammerhead sharks in the western Gulf of Mexico sub-region.

Alternative D4 would apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks along 89° 00' W. long. into western and eastern sub-regional quotas and would maintain the aggregated LCS and hammerhead shark quota linkages in the eastern sub-region of the Gulf of Mexico region, remove the aggregated LCS and hammerhead shark quota linkages in the western sub-region of the Gulf of Mexico region, and prohibit the harvest and landings of hammerhead sharks in the western Gulf of Mexico sub-region. In the eastern Gulf of Mexico sub-region, no changes would be made in the existing quota linkages between aggregated LCS and hammerhead sharks. Thus, within the eastern Gulf of Mexico sub-region, Alternative D4 would likely result in both direct and indirect short- and long-term neutral ecological impacts on LCS, since current conditions would be maintained. In contrast, in the western Gulf of Mexico sub-region, quota linkages would be removed between aggregated LCS and hammerhead sharks. While quota linkages mitigate incidental mortality of species caught together, based on landings in the Draft EA, only 0.6 percent of hammerhead shark landings in the Gulf of Mexico region were attributed to fishing activities in the western Gulf of Mexico sub-region. Thus, due to the difficulties associated with managing a small quota based on 0.1 mt dw (0.6 percent), harvest of hammerhead sharks would be prohibited in the western Gulf of Mexico sub-region. However, based on updated landing data and changes to the data source for landings used in the Final EA, the percentage of the hammerhead shark base annual quota apportioned to the western Gulf of Mexico sub-region based on historical landings would be 47.2 percent (11.9 mt dw). Based on this updated information, prohibiting harvest of hammerhead sharks in the western Gulf of Mexico would now result in regulatory discards of hammerhead sharks of up to 11.9 mt dw (23,301 lb dw). This magnitude of regulatory discards could have moderate adverse ecological impacts on the stock. Thus, Alternative D4 would likely result in both direct short- and long-term moderate adverse ecological impacts on LCS within the western Gulf of Mexico sub-region. Alterative D4 was preferred in the Draft EA but is no longer preferred for these reasons.

Alternative D5 would establish a non-blacknose SCS TAC of 931.9 mt dw in the Gulf of Mexico and maintain the current commercial base annual non-blacknose SCS quota of 45.5 mt dw (100,317 lb dw). The calculations for both the TAC and commercial quota are described in Section 2.3. In order to calculate the non-blacknose SCS commercial quota from the aforementioned TAC, NMFS subtracted all sources of mortality (e.g., the recreational bonnethead landings, the commercial bonnethead discards, and the research set-aside quota) to calculate a non-blacknose SCS commercial quota of 45.5 mt dw. NMFS has determined that the Gulf of Mexico Atlantic sharpnose sharks are not overfished and are experiencing no overfishing, the status of bonnethead sharks is unknown, and finetooth sharks are not overfished and are experiencing no overfishing (though results of SEDAR 13 should be viewed cautiously). Projections of different harvest levels for the Gulf of Mexico sensitivity run from the SEDAR 34 stock assessments indicated there was a 70 percent chance that both bonnethead and Atlantic sharpnose sharks could withstand harvest levels almost double current

levels. Considering that an annual quota of 45.5 mt dw is well below sustainable harvest levels projected in the stock assessment for Atlantic sharpnose sharks, and considering that the status of bonnethead sharks is unknown and that finetooth sharks are not as naturally abundant as bonnethead and sharpnose sharks (approximately 21 percent of combined Gulf of Mexico and Atlantic non-blacknose SCS landings in 2014), maintaining the current base annual quota for non-blacknose SCS and implementing the TAC discussed under this alternative is a conservative approach. With anticipated fishing activities remaining below current levels, no increases in potential bycatch or increased interactions with non-target, incidentally caught species are expected. Thus, maintenance of the current base annual quota is expected to have overall beneficial ecological impacts. Alternative D5 would likely result in both direct and indirect short- and long-term moderate beneficial ecological impacts on non-blacknose SCS in the Gulf of Mexico region, as this alternative would establish a TAC and quota that would maintain harvest well below levels projected by the SEDAR 13 and 34 stock assessments.

Alternative D6, would establish a non-blacknose SCS TAC of 954.7 mt dw and increase the commercial quota to the 2014 adjusted annual quota of 68.3 mt dw (150,476 lb dw). The calculations for both the TAC and commercial quota are described in Section 2.3. While that stock assessment indicated that the stock was not overfished and overfishing was not occurring, the assessment scientists also noted that finetooth sharks are not as naturally abundant as bonnethead and sharpnose sharks and that, given the uncertainty of the data and life history information at the time, the results of the assessment should be viewed cautiously. As such, in the Draft EA, NMFS preferred to take a relatively conservative approach with finetooth sharks and not increase landings substantially until a new assessment is complete. NMFS found that this quota level, which was previously analyzed in Amendment 3 and 5a, would not appear to have adverse ecological impacts. Under Alternative D6, the commercial quota and TAC would not result in any large changes in current fishing effort or catch rates of non-blacknose SCS in the Gulf of Mexico. With anticipated fishing activities remaining the same, no increases in potential bycatch or increased interactions with non-target, incidentally caught species are expected. While recent landings exceed the current base annual quota, results of the 2013 Atlantic sharpnose and bonnethead stock assessments indicated there was a 70 percent chance the Gulf of Mexico stocks could withstand harvest levels almost double current levels. Alternative D6 would likely result in both direct and indirect short- and long-term minor beneficial ecological impacts on non-blacknose SCS in the Gulf of Mexico region because the alternative maintains the quota at the present level, which is below the quota projected in the stock assessment. By maintaining the commercial quota at 2014 levels, interaction rates with blacknose sharks would remain the same.

Alternative D6 was preferred in the Draft EA for Amendment 6, but is no longer the preferred alternative. During the public comment period, NMFS received requests to implement the non-blacknose SCS TAC and quota originally proposed under Alternative D7, as it represented a higher non-blacknose SCS TAC and commercial quota that was still supported by the stock assessments. Additionally, commenters requested that NMFS prohibit retention of blacknose sharks in the Gulf of Mexico to prevent early closure of the non-blacknose SCS fishery. NMFS has acknowledged these concerns by developing a new preferred alternative, Alternative D8, which will address both issues of

the limited non-blacknose SCS quota and linkage to a small blacknose shark quota, while also maintaining harvest of non-blacknose SCS at sustainable levels.

Alternative D7 would establish a non-blacknose SCS TAC of 1,064.9 mt dw and increase the commercial quota to 178.5 mt dw (393,566 lb dw). The calculations for both the TAC and commercial quota are described in Section 2.4. Under this alternative, the commercial quota would be increased to twice the current 2013 non-blacknose SCS landings in the Gulf of Mexico region. The increase in non-blacknose SCS quota that could be landed under Alternative D7 could have negative ecological impacts on non-blacknose SCS stocks in the Gulf of Mexico, with a larger number of fishermen potentially entering the fishery and a larger number of non-blacknose SCS being landed. In addition, if more fishermen were fishing for non-blacknose SCS, this could increase interactions with blacknose sharks. However, the current quota linkage would likely prevent the non-blacknose SCS quota under this alternative from being fully utilized, as the blacknose shark quota would remain the same. Because the blacknose shark quota would remain the same, unless fishermen can avoid blacknose sharks completely, in order to fully use the non-blacknose SCS quota, fishermen would need to discard blacknose. Increased discards of blacknose could have a negative impact, as the status of blacknose sharks in the Gulf of Mexico is unknown. Furthermore, because projections from the Gulf of Mexico bonnethead and Atlantic sharpnose shark stock assessments indicated that there was a 70 percent chance both stocks could withstand harvest levels almost double current levels, doubling the commercial quota based on recent landings has a relatively low likelihood of negatively impacting Atlantic sharpnose and bonnethead stocks. For finetooth sharks, while the 2007 stock assessment for finetooth sharks found the stock was not overfished and overfishing was not occurring, the assessment scientists also noted that finetooth sharks are not as naturally abundant as bonnethead and sharpnose sharks and that, given the uncertainty of the data and life history information at the time, the results should be viewed cautiously. Thus, overall Alternative D7 would likely result in both direct and indirect short- and long-term neutral ecological impacts on non-blacknose SCS in the Gulf of Mexico region.

Alternative D8, one of the preferred alternatives, would establish a non-blacknose SCS TAC of 999.0 mt dw, increase the commercial quota to 112.6 mt dw (248,215 lb dw), and prohibit the retention of blacknose sharks in the Gulf of Mexico. The calculations for the TAC and commercial quota are described in Section 2.4. Under this alternative, the commercial quota would be increased to a higher amount than the current non-blacknose SCS base quota in the Gulf of Mexico region, while also removing the linkage between non-blacknose SCS and blacknose sharks, as a result of prohibiting retention of blacknose sharks. This increased non-blacknose SCS quota would result in shark fishermen taking more trips, in order to land the larger number of non-blacknose SCS allowed under this increased quota, and potentially increase interactions with other HMS and non-HMS species. However, this quota would still account for uncertainties associated with the SEDAR 34 stock assessment for bonnethead sharks and the SEDAR 13 stock assessment for finetooth sharks. Because projections from the Gulf of Mexico bonnethead and Atlantic sharpnose shark stock assessments indicated that there was a 70 percent chance both stocks could withstand harvest levels almost double current levels, based on recent landings, the commercial quota under Alternative D8 has a relatively low likelihood of negatively impacting Atlantic sharpnose and bonnethead stocks. Regarding finetooth sharks, while results from the SEDAR 13 stock assessment for finetooth sharks

should be viewed cautiously, NMFS does not anticipate the quota under Alternative D8 would negatively impact the finetooth shark stock. Under Amendment 3, which took into consideration results from SEDAR 13, NMFS implemented management measures allowing carryover of up to 50 percent of the underharvest for the non-blacknose SCS management group for the next year's quota. As a result, NMFS has implemented a non-blacknose SCS quota as great as 332.4 mt dw (732,808 lb), an amount which still provided for sustainable harvest of non-blacknose SCS. As such, the quota under Alternative D8 would represent approximately one third of this maximum quota. This combined with the fact that finetooth sharks represented only 21 percent of combined Gulf of Mexico and Atlantic non-blacknose SCS landings in 2014, compared to Atlantic sharpnose representing 73 percent, further supports that this quota would have minimal impacts on the finetooth shark stock.

Under this alternative, removing the linkage between non-blacknose SCS and blacknose sharks and prohibiting retention of blacknose sharks in the Gulf of Mexico would result in previous landings of blacknose sharks becoming regulatory discards. The non-blacknose SCS quota accounts for these blacknose shark discards by considering the interaction ratio of non-blacknose SCS to blacknose sharks in the Gulf of Mexico and then capping the harvest of blacknose shark discards at an amount to not exceed the 2015 base annual blacknose shark quota of 2.1 mt dw. As such, ecological impacts to blacknose sharks should be neutral as mortality of blacknose sharks would not exceed the 2015 base annual shark quota. While the non-blacknose SCS quota under Alternative D8 has a low likelihood of negatively impacting either non-blacknose SCS or blacknose shark stocks, it would result in shark fishermen taking more trips, and potentially increase interactions with other HMS and non-HMS species. Thus, overall Alternative D8 would likely result in short- and long-term direct neutral ecological impacts, as well as short- and long-term indirect minor adverse ecological impacts.

4.4.2 Social and Economic Impacts

Alternative D1, the No Action alternative, would not change current management of the Gulf of Mexico shark fisheries. Based on the 2014 ex-vessel prices, the annual gross revenues for the entire fleet from blacktip, aggregated LCS, and hammerhead shark meat in the Gulf of Mexico region would be $497,148, while the shark fins would be $472,355. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the Gulf of Mexico region would be $969,503 ($497,148+ $472,355) (Table 4.14), which would be 22 percent of the entire shark fishery. For the non-blacknose SCS and blacknose shark landings, the annual gross revenues for the entire fleet from the meat would be $39,995, while the shark fins would be $30,610. The total average annual gross revenues for non-blacknose SCS and blacknose shark landings in the Gulf of Mexico region would $70,605 ($39,995 + $30,610) (Table 4.14), which is 2 percent of the entire revenue for the shark fishery.

Table 4.14 Average blacktip, aggregated LCS, hammerhead shark, non-blacknose SCS, and blacknose shark 2014 ex-vessel prices and annual gross revenues for the fleet in the Gulf of Mexico region based on 2014 annual quotas. Shark fins are assumed to be 5 percent of the carcass weight.

Species	2014 Base Annual Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
Blacktip shark	565,700	$0.50	$282,850
Fins	28,285	$9.53	$269,556
Aggregated LCS	347,317	$0.54	$187,551
Fins	17,366	$10.04	$174,353
Hammerhead shark	55,722	$0.48	$26,747
Fins	2,786	$10.21	$28,446
Total LCS Meat	968,739		$497,148
Total LCS Fin	48,437		$472,355
Non-Blacknose SCS	100,317	$0.36	$36,114
Fins	5,016	$5.84	$29,293
Blacknose shark	4,513	$0.86	$3,881
Fins	226	$5.84	$1,318
Total SCS Meat	104,830		$39,995
Total SCS Fin	5,242		$30,610

Alternative D1 would likely result in short-term neutral direct socioeconomic impacts because shark fishermen would continue to operate under current conditions and to fish at similar rates. However, this alternative would likely result in long-term minor adverse socioeconomic impacts. Negative impacts would be partly due to the continued negative impact of federal and state regulations related to shark finning and sale of shark fins, which have resulted in declining ex-vessel prices of fins since 2010, as well as continued changes in shark fishery management measures. In addition, under the No Action alternative, the non-blacknose SCS quota would not be modified. This could potentially lead to negative socioeconomic impacts, since the non-blacknose SCS quotas could be increased based on results from the most recent stock assessment, as described in Alternatives D6-D8 below. Additionally, under the current regulations, differences in regional season opening dates would impact the availability of quota remaining in the Gulf of Mexico. Florida fishermen prefer to begin fishing the LCS quotas in the beginning of the year, when sharks are in local waters. However, opening the season at the beginning of the year puts Louisiana fishermen at a slight economic disadvantage, as many Louisiana fishermen prefer to delay fishing, maximizing fishing efforts during the religious holiday Lent when prices for shark meat are higher. Indirect short-term socioeconomic impacts resulting from any of the actions in Alternative D1 would likely be neutral because the measures would maintain the status quo with respect to shark landings and fishing effort. However, this alternative would likely result in indirect long-term minor adverse socioeconomic impacts. Negative socioeconomic impacts and decreased revenues associated with financial difficulties experienced by fishermen within the Gulf of Mexico shark fisheries would carry over to the dealers and supporting businesses they regularly interact with. In addition, this alternative would not achieve the goals of this rulemaking of increasing management flexibility to adapt to the changing needs of the Atlantic shark fisheries.

Alternative D2 would apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks along 89° 00' W. longitude into western and eastern sub-regional quotas. Establishing sub-regional quotas would provide flexibility in seasonal openings within the Gulf of Mexico region. Different seasonal openings within sub-regions would allow fishermen to maximize their fishing effort during periods when sharks migrate into local waters or during periods when sales of shark meat are increased (e.g., in Louisiana during Lent). Allowing these states more flexibility, by implementing sub-regions, could result in a higher proportion of the quota being landed and increased average annual gross revenues. This would benefit the economic interests of the Louisiana and Florida fishermen, the primary constituents impacted by the timing of seasonal openings for LCS and SCS in the Gulf of Mexico, by placing them in separate sub-regions with separate sub-regional quotas. No negative impacts are expected for either the fishermen or the length of the fishing season since NMFS will be able to transfer quota between sub-regions to ensure that the full quota is harvested.

Under this alternative, the eastern Gulf of Mexico sub-region would receive 30.8 mt dw in blacktip shark, 88.8 mt dw in aggregated LCS, and 13.4 mt dw in hammerhead shark quotas. Based on the 2014 ex-vessel prices, the annual gross revenues for blacktip, aggregated LCS, and hammerhead shark meat in the eastern Gulf of Mexico sub-region would be $153,897, while the shark fins would be $145,758. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the eastern Gulf of Mexico sub-region would be $299,655 ($153,897 + $145,758) (Table 4.15). When compared to the other alternatives, the eastern Gulf of Mexico sub-region would have minor beneficial socioeconomic impacts under Alternative D2, because this alternative would result in the highest total average annual gross revenues for blacktip, aggregated LCS, and hammerhead sharks. In the western Gulf of Mexico sub-region, fishermen would receive 225.8 mt dw in blacktip shark, 68.7 mt dw in aggregated LCS, and 11.9 mt dw in hammerhead shark quotas. Based on the 2014 ex-vessel prices, the annual gross revenues for blacktip, aggregated LCS, and hammerhead shark meat in the eastern Gulf of Mexico sub-region would be $343,251, while the shark fins would be $326,597. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the eastern Gulf of Mexico sub-region would be $669,502 ($343,251 + $326,251) (Table 4.15).

Alternative D2 would result in an increase of $19,753 in annual gross revenues to the eastern Gulf of Mexico sub-region. This alternative would have direct short-term minor beneficial socioeconomic impacts as a result of implementing a sub-regional quota structure, combined with higher sub-regional quotas and therefore increased potential gross revenue, received by the eastern Gulf of Mexico sub-region. However, despite the increase in the quota for the eastern Gulf of Mexico sub-region, in the long-term, there could be minor adverse economic impacts based on the boundary line chosen to separate the sub-regions in the Gulf of Mexico. Placing the boundary between the eastern and western Gulf of Mexico sub-regions along 89° 00' W. long. (i.e., between fishing catch areas 11 and 12) may not create sufficient geographic separation between the major stakeholders in the Gulf of Mexico (i.e., Louisiana and Florida), as opposed to the boundary in Alternative D3. As the range of Louisiana fishermen extends east beyond this boundary, placing the boundary along 89° 00' W. long. would allow active shark fishermen in the western sub-region to utilize both sub-regional quotas while active shark fishermen in the eastern sub-region would be

limited to just the eastern sub-region quota. As such, this alternative could result in less equitable economic benefits to fishermen in both sub-regions. Fishermen in the western sub-region could potentially increase their gross annual revenues by harvesting some of the eastern sub-regional quota, which would be lost by fishermen from the eastern sub-region, who could lose some of their potential annual revenue as a result of not fully harvesting the eastern sub-regional quota.

Table 4.15 Average blacktip, aggregated LCS, and hammerhead shark 2014 ex-vessel prices and annual gross revenues for the fleet by region based on potential sub-regional quotas. Shark fins are assumed to be 5 percent of the carcass weight

Species	Potential Sub-Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
Eastern Gulf of Mexico Region			
Blacktip shark	55,439	$0.50	$27,719
Fins	2,772	$9.53	$26,416
Aggregated LCS	188,593	$0.54	$101,840
Fins	9,430	$10.04	$94,674
Hammerhead shark	29,533	$0.48	$14,176
Fins	1,477	$10.21	$15,076
Total Meat	273,564		$143,735
Total Fin	13,678		$136,167
Western Gulf of Mexico Region			
Blacktip shark	510,261	$0.50	$255,131
Fins	25,513	$9.53	$243,140
Aggregated LCS	158,724	$0.54	$85,711
Fins	7,936	$10.04	$79,679
Hammerhead shark	26,189	$0.48	$12,571
Fins	1,309	$10.21	$13,370
Total Meat	695,175		$353,412
Total Fin	34,759		$336,189

Alternative D3, one of the preferred alternatives, would apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks along 88° 00’ W. long. into western and eastern sub-regional quotas. Establishing sub-regional quotas could allow for enhanced flexibility in seasonal openings within the Gulf of Mexico region. Different seasonal openings within sub-regions would allow fishermen to maximize their fishing effort during periods when sharks migrate into local waters or when sales of shark meat are increased (e.g., in Louisiana during Lent). Flexibility in seasonal opening dates within sub-regions could also potentially allow for year-round fisheries, and result in a higher proportion of the quota being landed and thereby increased average annual gross revenues. Thus, Alternative D3 would likely result in direct, short-term minor beneficial socioeconomic impacts due to fishermen maximizing their fishing effort, and thereby maximizing revenue, during periods when sharks migrate into local waters, and ultimately, direct, long-term moderate beneficial impacts as increased revenues from increased landings each fishing season would continue to accrue annually. Drawing the regional boundary between the eastern and western sub-regions along 88° 00’ W. long. (between fishing catch areas 11 and 12) would better geographically separate the fishing activities of the major fishing constituents in the Gulf of Mexico region (i.e.,

Louisiana and Florida), in contrast to the boundary in Alternative D2, as the general range of Louisiana fishermen does not extend beyond this boundary; this would help to minimize future user group conflicts within the region.

Under this alternative, the eastern Gulf of Mexico sub-region would receive 9.8 percent of the total blacktip quota (25.1 mt dw; 55,439 lb dw), 54.3 percent of the total aggregated LCS quota (85.5 mt dw; 188,593 lb dw), and 52.8 percent of the total hammerhead shark quota (13.4 mt dw; 29,421 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for blacktip, aggregated LCS, and hammerhead shark meat in the eastern Gulf of Mexico sub-region would be $143,735 while the shark fins would be $136,167. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the eastern Gulf of Mexico sub-region would be $279,902 ($143,735 + $136,167) (Table 4.15). When compared to the other alternatives, the eastern Gulf of Mexico sub-region would have minor adverse socioeconomic impacts under Alternative D3, because this alternative would result in lower total average annual gross revenues for blacktip, aggregated LCS, and hammerhead sharks than under Alternative D2. In the western Gulf of Mexico sub-region, fishermen would receive 90.2 percent of the total blacktip quota (231.5 mt dw; 510,261 lb dw), 45.7 percent of the total aggregated LCS quota (72.0 mt dw; 158,724 lb dw), and 47.2 percent of the total hammerhead shark quota (11.9 mt dw; 23,301 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for blacktip, aggregated LCS, and hammerhead shark meat in the western Gulf of Mexico sub-region would be $251,403, while the shark fins would be $101,055. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the western Gulf of Mexico sub-region would be $689,601 ($353,412 + $336,189) (Table 4.15).

Alternative D3 would result in $19,753 less in annual gross revenues to the eastern Gulf of Mexico sub-region, which would receive slightly smaller sub-regional quotas under this alternative, as compared to under Alternative D2. However, despite the economic disadvantages resulting from slightly smaller sub-regional quotas for the eastern Gulf of Mexico sub-region, overall there would be short-term minor beneficial socioeconomic impacts and long-term moderate beneficial socioeconomic impacts under this alternative, based on where the Gulf of Mexico sub-region would be split. Placing the boundary between the eastern and western Gulf of Mexico sub-regions along 88° 00’ W. long. (i.e., between fishing catch areas 10 and 11) would create better geographic separation between the major stakeholders in the Gulf of Mexico (i.e., Louisiana and Florida), as opposed to the boundary in Alternative D2. This would provide more equitable economic benefits to fishermen in both sub-regions, by allowing them increased likelihood of fully harvesting their sub-regional quotas, and maximizing the potential annual revenue they could gain upon implementation of sub-regional quotas in the Gulf of Mexico.

Table 4.16 Average blacktip, aggregated LCS, and hammerhead shark 2014 ex-vessel prices and annual gross revenues for the fleet by region based on potential sub-regional quotas. Shark fins are assumed to be 5 percent of the carcass weight.

Species	Potential Sub-Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
Eastern Gulf of Mexico Region			
Blacktip shark	188,643	$0.42	$79,230
Fins	9,432	$11.16	$33,295
Aggregated LCS	177,596	$0.49	$87,022
Fins	8,880	$11.16	$31,346
Hammerhead shark	55,388	$0.41	$22,709
Fins	2,769	$11.16	$9,776
Total Meat	421,627		$188,961
Total Fin	21,081		$74,417
Western Gulf of Mexico Region			
Blacktip shark	415,983	$0.42	$174,713
Fins	20,799	$11.16	$73,421
Aggregated LCS	156,232	$0.49	$76,554
Fins	7,812	$11.16	$27,575
Hammerhead shark	334	$0.41	$137
Fins	17	$11.16	$59
Total Meat	572,549		$251,403
Total Fin	28,627		$101,055

Alternative D4 would apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks along 89° 00’ W. longitude into western and eastern sub-regional quotas, maintain LCS quota linkages in the eastern sub-region of the Gulf of Mexico region, remove the LCS quota linkages in the western sub-region of the Gulf of Mexico region, and prohibit the harvest of hammerhead sharks in the western Gulf of Mexico sub-region. In the Draft EA for Amendment 6, NMFS originally considered this alternative to have neutral economic impacts, as there were negligible landings of hammerhead sharks in western sub-region between 2008-2013. However, based on updated landing data resulting in comparable hammerhead shark sub-regional quotas (13.4 mt dw for the eastern Gulf of Mexico sub-region, and 11.9 mt dw for the western Gulf of Mexico sub-region), it is now apparent that there would be some negative socioeconomic impacts if NMFS were to prohibit hammerhead sharks in the western sub-region. Given this information, prohibiting retention of hammerhead sharks in the western sub-region would result in a large number of regulatory discards, and would also have negative socioeconomic impacts on fishermen in this sub-region. Under Alternative D4, there would be loss of $25,941 for active shark fishermen operating within the western Gulf of Mexico region if they were unable to retain hammerhead sharks (Table 4.15). Additionally, based on public comment on the preference for a boundary line at 88° 00’ W. long., placing the boundary line at 89° 00’ W. long. would allow fishermen operating in the western sub-region an opportunity to harvest from both sub-regional quotas. While implementing sub-regional quotas in the Gulf of Mexico would allow fishermen to maximize their fishing effort at times when fishing would be most profitable for them, thereby maximizing revenue, placing the boundary line at 89° 00’ W. long. would decrease the likelihood of fishermen from each respective sub-region

fully harvesting their sub-regional quota, and maximizing the potential annual revenue they could gain upon implementation of sub-regional quotas in the Gulf of Mexico. Thus, Alternative D4 would likely result in both direct and indirect short- and long-term minor adverse socioeconomic impacts across the entire Gulf of Mexico region, as there would be potential losses from prohibiting landings of hammerhead sharks in the western Gulf of Mexico and from choosing a boundary that does not create sufficient geographic separation between the major stakeholders in the Gulf of Mexico.

Alternative D5 would establish a non-blacknose SCS TAC of 931.9 mt dw and maintain the current commercial base annual quota of 45.5 mt dw (100,317 lb dw). However, given the impact of federal and state regulations related to shark finning and sale of shark fins, which have resulted in declining ex-vessel prices of fins since 2010, on fishermen in the Gulf of Mexico, maintaining the current base annual quota would likely have negative socioeconomic impacts. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS and blacknose shark meat in the Gulf of Mexico region would be $36,114, while the shark fins would be $29,293. Thus, total average annual gross revenues for non-blacknose SCS landings would be $65,407 ($36,114 + $29,293) (Table 4.17). As the 2013 non-blacknose SCS landings exceeded the current base annual quota, this alternative would limit or reduce the amount of non-blacknose SCS that could be landed and potentially result in an early closure due to the small non-blacknose SCS quota. Such a reduction could lead to continued overharvests and resulting smaller quotas each year, as quotas are adjusted to account for any overharvests. Alternative D5 would likely result in both direct and indirect short- and long-term moderate adverse socioeconomic impacts, as fishermen would continue to experience reduced revenue throughout the region, as would the dealers and supporting business that they regularly interact with.

Table 4.17 Average non-blacknose SCS 2014 ex-vessel prices and annual gross revenues for the fleet under each alternative. Shark fins are assumed to be 5 percent of the carcass weight.

Alternative	Type of Shark Product	Regional Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
D5	Meat	100,317	$0.36	$36,114
	Fins	5,016	$4.00	$29,293
D6	Meat	150,476	$0.36	$54,171
	Fins	7,524	$4.00	$43,939
D7	Meat	395,566	$0.36	$141,684
	Fins	19,678	$4.00	$114,921
D8	Meat	248,215	$0.36	$89,357
	Fins	12,411	$4.00	$72,479

Alternative D6 would establish a non-blacknose SCS TAC of 954.7 mt dw and increase the commercial quota to the 2014 adjusted base annual quota of 68.3 mt dw (150,476 lb dw). Based on the 2013 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the Gulf of Mexico region would be $54,171, while the shark fins would be $43,939. Thus, total average annual gross revenues for non-blacknose SCS landings would be $90,110 ($54,171 + $43,939) (Table 4.17). Under this alternative, fishermen could land more non-blacknose SCS than under Alternative D5. Additionally, under the 2014 adjusted annual quota, blacknose shark interactions are kept at a minimum, increasing the likelihood of maximizing profits from non-blacknose SCS landings, given the quota linkage between the two management groups. However, as 2013 non-blacknose SCS

landings exceeded the current base annual quota, the commercial quota described under this alternative would still limit the amount of non-blacknose SCS that could be landed, though the likelihood of the non-blacknose SCS fishery closing early is lower than under Alternative D5. Given current financial difficulties faced by fishermen, associated with declining ex-vessel prices and restrictions on the sale of shark fins, the beneficial socioeconomic impacts of increasing the annual quota by 22.8 mt dw (from the quota under Alternative D5) would likely be minimal. However, due to the uncertainties in SEDAR 34 and given the unknown stock status of bonnethead sharks in the Gulf of Mexico region and uncertainty about the data and life history information for finetooth sharks, NMFS believes that the considered quota would continue to provide fishermen with sufficient opportunity to harvest non-blacknose SCS, while maintaining the species at sustainable levels. Thus, it is likely that Alternative D6 could result in both direct and indirect short- and long-term neutral to minor adverse socioeconomic impacts.

Alternative D7 would establish a non-blacknose SCS TAC of 1,064.9 mt dw and increase the quota to 178.5 mt dw (393,566 lb dw). Under this alternative, the commercial quota would be increased to twice the current 2013 landings, which is almost four times the current base annual quota for non-blacknose SCS. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the Gulf of Mexico region would be $141,684, while the shark fins would be $114,921. Thus, total average annual gross revenues for non-blacknose SCS landings would be $256,605 ($141,684 + $114,921) (Table 4.17). Fishermen could potentially land more non-blacknose SCS than under either Alternatives D5 or D6, resulting in increased annual revenues, particularly if they were able to land the entire increased commercial quota. However, the likelihood of landing the entire quota is low given the linkage between blacknose sharks and non-blacknose SCS management groups, which would be maintained in the Gulf of Mexico region. Increasing the commercial quota to about four times the current base annual quota may increase fishing effort and thereby increase the number of blacknose shark interactions. If the blacknose quota is reached quickly, this could result in the early closure of the non-blacknose SCS fishery before the quota is reached and in the loss of associated revenue, due to the linkage of the blacknose shark and non-blacknose SCS management groups. Additionally, while the TAC and commercial quota under Alternative D7 could be sufficient to maintain sustainable levels of fishing for bonnethead and Atlantic sharpnose sharks, this quota level does not factor in uncertainties associated with the SEDAR 34 stock assessment or the SEDAR 13 stock assessment for finetooth sharks. Alternative D7 could have short-term beneficial socioeconomic impacts, since the commercial quota under this alternative is almost four times the current base quota for non-blacknose SCS. However, if the increase in quota results in overfishing for blacknose and/or finetooth sharks, additional restrictions would be likely in the future, which would likely have large negative socioeconomic impacts.

Alternative D8, one of the preferred alternatives, would establish a non-blacknose SCS TAC of 999.0 mt dw, increase the quota to 112.6 mt dw (248,215 lb dw), and prohibit the retention of blacknose sharks in the Gulf of Mexico. Under this alternative, the commercial quota would be increased to almost twice the 2013 landings, which is almost four times the current base annual quota for non-blacknose SCS, but then would be adjusted down to account for blacknose shark discards that would occur as a result of the prohibition on retaining blacknose sharks. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the Gulf of Mexico region would be

$89,357, while the shark fins would be $72,479. Thus, total average annual gross revenues for non-blacknose SCS landings would be $345,551 ($125,941 + $219,610) (Table 4.17). Fishermen could potentially land more non-blacknose SCS under this alternative than under either Alternatives D5 or D6, resulting in increased annual revenues. While the quota would be lower than under Alternative D7, by prohibiting blacknose sharks, this would remove the linkage between blacknose sharks and non-blacknose sharks, and increase the likelihood that fishermen could harvest the entire non-blacknose SCS quota. Additional revenue gained from increasing the non-blacknose SCS quota would outweigh a loss of $5,199 (Table 4.18) from prohibiting blacknose in the Gulf of Mexico. Potential loss of gross revenue by shark fishermen due to the prohibition on blacknose may also be less than $5,199, as fishermen have demonstrated an ability to largely avoid blacknose sharks with the use of gillnet gear. Fishermen in the Gulf of Mexico have also been requesting a prohibition on landing and retention of blacknose sharks since Amendment 3 to the 2006 Consolidated HMS FMP, when blacknose sharks were separated from the SCS management group and linked to the newly created non-blacknose SCS management group. The small blacknose shark quota has resulted in early closure before the non-blacknose SCS quota could be harvested. However, in recent years, blacknose sharks have not been the limiting factor in initiating closure of the linked SCS management groups in the Gulf of Mexico; instead, it has been landings of non-blacknose SCS either exceeding or being projected to exceed 80 percent of the quota. Thus, Alternative D8 would likely result in both direct and indirect short- and long-term moderate beneficial socioeconomic impacts, since the commercial quota under this alternative would be higher than the current base quota for non-blacknose SCS.

Table 4.18 Average blacknose shark 2014 ex-vessel prices and annual gross revenues for the fleet in the Gulf of Mexico region based on 2015 base annual quotas. Shark fins are assumed to be 5 percent of the carcass weight.

Species	2015 Base Annual Quotas (lb dw)	Average Ex-Vessel Price	Average Annual Gross Revenues
Blacknose shark	4,513	$0.86	$3,881
Fins	226	$5.84	$1,318

4.4.3 CONCLUSION

Cumulatively, Alternatives D3 and D8 would have positive impacts on the current state of shark fisheries in the Gulf of Mexico Region. Establishing the eastern and western sub-regional quotas for the LCS management groups along 88° 00’ W. long. in Alternative D3 would allow fishermen to maximize their fishing effort during periods when sharks migrate into local waters or periods when sales of shark meat are increased, as well as providing increased revenue associated with potentially landing a larger portion of their sub-regional quota. During the public comment period, the majority of commenters supported dividing the Gulf of Mexico into eastern and western sub-regions at 88° 00’ W. long. These sub-regions would provide sufficient geographic separation between the major stakeholders in the Gulf of Mexico (i.e., Louisiana and Florida), and provide more equitable economic benefits to fishermen in both sub-regions, by allowing them increased likelihood of fully harvesting their sub-regional quota, and maximizing the potential annual revenue they could gain upon implementation of sub-regional quotas in the Gulf of Mexico. With the implementation of

sub-regions, NMFS will continue to monitor the associated sub-regional quotas based on where fish were caught rather than where fish were landed, which would provide for more effective monitoring of quotas and more accurate reporting. Additionally, Alternative D3 would provide increased flexibility in the application of shark management measures throughout the Gulf of Mexico region, without having any adverse economic or ecological consequences.

Alternative D8 would increase the non-blacknose SCS quota to a higher amount than the current non-blacknose SCS base quota and prohibit retention of blacknose sharks in the Gulf of Mexico. During the public comment period, NMFS received support for a non-preferred alternative, which would increase the non-blacknose SCS TAC and quota to the highest amounts analyzed, adjusted down to account for discards of blacknose sharks. Revenue gained from increasing the non-blacknose SCS quota would outweigh financial losses associated with prohibiting blacknose sharks in the Gulf of Mexico. Additionally, this quota would still be conservative based on uncertainties associated with the SEDAR 34 stock assessment for bonnethead sharks and the SEDAR 13 stock assessment for finetooth sharks. This quota would maintain the Atlantic sharpnose and bonnethead sharks stocks in the Gulf of Mexico at sustainable levels based on the results of SEDAR 34. Additionally, minimal impacts would be expected on finetooth sharks. Based on the management measures implemented under Amendment 3 regarding underharvest carryover for non-blacknose SCS under Amendment 3, which considered results of the SEDAR 13 stock assessment, the non-blacknose SCS quota under this alternative would represent one third of the maximum quota ever observed for this management group. Furthermore, finetooth sharks represent only 21 percent of percent of combined Gulf of Mexico and Atlantic non-blacknose SCS landings in 2014, compared to Atlantic sharpnose representing 73 percent. While there would be neutral direct, ecological impacts as a result of implementing sub-regional quotas for LCS and minor adverse, ecological impacts as a result of increasing the non-blacknose SCS quota, because of the minor to moderate beneficial socioeconomic impacts, NMFS prefers these alternatives at this time.

NMFS does not prefer the remaining alternatives at this time for a variety of reasons. Alternative D1, the status quo alternative, does not address some of the issues facing the Gulf of Mexico shark fisheries and the current purpose of Amendment 6 to increase flexibility for shark fishermen. Alternative D2 does not create sufficient geographic separation between the major stakeholders in the Gulf of Mexico, providing less equitable economic benefits to fishermen in both sub-regions. Alternative D4, in addition to not providing sufficient geographic separation between the major stakeholders, would also result in further loss of revenue by prohibiting hammerhead sharks in the western Gulf of Mexico sub-region. The quota under Alternative D5 would not address the financial difficulties faced by shark fishermen throughout the Gulf of Mexico or improve the current state of the Gulf of Mexico shark fisheries. While the quota under Alternative D6 would maintain non-blacknose SCS at sustainable levels, it would unnecessarily limit the potential revenue that could be gained from harvesting non-blacknose SCS in the Gulf of Mexico. Finally, the increased quota under Alternative D7 could likely negatively impact blacknose sharks, which have an unknown status, and would have an unknown impact on finetooth sharks.

4.5 UPGRADING RESTRICTIONS

Alternative E1 No Action: Do not remove current upgrading restrictions for shark limited access permit holders

Alternative E2 *Remove current upgrading restrictions for shark limited access permit holders – Preferred Alternative*

4.5.1 ECOLOGICAL IMPACTS

Under Alternative E1, the No Action alternative, NMFS would not remove the upgrading restrictions in place for shark limited access permit holders. Thus, shark limited access permit holders would continue to be limited to upgrading a vessel or transferring a permit only if it does not result in an increase in horsepower of more than 20 percent or an increase of more than 10 percent overall, gross registered tonnage, or net tonnage from the vessel baseline specifications. NMFS expects the No Action alternative to have direct and indirect neutral ecological impacts because it would maintain the current upgrading restrictions, which are administrative and have no impacts on the status of Atlantic shark stocks.

Alternative E2, the preferred alternative, would remove current upgrading restrictions for shark directed permit holders. Since this alternative removes restrictions on shark limited access permits related to vessel specifications and has no impacts on the biological status of Atlantic sharks, Alternative E2 would have short- and long-term neutral ecological impacts. In addition, Alternative E2 would not remove the upgrading restriction for swordfish permit holders, so triple pack owners would still need to follow the upgrading restrictions for the swordfish limited access permit.

4.5.2 SOCIAL AND ECONOMIC IMPACTS

Under Alternative E1, the No Action alternative NMFS would maintain the current upgrading restrictions in place for shark limited access permit holders. The No Action alternative could result in direct and indirect minor adverse socioeconomic impacts if fishermen continue to be constrained by limits on horsepower and vessel size increases. Fishermen would also be limited by these upgrading restrictions when buying, selling, or transferring shark directed limited access permits.

Alternative E2, a preferred alternative, would remove current upgrading restrictions for shark directed permit holders. Eliminating these restrictions would have short- and long-term minor beneficial socioeconomic impacts, since it would allow fishermen to buy, sell, or transfer shark directed permits without worrying about the increase in horsepower of more than 20 percent or an increase of more than 10 percent in length overall, gross registered tonnage, or net tonnage from the vessel baseline specifications. The upgrading restriction is not needed at this time, since the fishery was very different at the time of implementation and the fishery is much smaller now due to current management measures. In addition, the upgrade restriction for shark permit holders was implemented to match the upgrading restrictions for the Northeast multispecies permits. NMFS is currently considering removing the upgrading restrictions for the Northeast multispecies permits, and if those are removed, then removing the upgrading restrictions for shark directed permit holders could aid in maintaining consistency for fishermen who hold multiple permits.

4.5.3 CONCLUSION

The preferred alternative, Alternative E2, which would remove current upgrading restrictions for shark directed permit holders, would have short- and long-term neutral ecological impacts, since removing restrictions on shark limited access permits related to vessel specifications would have no impacts on the biological status of Atlantic sharks. Additionally, eliminating these restrictions would have short- and long-term minor beneficial socioeconomic impacts, since it would allow fishermen to buy, sell, or transfer shark directed permits without worrying about the increase in horsepower of more than 20 percent or an increase of more than 10 percent in length overall, gross registered tonnage, or net tonnage from the vessel baseline specifications. NMFS prefers this alternative at this time because it would provide more flexibility for current shark limited access permit holders without having any negative ecological effects, could potentially maintain consistency with the Northeast multispecies fisheries permit requirements if those requirements also are removed, and is consistent with all comments received during the public comment period.

4.6 IMPACTS ON ESSENTIAL FISH HABITAT

Pursuant to 16 U.S.C. 1855(b)(1), and as implemented by 50 C.F.R. §600.815, 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. Ecological impacts to EFH due to the preferred alternatives in this proposed amendment – increasing retention limits for LCS, establishing sub-regional quotas for LCS in the Gulf of Mexico, adjusting the non-blacknose SCS quotas based on the most recent stock assessment, revising current quota linkages, and removing the current upgrade restrictions – would likely be neutral and have no adverse effects.

The current Atlantic aggregated LCS, hammerhead and non-blacknose SCS quotas, as well as the current Gulf of Mexico aggregated LCS, hammerhead, blacktip and non-blacknose SCS quotas, would not affect EFH beyond what was already analyzed when those quotas were established. Additionally, potential increases to the non-blacknose SCS quotas are not expected to have any impacts on EFH, since NMFS does not expect overall fishing effort to increase. In the 2006 Consolidated HMS FMP and Amendment 1 to the 2006 Consolidated HMS FMP, NMFS reviewed the various gear types with the potential to affect EFH and, based on the best information available at that time, NMFS determined that fishing sharks is not likely to adversely affect EFH. Gears commonly used in the Atlantic shark fisheries or impacted by this action include bottom longline, pelagic longline, gillnet, and rod and reel gear. Amendment 1 to the 2006 Consolidated HMS FMP analyzed EFH impacts resulting from these gear types. Amendment 1 found that bottom longline and gillnet interact with the sea floor in areas deemed EFH by the regional councils or NMFS, but that the impact did not warrant additional conservation measures. Amendment 1 also found that pelagic longline and rod and reel gear do not typically interact with the sea floor; therefore, these gear types are unlikely to impact EFH. There is no new information on the effects shark fishing gear would have on EFH. Certain fishing gears can have negative effects on EFH, but the Amendment 6

measures are not expected to change the fishing gears authorized relative to the status quo. Thus, there is no evidence to suggest that implementing any of the preferred alternatives in this amendment would adversely affect EFH.

4.7 IMPACTS ON PROTECTED RESOURCES

On March 31, 2014, NMFS requested reinitiation of consultation under Section 7 of the Endangered Species Act (ESA) for the Atlantic pelagic longline (PLL) fishery in accordance with 50 C.F.R. § 402.16 and the requirements of the 2004 Biological Opinion for the Atlantic PLL Fishery for Highly Migratory Species (2004 BiOp). The request for reinitiation included Section 7(a)(2) and Section 7(d) determinations regarding ESA listed sea turtles. On October 30, 2014, NMFS requested reinitiation of Section 7 consultation on the 2001 biological opinion for the Atlantic Highly Migratory Species (HMS) Fishery Management Plan and the 2012 Shark and Smoothhound biological opinion to assess effects to the scalloped hammerhead shark Central and Southwest Distinct Population Segment and seven species of corals. In the October 30, 2014, request for reinitiation of consultation, NMFS asked that you include in the HMS pelagic longline consultation consideration of the effects of the pelagic longline fishery on the Central and Southwest DPS of scalloped hammerhead sharks and threatened coral species, as well, in order to most effectively evaluate the effects of the pelagic longline fishery on all listed species in the action area. On July 7, 2015, NMFS submitted a memo that supplements the Section 7(a)(2) and Section 7(d) determinations that NMFS has determined that ongoing operation of the Atlantic HMS fisheries consistent with the Reasonable and Prudent Alternatives and Reasonable and Prudent Measures in existing biological opinions and consistent with conservation and management measures is not likely to jeopardize the continued existence of the species, 16 U.S.C. 1536(a)(2), or result in an irreversible or irretrievable commitment of resources which would foreclose formulation or implementation of any reasonable and prudent alternative measures, 16 U.S.C. 1536(d).

Permit Stacking

Protected resources impacts resulting from the adoption of any of the alternatives related to permit stacking are expected to be neutral. Permit stacking provides a means of indirectly increasing trip limits. Under Alternative A1, not implementing permit stacking would have no impact on fishing effort levels or catch rates of LCS and SCS in the Atlantic or Gulf of Mexico region. Similarly, no changes in bycatch or bycatch rates are expected for protected resources if permit stacking were not implemented for shark directed permit holders. Thus, directed and indirect, neutral impacts on protected resources are expected in the short and long term for Alternative A1. Under Alternatives A2 and A3, directed permit holders could place a maximum of 2 and 3 directed permits on a vessel, allowing a permit holder an increased retention limit of 72 and 108 LCS other than sandbar sharks per trip, respectively. Even under a higher trip limit, as considered in Alternatives A2 and A3, there are no expected increases in either overall fishing effort level or catch rates, and thus no expected increase in bycatch or bycatch rates in the short term because these fisheries would continue to be quota-limited. Although, if fishermen increase the number of hooks per set substantially in order to catch the increased retention limit, they could end up interacting with additional protected species as a result. If this happened, it would likely only happen in the short term as fishermen adjust their

fishing practices to the adjusted trip limit. Thus, permit stacking would likely result in direct long-term neutral impacts on protected resources because the LCS fishery would continue to be quota-limited, with the same number of LCS harvested annually, and similar interaction rates are expected with protected resources as those analyzed previously for the Atlantic shark fisheries.

Commercial Retention Limits

Each of the alternatives considered related to increasing or maintaining the LCS retention limit for directed permit holders is expected to have neutral impacts on protected resources. If no changes were made to the LCS retention limits for directed shark permit holders, under Alternative B1, then retention limits would be kept at 36 LCS per trip and shark fisheries would continue to operate under the same conditions in place since 2008. There would be no expected increase in either fishing effort or catch rates, and thus no expected increase in bycatch or bycatch rates, because these fisheries would continue to be quota-limited. Under Alternatives B2, B3, and B4, which would consider increasing the LCS retention limit for directed permit holders to varying degrees, there are no expected increases in either overall fishing effort level or catch rates, and thus no expected increase in bycatch or bycatch rates in the short term, because these fisheries would continue to be quota-limited. However, if fishermen increase the number of hooks per set substantially in order to catch the increased retention limit, they could end up interacting with additional protected species as a result. If this happened, it would likely only happen in the short term as fishermen adjust their fishing practices to the adjusted trip limit. Increasing commercial retention limits would likely result in direct and indirect short-term and long-term neutral impacts on protected resources because shark management groups would continue to be quota-limited, with the same number of LCS harvested annually, and similar interaction rates are expected with protected resources as those analyzed previously for the Atlantic shark fisheries.

Atlantic Regional and Sub-regional Quotas

Impacts to protected resources resulting from the adoption of any of the alternatives related to sub-regional quotas in the Atlantic region are expected to be neutral. Under Alternative C1, the No Action alternative, there would be no expected increase in either fishing effort or catch rates, as shark fisheries would continue to operate under the same conditions. Under Alternatives C2, C3, and C4, there would be no expected changes in mortality or risk to marine mammals or sea turtles, as implementation of sub-regional regional quotas represents an administrative change in the way quotas are monitored within a given region. Establishing sub-regional quotas should have no impact on either fishing effort or bycatch or bycatch rates, and should not impact the distribution of current fishing efforts throughout the region. Under Alternative C8, a preferred alternative, in the area south of 34 degrees latitude, no changes would be made to the existing quota linkages between blacknose and non-blacknose sharks. Since no changes would be made, there are no expected changes in the magnitude of interactions with protected resources. In the area north of 34 degrees latitude, the quota linkage between blacknose and non-blacknose SCS would be removed and blacknose shark landings would be prohibited. However, because only a small percentage of blacknose landings in the Atlantic region can be attributed to fishing activities in this area, there are no expected changes in fishing effort as a result of removing the quota linkage. Thus, neutral direct and indirect impacts on

protected resources are expected in the short and long term for Alternatives C1, C2, C3, C4, and C8, because fishing effort is expected to remain the same.

Impacts to protected resources resulting from the adoption of any of the alternatives related to establishing a TAC and commercial quota for non-blacknose SCS in the Atlantic region vary depending upon the magnitude of the TAC and commercial quota. Under Alternative C5, there would likely be minor beneficial direct and indirect ecological impacts on protected resources in the short-term and moderate beneficial direct and indirect ecological impacts on protected resources in the long term, because it considers establishing a commercial quota that is less than half of the current quota. Thus, under Alternative C5, there is increased likelihood that fishing effort would decrease under a smaller quota, reducing mortality or risk to marine mammals and sea turtles. Under Alternative C6, there would likely be neutral direct and indirect ecological impacts on protected resources in the short term and minor beneficial direct and indirect ecological impacts on protected resources in the long term, because maintaining the current commercial base annual quota would not increase interactions with protected species, particularly since fishing rate and effort should remain the same. However, because of the inability to carryover underharvest in the Atlantic, due to the unknown stock status of bonnethead in the Atlantic, the non-blacknose SCS quota may be effectively capped at a lower quota level under Alternative C6 when compared to previous commercial adjusted annual quotas. Thus, in the long term, there could be a reduction in the rate of interaction with protected species. Current landings of non-blacknose SCS have been approximately half of the current quota proposed under Alternative C7, and if landings continue at this rate, regardless of the increase in quota, fishing effort may remain the same. However, increasing the non-blacknose SCS quota and the ability for fishermen north of the management boundary line in the Atlantic region to fish for non-blacknose SCS when the blacknose fishery closes could ultimately result in increased fishing effort, but NMFS believes that there would not be an increase in interactions with marine mammals and sea turtles, because interactions are currently very low. Therefore, even with some additional effort, interactions are expected to continue to be very low.

Gulf of Mexico Regional and Sub-regional Quotas

Impacts to protected resources impacts resulting from the adoption of any of the alternatives related to sub-regional quotas in the Gulf of Mexico region are expected to be neutral. Under Alternative D1, the No Action alternative, there would be no expected increase in either fishing effort level or rates, as shark fisheries would continue to operate under the same conditions. Under Alternative D2 and Alternative D3 (one of the preferred alternatives), there would be no expected changes in mortality or risk to marine mammals or sea turtles, as implementation of sub-regional regional quotas represents an administrative change in the way quotas are monitored within a given region. Establishing sub-regional quotas should have no impact on either fishing effort or bycatch or bycatch rates, and should not impact the distribution of current fishing efforts throughout the region. Under Alternative D4, in the eastern Gulf of Mexico sub-region, no changes would be made in the existing quota linkages between aggregated LCS and hammerhead sharks. Since no changes would be made, there would be no expected changes in the magnitude of interactions with protected resources. In contrast, in the western Gulf of Mexico sub-region, quota linkages between aggregated LCS and hammerhead sharks would be removed, and retention of hammerhead sharks would be

prohibited. Based on updated landings data since the draft EA for Amendment 6, fishermen would be unable to retain a potential sub-regional quota of 11.9 mt dw (47.2 percent of the landings) for hammerhead sharks due to the prohibition, which is considerably higher than the 0.6 percent of hammerhead shark landings that were originally attributed to the western Gulf. As such, fishermen may be disincentivized from fishing, and reduce efforts in this region, which could benefit protected species. Thus, neutral direct and indirect impacts on protected resources are expected in the short- and long term for Alternatives D1, D2, and D3, with minor beneficial direct and indirect impacts on protected species expected under Alternative D4 for the short- and long-term.

Impacts to protected resources resulting from the adoption of any of the alternatives related to establishing a TAC and commercial quota for non-blacknose SCS in the Gulf of Mexico region vary depending upon the magnitude of the commercial TAC and quota. Under Alternative D5, there would likely be minor beneficial direct and indirect ecological impacts on protected resources in the short- and long-term. Establishing a commercial quota that is below the current commercial quota for non-blacknose SCS would reduce mortality or risk to marine mammals and sea turtles. This quota would maintain a sustainable level of harvest well below levels projected in the stock assessment and keep interactions rates with protected resources at a minimum. Under Alternative D6, there would likely be neutral direct and indirect ecological impacts on protected resources in the short and long term. At the 2014 adjusted commercial base annual quota, there are no expected increases in interactions with protected species, particularly since fishing effort and catch rate should remain the same. Under Alternative D7, there would likely be minor adverse direct and indirect ecological impacts on protected resources in the short and long term. By implementing a commercial quota for non-blacknose SCS almost four times that of the current base annual quota, there could initially be increases in interactions with marine mammals, sea turtles, and other protected species due to increased fishing effort by shark fishermen targeting non-blacknose SCS. However, due to the linkage of the blacknose shark and non-blacknose SCS management groups, the potential negative impacts to protected resources associated with implementing a significantly higher quota would be mitigated by the inability of fishermen to catch the full non-blacknose SCS quota without interacting with enough blacknose sharks to close the fishery early. Under Alternative D7, there would be neutral direct and indirect ecological impacts on protected species because the commercial quota would not be expected to increase fishing effort, but rather would continue to allow fishermen to land these species at current levels, while maintaining the Atlantic sharpnose, bonnethead, and finetooth sharks at sustainable levels, consistent with the recent stock assessments. Under the increased non-blacknose SCS quota for Alternative D8, there may be an increase in effort to catch the larger quotas. However, NMFS believes that while there would be an increase in interactions with marine mammals, seas turtles, and other protected species, interactions are extremely low (approximately seven per year with low mortalities), based on gillnet and bottom longline observer data, and therefore, any potential increase in interactions would be minimal. This quota would still provide for sustainable harvest of non-blacknose SCS in the Gulf of Mexico based on the results of the recent stock assessments.

Upgrading Restrictions

Under Alternative E1, not removing the upgrading restrictions would have no impact on fishing effort levels or catch rates for the shark fisheries. Similarly, no changes in bycatch or bycatch rates are expected for protected resources. Thus, direct and indirect neutral impacts on protected resources are expected in the short and long term for Alternative E1. Protected resources impacts resulting from the removal of upgrading restrictions for shark limited access permit holders is expected to be neutral. Removing the upgrading restrictions is only expected to have beneficial socioeconomic impacts. Thus, neutral direct and indirect impacts on protected resources are expected in the short and long term for preferred Alternative E2.

4.8 ENVIRONMENTAL JUSTICE CONCERNS

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.

Community profile information is available in the 2006 Consolidated HMS FMP (Chapter 9), a recent report by MRAG Americas, Inc., and Jepson (2008) titled "Updated Profiles for HMS Dependent Fishing Communities" (Appendix E of Amendment 2 to the 2006 Consolidated HMS FMP), and in the 2011 and 2012 HMS SAFE Reports. The MRAG report updated community profiles presented in the 2006 Consolidated HMS FMP and provided new social impacts assessments for HMS fishing communities along the Atlantic and Gulf of Mexico coasts. The 2011 and 2012 SAFE Reports include updated census data for all coastal Atlantic states, as well as those in the Gulf of Mexico, and some selected communities that are known centers of HMS fishing, processing, or dealer activity. Demographic data indicate that coastal counties with fishing communities are variable in terms of social indicators like income, employment, and race and ethnic composition.

The preferred alternatives were selected to minimize ecological and economic impacts and provide for the sustained participation of fishing communities. The preferred alternatives would not have any effects on human health nor are they expected to have any disproportionate social or economic effects on minority and low-income communities. Not implementing permit stacking could potentially have minor beneficial effects on low-income members of communities, because permit stacking would only benefit those fishermen that already have multiple permits or that could afford to buy additional permits. Increasing the retention limit for directed permit holders to a maximum of 55 LCS other than sandbar sharks per trip would likely have minor beneficial effects on minorities and low-income members of communities. Implementing a higher retention limit is likely to make each trip more profitable for fishermen, and the increased efficiency of trips could save money on gas, bait, and other associated costs. The alternatives creating a management boundary for SCS along 34° 00' N. lat. and apportioning the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks along 88° 00' W. long. into western and eastern sub-regional quotas, along with

altering the LCS and SCS quota linkages in the Atlantic and Gulf of Mexico regions, would not disproportionately impact minority or low-income populations. Finally, removing upgrading restrictions would provide more financial flexibility, thereby providing minor beneficial socioeconomic impacts to minorities and low-income members of communities by allowing fishermen more flexibility to buy, sell, or transfer shark directed permits. Overall, the final actions considered in Amendment 6 would have minor beneficial impacts on enhancing future social justice concerns for minority and low-income communities.

4.9 COASTAL ZONE MANAGEMENT ACT (CZMA) CONCERNS

The CZMA requires that federal agency activities that have reasonably foreseeable coastal effects be consistent to the maximum extent practicable with the enforceable policies of the affected federally-approved state coastal management programs. This action proposes to implement increased LCS trip limits for shark directed limited access permit holders. Additionally, this action proposes to apportion the Gulf of Mexico regional quotas for blacktip sharks, aggregated LCS, and hammerhead sharks into western and eastern sub-regional quotas. The proposed action includes measures to adjust the non-blacknose SCS quotas in the Atlantic and Gulf of Mexico based on the results of the 2013 stock assessments for Atlantic sharpnose and bonnethead sharks, and examines the current quota linkages in the LCS and SCS fisheries. Finally, this action proposes to remove the upgrading restrictions for shark limited access permit holders. Overall, this action explores potential alternatives that provide the flexibility to adapt to the changing needs of the Atlantic shark fisheries. Thus, NMFS has determined that these proposed measures are consistent to the maximum extent practicable with the enforceable policies of those coastal states in the Atlantic, Gulf of Mexico, and Caribbean that have approved coastal zone management programs. Letters were sent to those states requesting their concurrence when the proposed rule filed with the Federal Register. Eleven states replied within the response time period that the proposed regulations were consistent with the enforceable policies of the coastal management programs (Alabama, Connecticut, Delaware, Florida, Louisiana, Mississippi, North Carolina, New Hampshire, New Jersey, Rhode Island, Virginia). Another nine states did not respond (Maine, Maryland, Massachusetts, South Carolina, Texas, New York, Georgia, U.S. Virgin Islands, and Puerto Rico) within the response time period nor did they request an extension in comment period; therefore, we presume their concurrence. The final action would not be expected to violate any Federal State or local law or requirements imposed for the protection of the environment.

4.10 CUMULATIVE IMPACTS

Under NEPA, a cumulative impact is the impact on the environment that results from the incremental impact of the final action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7). A cumulative impact includes the total effect on a natural resource, ecosystem, or human community due to past, present, and reasonably foreseeable future activities or actions of federal, non–federal, public, and private entities. Cumulative impacts may also include the effects of natural processes and events, depending on the specific resource in question. Cumulative impacts include the total of all impacts to a particular

resource that have occurred, are occurring, and would likely occur as a result of any action or influence, including the direct and reasonably foreseeable indirect impacts of a federal activity. The goal of this section is to describe the cumulative ecological, economic, and social impacts of past, present, and reasonably foreseeable future actions on shark fishermen and the environment, with regard to the management measures presented in this document. For an overview of other non-HMS fisheries for which shark fishermen currently have permits and the shark fishermen's ability to enter other fisheries, please refer to Section 4.8 of Amendment 5a to the 2006 Consolidated HMS FMP.

As discussed above, the management actions considered would provide more proactive management and explore methods to establish more flexible regulations that would consider the changing needs of the Atlantic shark fisheries. Since sharks have been federally managed, there have been many changes to the regulations and major rules related to sharks, either through FMP amendments or regulatory amendments. Despite modifications to the regulations or amendments to the FMP in order to respond to changes, the Atlantic shark fisheries continue to be faced with problems such as commercial landings that exceed the quotas, declining numbers of fishing permits since limited access was implemented, complex regulations, "derby" fishing conditions due to small quotas and short seasons, increasing numbers of regulatory discards, and declining market prices. The preferred actions would provide fishermen with more economic efficiency, potentially increasing profitability across the Atlantic shark fisheries. Additionally, as discussed above, the preferred actions would simultaneously have largely neutral cumulative ecological impacts, with minimal impacts on protected species and marine mammals.

The Atlantic shark fishery has had a number of past rules that would be impacted by this rulemaking. A chronological list of these measures is outlined in Table 4.3 in Section 4.8 of Amendment 5a to the 2006 Consolidated HMS FMP. In addition, there are a few past and ongoing rulemakings that could impact shark fishermen. Certain measures and actions in particular may have impacts on the human environment when considered in conjunction with Amendment 6 to the 2006 Consolidated HMS FMP:

- Amendment 2 to the 2006 Consolidated HMS FMP (73 FR 35778, June 24, 2008; 73 FR 40658, July 15, 2008) changed quotas, retention limits, and authorized species for the commercial shark fishery. Changes in this amendment were determined to likely result in beneficial cumulative ecological impacts for SCS and LCS by decreasing fishing mortality, but reductions in LCS were determined to likely lead to adverse cumulative socioeconomic impacts. When considered in conjunction with Amendment 6, increases in commercial retention rates and establishing sub-regional quotas could result in minor beneficial cumulative socioeconomic benefits for Atlantic shark fishermen.
- Amendment 3 to the 2006 Consolidated HMS FMP (75 FR 30484, June 1, 2010), among other things, established separate blacknose shark and non-blacknose SCS quotas, applicable across both the Atlantic and Gulf of Mexico regions. This action was in response to a stock assessment that found blacknose sharks were overfished with overfishing occurring. When considered in conjunction with Amendment 6, NMFS expects neutral cumulative ecological impacts and beneficial socioeconomic impacts when establishing non-blacknose SCS TACs and increased commercial quotas for non-blacknose SCS in the Atlantic and GOM regions

because these increased quotas are consistent with the results of the SEDAR 34 and 13 stock assessment.

- Amendment 5a to the 2006 Consolidated HMS FMP (78 FR 40318, July 3, 2013) divided the blacknose and non-blacknose SCS quotas into separate regional quotas in response to a new stock assessment that determined that there are separate blacknose shark stocks in the Atlantic and Gulf of Mexico. Additionally, Amendment 5a established a separate blacktip shark quota in the Gulf of Mexico. When considered in conjunction with Amendment 6, NMFS expects neutral cumulative ecological and socioeconomic impacts when establishing sub-regional quotas in the Gulf of Mexico region, because the overall regional aggregated LCS, hammerhead, and Gulf of Mexico blacktip shark quotas would remain the same. NMFS also expects neutral cumulative ecological impacts and beneficial socioeconomic impacts of prohibiting blacknose sharks in the GOM region and in the Atlantic north of 34 degrees latitude.
- In June 2013, SEDAR 34 began to assess Atlantic and Gulf of Mexico bonnethead and Atlantic sharpnose sharks. The results from these stock assessments were received in September 2013. This rulemaking considers establishing TACs and adjusting the commercial quotas for SCS in the Atlantic and Gulf of Mexico based on the results of SEDAR 34 stock assessment reports for both bonnethead and Atlantic sharpnose sharks (Alternatives C7 and D8). Establishing TACs and commercial quotas for non-blacknose SCS in the Atlantic and Gulf of Mexico that are above the current base and adjusted base quotas (Alternatives C7 and D8) would allow fishermen to maximize landings of non-blacknose SCS, without increased interactions with blacknose sharks and closing the non-blacknose SCS fishery early due to the quota linkage. NMFS expects this increase in commercial quotas to have minor beneficial socioeconomic impacts. In addition, NMFS expects the increase in commercial quotas for non-blacknose SCS to have neutral ecological cumulative impacts because projections from the bonnethead and Atlantic sharpnose shark stock assessments indicated that there was a 70 percent chance both stocks could withstand harvest levels almost double current levels. Similarly for finetooth sharks, while results from the SEDAR 13 stock assessment for finetooth sharks should be viewed cautiously, the quota under Alternative D8 would represent approximately one third of the maximum quota put in place for non-blacknose SCS, which took into consideration uncertainty in the results of SEDAR 13. Furthermore, prohibiting retention of blacknose sharks in the Gulf of Mexico could have minor beneficial effects on the stock, since fishermen would be incentivized to avoid blacknose sharks and obligated to discard live sharks that would have been retained if a small quota had been kept in place.
- Draft Amendment 5b to the 2006 Consolidated HMS FMP would include management measures to rebuild and end overfishing on dusky sharks, based on the most recent stock assessment. Management measures are expected to primarily impact the recreational HMS fisheries and the commercial pelagic longline fishery. When considered in conjunction with Amendment 6, NMFS expects the socioeconomic cumulative impacts to be minor adverse to neutral, since the commercial pelagic longline fishermen could be impacted by the potential management measures under both amendments.

- Draft Amendment 9 to the 2006 Consolidated HMS FMP (79 FR 46217, August 7, 2014) would implement the smooth dogfish-specific provisions from the 2010 Shark Conservation Act, a revised smoothhound shark quota based on results of SEDAR 39, and the requirements from the 2012 Atlantic Shark and Smoothhound Biological Opinion. This rulemaking would also include measures specific to the Atlantic shark gillnet fishery to require them to only use VMS in the Southeast U.S. Monitoring Area, consistent with the Atlantic Large Whale Take Reduction Plan (ALWTRP). When considered in conjunction with Amendment 6, NMFS expects the socioeconomic cumulative impacts to be beneficial, since the shark gillnet fishermen would be impacted by both of these actions.

Overall, the preferred actions in Amendment 6 for LCS and SCS fisheries would have direct and indirect short- and long-term neutral cumulative ecological impacts, based on the detailed discussions of the ecological impacts of each of the preferred actions above. The neutral ecological impacts associated with the preferred actions make these actions favorable, particularly given their associated economic benefits to shark fishermen (discussed below). The preferred alternatives would likely have neutral impacts on the overall fishing effort or fishing rates, bycatch, or bycatch rates in the long-term. Additionally, there would be no major impacts on EFH, and the preferred actions would both maintain sustainable shark fisheries and maintain the status quo for species currently under a rebuilding plan. The ecological impacts of all three permit stacking alternatives, including the preferred alternative to not implement permit stacking, would be neutral. Preferred Alternative B2, to increase the LCS retention limit to 55 LCS other than sandbar sharks per trip, would have minimal impacts to the sandbar shark quota, with no expected change in interactions with target species, non-target species or protected species. Preferred Alternatives C7, C8, D3, and D8, which would establish a management boundary along 34° 00’ N. lat., establish sub-regional quotas for LCS, remove quota linkages, and establish non-blacknose SCS TACs and commercial quotas, would maintain harvest at levels that minimize interactions with non-target species and set the quota at a level that would maintain these stocks at a sustainable level consistent with the results of SEDAR 34 and 13. Finally, preferred alternative E2, to remove upgrading restrictions, would also have neutral ecological impacts.

Overall, the preferred actions in Amendment 6 for LCS and SCS fisheries have a combination of minor to moderate beneficial socioeconomic impacts, based on the detailed discussions of the socioeconomic impacts of each of the preferred actions in this Chapter. Preferred Alternative A1, not implementing permit stacking would provide equitable opportunities for all fishermen, by not disadvantaging those fishermen that are unable to buy additional permits. Preferred Alternative B2 would allow the shark fisheries to reach optimal yield for the quotas, are consistent with Amendments 2, 3, and 5a to the 2006 Consolidated HMS FMP, and would not unnecessarily limit fishermen or close the fisheries. Implementation of a management boundary along 34° 00’ N. lat. in the Atlantic and sub-regional quotas in the Gulf of Mexico, as well as removing quota linkages in some sub-regions and establishing TACs and commercial quotas for non-blacknose SCS (Alternatives C7, C8, D3 and D8), would allow fisherman to maximize their fishing effort and profits, opting for different seasonal openings within sub-regions based on when sharks migrate into local waters or when regional time/area closures are not in effect. Additionally, removing quota linkages within specified sub-regions or areas would provide economic advantages to active fishermen, allowing them to continue fishing for a certain management group without the fishing activities of the adjacent sub-

region or area impacting the closing time of a given fishery. Also, establishing TACs and commercial quotas for non-blacknose SCS in the Atlantic and Gulf of Mexico that are above the current base and adjusted base quotas (Alternatives C7 and D8) would allow fishermen to maximize landings of non-blacknose SCS, without increased interactions with blacknose sharks closing the non-blacknose SCS fishery early due to the quota linkage. Finally, removing the upgrading restrictions (Alternative E2) is expected to have neutral impacts. These cumulative socioeconomic benefits align well with the purpose and need for Amendment 6. NMFS anticipates that the cumulative direct and indirect socioeconomic impacts of all alternatives considered in this rulemaking are likely minor beneficial in the short term and moderately beneficial in the long term.

4.11 COMPARISON OF ALTERNATIVES

Table 4.19 provides a qualitative comparison of the impacts associated with the various alternatives considered in this rulemaking. This table summarizes the impacts that were discussed in detail in Sections 4.1 - 4.5.

Table 4.19 Comparison of alternatives considered.

Alternative	Quality	Timeframe	Ecological	Protected Resources	Socioeconomic
Alternative A1: *No Action – Do not implement permit stacking – Preferred Alternative*	Direct	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Minor adverse
	Indirect	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Neutral
	Cumulative	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Minor adverse
Alternative A2: Implement permit stacking for directed permit holders where each permit holder could place a maximum of 2 directed permits on a vessel; those 2 permits would allow the permit holder to harvest a maximum of 2 retention limits per trip (e.g., 72 LCS other than sandbar sharks per trip).	Direct	Short-term	Minor adverse	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
	Indirect	Short-term	Neutral	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
	Cumulative	Short-term	Neutral	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
Alternative A3: Implement permit stacking for directed limited access permit holders where each permit holder could place a maximum of 3 directed permits on a vessel; those 3 permits would allow the permit holder to harvest a maximum of 3 retention limits per trip (e.g., 108 LCS other than sandbar sharks	Direct	Short-term	Minor adverse	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
	Indirect	Short-term	Neutral	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
	Cumulative	Short-term	Neutral	Minor adverse	Minor beneficial

Alternative	Quality	Timeframe	Ecological	Protected Resources	Socioeconomic
per trip).		Long-term	Neutral	Neutral	Minor adverse
Alternative B1: No Action – No changes to current LCS retention limits for directed shark permit holders	Direct	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Minor adverse
	Indirect	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Minor adverse
	Cumulative	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Minor adverse
Alternative B2: *Increase the LCS retention limit for directed permit holders to a maximum of 55 LCS other than sandbar sharks per trip and adjust sandbar shark research fishery quota to 90.7 mt dw (199,943 lb dw); set the default LCS retention limit for directed permit holders to 45 LCS other than sandbar sharks per trip – Preferred Alternative*	Direct	Short-term	Minor adverse	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
	Indirect	Short-term	Minor adverse	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
	Cumulative	Short-term	Minor adverse	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
Alternative B3: Increase the LCS retention limit for directed permit holders to a maximum of 72 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 82.7 mt dw (182,290 lb dw)	Direct	Short-term	Minor adverse	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
	Indirect	Short-term	Minor adverse	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
	Cumulative	Short-term	Minor adverse	Minor adverse	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
Alternative B4: Increase the LCS retention limit for directed permit holders to a maximum of 108 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 65.7 mt dw (144,906 lb dw)	Direct	Short-term	Minor adverse	Minor adverse	Moderate beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Indirect	Short-term	Minor adverse	Minor adverse	Moderate beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Cumulative	Short-term	Minor adverse	Minor adverse	Moderate beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
Alternative C1: No Action: Do not implement sub-regional quotas in the Atlantic region; do not adjust the non-blacknose SCS quota to reflect the results of the 2013 assessments for	Direct	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Minor beneficial
	Indirect	Short-term	Neutral	Neutral	Neutral

Alternative	Quality	Timeframe	Ecological	Protected Resources	Socioeconomic
Atlantic sharpnose and bonnethead sharks; do not adjust the quota linkages in the Atlantic region; do not prohibit the harvest of blacknose sharks in the Atlantic region or any portion of the Atlantic region		Long-term	Neutral	Neutral	Minor beneficial
	Cumulative	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Minor adverse
Alternative C2: Apportion the Atlantic regional commercial quotas for certain LCS and SCS management groups along 33° 00' N. Lat. (approximately at Myrtle Beach, South Carolina) into northern and southern sub-regional quotas.	Direct	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Indirect	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Cumulative	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
Alternative C3: Apportion the Atlantic regional commercial quotas for certain LCS and SCS along 34° 00' N. Lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas	Direct	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Indirect	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Cumulative	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
Alternative C4: Apportion the Atlantic regional commercial quotas for certain LCS and SCS management groups along 34° 00' N. Lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas and maintain SCS quota linkages in the southern sub-region of the Atlantic region; remove the SCS quota linkages in the northern sub-region of the Atlantic region and prohibit the harvest and landings of blacknose sharks in the North Atlantic region	Direct	Short-term	Neutral	Neutral	Moderate beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Indirect	Short-term	Neutral	Neutral	Moderate beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Cumulative	Short-term	Neutral	Neutral	Moderate beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
Alternative C5: Establish a non-blacknose SCS TAC of 353.2 mt dw and adjust the non-blacknose SCS commercial quota to 128 mt dw (282,238 lb dw)	Direct	Short-term	Minor beneficial	Minor beneficial	Minor adverse
		Long-term	Moderate beneficial	Moderate beneficial	Minor adverse
	Indirect	Short-term	Minor beneficial	Minor beneficial	Minor adverse

Alternative	Quality	Timeframe	Ecological	Protected Resources	Socioeconomic
		Long-term	Moderate beneficial	Moderate beneficial	Minor adverse
	Cumulative	Short-term	Minor beneficial	Minor beneficial	Minor adverse
		Long-term	Moderate beneficial	Moderate beneficial	Minor adverse
Alternative C6: Establish a non-blacknose SCS TAC of 401.3 mt dw and maintain the 2014commercial base annual quota of 176.1 mt dw (388,222 lb dw)	Direct	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Minor beneficial	Minor adverse
	Indirect	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Minor beneficial	Minor adverse
	Cumulative	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Minor beneficial	Minor adverse
Alternative C7: *Establish a non-blacknose SCS TAC of 489.3 mt dw and increase the commercial quota to 264.1 mt dw (582,333 lb dw) – Preferred Alternative*	Direct	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Minor adverse	Neutral
	Indirect	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Minor adverse	Neutral
	Cumulative	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Minor adverse	Neutral
Alternative C8: *Do not implement sub-regional quotas in the Atlantic region; establish a management boundary in the Atlantic region along 34° 00' N. lat. (approximately at Wilmington, North Carolina) for the SCS fishery; maintain SCS quota linkages south of the 34° 00' N. lat. management boundary; and prohibit the harvest and landings of blacknose sharks north of the 34° 00' N. lat. management boundary - Preferred Alternative*	Direct	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
	Indirect	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
	Cumulative	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
Alternative D1: No Action: Do not implement sub-regional quotas in the Gulf of Mexico region; do not adjust the non-blacknose SCS quota to reflect the results of the 2013 assessments for Atlantic sharpnose and bonnethead sharks; do not adjust the quota linkages in the Gulf of Mexico region; do not	Direct	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	neutral	Minor adverse
	Indirect	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Minor adverse
	Cumulative	Short-term	Neutral	Neutral	Neutral

Alternative	Quality	Timeframe	Ecological	Protected Resources	Socioeconomic
prohibit the harvest of hammerhead sharks in the Gulf of Mexico region or any portion of the Gulf of Mexico region		Long-term	Neutral	Neutral	Minor adverse
Alternative D2: Apportion the Gulf of Mexico regional quotas for aggregated LCS and hammerhead sharks along 89° 00' W. longitude into western and eastern sub-regional quotas	Direct	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
	Indirect	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
	Cumulative	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
Alternative D3: *Apportion the Gulf of Mexico regional quotas for aggregated LCS and hammerhead sharks into western and eastern sub-regional quotas along 88° 00' W. longitude – Preferred Alternative*	Direct	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Indirect	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Cumulative	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
Alternative D4: Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks along 89° 00' W. longitude into western and eastern sub-regional quotas and maintain the LCS quota linkages for aggregated LCS and hammerhead sharks in the eastern sub-region of the Gulf of Mexico region; remove the linkage in the western sub-region of the Gulf of Mexico region and prohibit the harvest and landing of hammerhead sharks in that sub-region	Direct	Short-term	Moderate adverse	Minor beneficial	Minor adverse
		Long-term	Moderate adverse	Minor beneficial	Moderate adverse
	Indirect	Short-term	Moderate adverse	Minor beneficial	Minor adverse
		Long-term	Moderate adverse	Minor beneficial	Moderate adverse
	Cumulative	Short-term	Moderate adverse	Minor beneficial	Minor adverse
		Long-term	Moderate adverse	Minor beneficial	Moderate adverse
Alternative D5: Establish a non-blacknose SCS TAC of 931.9 mt dw and maintain the 2014 base annual non-blacknose SCS quota of 45.5 mt dw (100,317 lb dw)	Direct	Short-term	Moderate beneficial	Minor beneficial	Moderate Adverse
		Long-term	Moderate beneficial	Minor beneficial	Moderate Adverse
	Indirect	Short-term	Moderate beneficial	Minor beneficial	Moderate Adverse
		Long-term	Moderate beneficial	Minor beneficial	Moderate Adverse
	Cumulative	Short-term	Moderate beneficial	Minor beneficial	Moderate Adverse
		Long-term	Moderate beneficial	Minor beneficial	Moderate Adverse

Alternative	Quality	Timeframe	Ecological	Protected Resources	Socioeconomic
Alternative D6: Establish a non-blacknose SCS TAC of 954.7 mt dw and increase the commercial quota to the 2014 adjusted annual quota of 68.3 mt dw (150,476 lb dw)	Direct	Short-term	Minor beneficial	Neutral	Neutral
		Long-term	Minor beneficial	Neutral	Minor adverse
	Indirect	Short-term	Minor beneficial	Neutral	Neutral
		Long-term	Minor beneficial	Neutral	Minor adverse
	Cumulative	Short-term	Minor beneficial	Neutral	Neutral
		Long-term	Minor beneficial	Neutral	Minor adverse
Alternative D7: Establish a non-blacknose SCS TAC of 1,064.9 mt dw and increase the commercial quota to 178.5 mt dw (393,566 lb dw)	Direct	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
	Indirect	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
	Cumulative	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor adverse
Alternative D8: *Establish a non-blacknose SCS TAC of 999.0 mt dw, increase the commercial quota to 112.6 mt dw (248,215 lb dw), and prohibit the retention of blacknose sharks in the Gulf of Mexico – Preferred Alternative*	Direct	Short-term	Neutral	Neutral	Moderate beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
	Indirect	Short-term	Minor adverse	Neutral	Moderate beneficial
		Long-term	Minor adverse	Neutral	Moderate beneficial
	Cumulative	Short-term	Neutral	Neutral	Moderate beneficial
		Long-term	Neutral	Neutral	Moderate beneficial
Alternative E1: No Action: Do not remove current upgrading restrictions for shark limited access permit holders	Direct	Short-term	Neutral	Neutral	Minor adverse
		Long-term	Neutral	Neutral	Minor Adverse
	Indirect	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Neutral
	Cumulative	Short-term	Neutral	Neutral	Neutral
		Long-term	Neutral	Neutral	Neutral
Alternative E2*: Remove current upgrading restrictions for shark limited access permit holders – Preferred Alternative*	Direct	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
	Indirect	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial
	Cumulative	Short-term	Neutral	Neutral	Minor beneficial
		Long-term	Neutral	Neutral	Minor beneficial

5.0 MITIGATION AND UNAVOIDABLE ADVERSE 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 CEQ 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 EA 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. We 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.

More information on the ecological, social, and economic impacts of the preferred alternatives are found in Chapter 4 and not repeated here.

5.1 MITIGATING MEASURES

Preferred Alternative A1, not implementing permit stacking, would likely have neutral ecological impacts and neutral to minor adverse socioeconomic impacts, because fishermen with multiple permits could not stack their permits to effectively increase their trip limits. However, the minor adverse socioeconomic impacts associated with preferring not to implement permit stacking in the directed shark fishery would be mitigated by preferring to increase the LCS retention limits for all shark directed limited access permit holders.

Preferred Alternative B2, increasing the trip limit for directed permit holders, would likely have neutral ecological impacts, since raising the LCS retention limit to 55 LCS per trip with a default limit of 45, is not likely to increase overall fishing effort or fishing mortality, as LCS quotas other than the sandbar shark research fishery quota are not being changed. This alternative would likely have minor beneficial socioeconomic impacts. Therefore, no impacts would need to be mitigated.

Preferred Alternatives C8 and D3 would likely have neutral ecological impacts, since these alternatives would prohibit blacknose shark landings north of 34 degrees latitude in the Atlantic and apportion the annual base quotas for the LCS management groups in the Gulf of Mexico into two sub-regional quotas. Apportioning the quotas into two sub-regions would likely have minor beneficial to moderate beneficial socioeconomic impacts in the long-term, since these alternatives would allow fishermen flexibility to maximize landings of LCS within their associated sub-regions, better accounting for the regional differences in the fisheries and potentially allowing for year-round

fisheries. In addition, no socioeconomic impacts are expected by maintaining the quota linkages already in place for LCS in Gulf of Mexico. The prohibition of blacknose sharks north of 34 degrees in the Atlantic would likely have beneficial socioeconomic impacts since fishermen fishing in this area would not be constrained by a linkage between blacknose and non-blacknose SCS and could potentially have more access to the non-blacknose SCS quota than in previous years. In the area south of 34 degrees, no socioeconomic impacts are expected by maintaining the quota linkages already in place for blacknose and non-blacknose SCS. Therefore, there are no impacts associated with these alternatives that would need to be mitigated.

Preferred Alternative C7 would establish a non-blacknose SCS TAC of 489.3 mt dw and increase the commercial quota to 264.1 mt dw (582,333 lb dw). This alternative is likely to have short-term neutral ecological impacts and long-term minor beneficial ecological impacts, since the quota is capped at the current adjusted quota level. Because this alternative would maintain the current non-blacknose SCS adjusted commercial quota, it is likely to have short-term neutral socioeconomic impacts. Recent non-blacknose SCS landings have been below 264.1 mt dw, thus, this commercial quota could allow for increased landings and additional revenue if the entire quota is caught, which could have long-term moderate beneficial socioeconomic impacts. Thus, no adverse impacts need to be mitigated for Alternative C7.

Preferred Alternative D8 would establish a non-blacknose SCS TAC of 999.8 mt dw and increase the commercial quota to 112.6 mt dw (249,967 lb dw). This alternative is likely to have short- and long-term neutral ecological impacts, since the quota is within scientifically recommended catch levels that would maintain the non-blacknose SCS species at sustainable levels. Prohibiting blacknose sharks would have beneficial ecological impacts for this species, and all discards from the prohibition would be accounted for in the commercial quota for non-blacknose SCS. Prohibiting blacknose sharks could help fishermen maximize profits from non-blacknose SCS landings, given that there will no longer be a quota linkage between the two management groups, which has previously limited the fishermen's ability to land non-blacknose SCS. Given the current financial situation faced by fishermen, associated with declining ex-vessel prices and restrictions on the sale of shark fins, the beneficial socioeconomic impacts of increasing the annual quota by 67.1 mt dw (from the current base quota under Alternative D5) would likely be moderate. Thus, no adverse impacts need to be mitigated for Alternative D8.

Preferred Alternative E2 would remove current upgrading restrictions for shark directed permit holders. Eliminating these restrictions would have short- and long-term neutral ecological impacts and minor beneficial socioeconomic impacts since it would allow fishermen to buy, sell, or transfer shark directed permits without worrying about an increase in horsepower of more than 20 percent or an increase of more than 10 percent in length overall, gross registered tonnage, or net tonnage from the vessel baseline specifications (except vessel owners that have a triple pack would still need to follow the upgrading restrictions for the swordfish limited access permit). Therefore, no impacts would need to be mitigated.

5.2 UNAVOIDABLE ADVERSE IMPACTS

In general, there are no unavoidable adverse ecological impacts expected as a result of any of the preferred alternatives and corresponding management measures for LCS and SCS, as discussed in Chapter 4. Thus, the actions would not be expected to change previously analyzed endangered species or marine mammal interaction rates or magnitudes, or substantially alter current fishing practices or bycatch mortality rates. In addition, NMFS does not expect this action to have any significant adverse socioeconomic impacts, as this action focuses on increasing opportunities and flexibility for U.S. shark fishermen.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

No irreversible or irretrievable commitments of resources are expected from the management measures preferred in this EA.

6.0 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. The information contained in Chapter 6, taken together with the data and analysis incorporated by reference, comprise the complete RIR.

The requirements for all regulatory actions specified in E.O. 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, the environment, public health or safety, or State, local, or tribal governments of 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, or the principles set forth in this Executive Order.

6.1 DESCRIPTION OF MANAGEMENT OBJECTIVES

Please see Chapter 1 for a description of the objectives of this rulemaking.

6.2 DESCRIPTION OF FISHERY

Please see Chapter 3 for a description of the fishery and environment that could be affected by this rulemaking.

6.3 STATEMENT OF PROBLEM

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

6.4 DESCRIPTION OF EACH ALTERNATIVE

Please see Chapter 2 for a summary of each alternative suite and Chapter 4 for a complete description of each alternative suite and its expected ecological, social, and economic impacts. Chapters 3 and 6 provide additional information related to the economic impacts of the alternative suites.

6.5 ECONOMIC ANALYSIS OF EXPECTED EFFECTS OF EACH ALTERNATIVE RELATIVE TO THE BASELINE

Table 6.1 summarizes the net economic benefits and costs of each of the alternatives analyzed in this EA. Additional details and more complete analyses are provided in Chapter 4.

Table 6.1 Net Economic Benefits and Costs of Alternatives.

Alternative	Net Economic Benefits	Net Economic Costs
Alternative A1: *No Action – Do not implement permit stacking – Preferred Alternative*	This alternative would cause neutral economic impacts, since the LCS retention limit would not change, and therefore, the average trip gross revenues would remain the same.	This alternative would cause neutral economic costs, since all directed shark permit holders would have the same retention limit. In the long-term, this alternative would have minor adverse economic impacts, due to the continued negative effects of federal and state regulations related to shark finning and sale of shark fins, declining ex-vessel prices of fins, and continued changes in shark fishery management measures, which, when combined with expected increases in prices for gas, bait, and other associated costs, are expected to lead to a decline in the profitability of each trip if fishermen are unable to retain an increased number of LCS per trip.

Alternative	Net Economic Benefits	Net Economic Costs
Alternative A2: Implement permit stacking for directed permit holders where each permit holder could place a maximum of 2 directed permits on a vessel; those 2 permits would allow the permit holder to harvest a maximum of 2 retention limits per trip (e.g., 72 LCS other than sandbar sharks per trip)	This alternative would allow fishermen with multiple permits to have a higher retention limit, which would have minor beneficial economic impacts, since fishermen could land twice as many LCS per trip, which could make each trip more profitable and efficient, if fishermen decide to take fewer trips and in turn save money on gas, bait, and other associated costs.	The majority of directed shark permit holders only have one permit and could not avail themselves of a higher retention limit without buying another permit. Therefore, this alternative would have long-term adverse impacts for fishermen who decide to acquire an additional permit.
Alternative A3: Implement permit stacking for directed limited access permit holders where each permit holder could place a maximum of 3 directed permits on a vessel; those 3 permits would allow the permit holder to harvest a maximum of 3 retention limits per trip (e.g., 108 LCS other than sandbar sharks per trip)	Same as Alternative A2.	Same as Alternative A2.
Alternative B1: No Action – No changes to current LCS retention limits for directed shark permit holders	Under this alternative, the retention limit would remain the same, and therefore, the economic impacts would be neutral.	In the long-term, this alternative would have minor adverse economic impacts, due to the continued negative effects of federal and state regulations related to shark finning and sale of shark fins, declining ex-vessel prices of fins, and continued changes in shark fishery management measures, which, when combined with expected increases in prices for gas, bait, and other associated costs, are expected to lead to a decline in the profitability of each trip if fishermen are unable to retain an increased number of LCS per trip.
Alternative B2: *Increase the LCS retention limit for directed permit holders to a maximum of 55 LCS other than sandbar sharks per trip and adjust sandbar shark research fishery quota to 90.7 mt dw (199,943 lb dw); set the default LCS retention limit for directed permit holders to 45 LCS other than sandbar sharks per trip – Preferred Alternative*	This alternative would have short- and long-term minor beneficial economic impacts, since shark directed permit holders could potentially land 1.5 times as many LCS per trip, which could make trips more profitable, potentially allowing fishermen to make fewer trips per year.	This alternative would cause neutral economic impacts to the sandbar shark research fishery since the observer funding would limit the fishery and not the reduced quota.

Alternative	Net Economic Benefits	Net Economic Costs
Alternative B3: Increase the LCS retention limit for directed permit holders to a maximum of 72 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 82.7 mt dw (182,290 lb dw)	This alternative would have minor beneficial economic impacts, since shark directed permit holders could land twice as many LCS per trip, which could make trips more profitable, potentially allowing fishermen to make fewer trips per year.	Same as Alternative B2.
Alternative B4: Increase the LCS retention limit for directed permit holders to a maximum of 108 LCS other than sandbar sharks per trip and adjust the sandbar shark research fishery quota to 65.7 mt dw (144,906 lb dw)	This alternative would have minor beneficial economic impacts since shark directed permit holders could land three times as many LCS per trip, which could make trips more profitable, potentially allowing fishermen to make fewer trips per year.	This alternative would cause economic impacts on the shark research fishery. In order to increase the retention limit, the sandbar shark research quota would need to be reduced to an amount comparable to what is currently being landed in the shark research fishery, which could have adverse impacts on fishermen in the shark research fishery if the quota is reached, and thus adverse impacts on revenue.
Alternative C1: No Action: Do not implement sub-regional quotas in the Atlantic region; do not adjust the non-blacknose SCS quota to reflect the results of the 2013 assessments for Atlantic sharpnose and bonnethead sharks; do not adjust the quota linkages in the Atlantic region; do not prohibit the harvest of blacknose sharks in the Atlantic region or any portion of the Atlantic region	This alternative would likely result in neutral beneficial economic impacts, as fisheries would continue to operate under current conditions, with shark fishermen continuing to fish at current rates.	In the long-term, this alternative would have minor adverse economic impacts, due to the continued negative effects of federal and state regulations related to shark finning and sale of shark fins, declining ex-vessel prices of fins, and continued changes in shark fishery management measures.
Alternative C2: Apportion the Atlantic regional quotas for LCS and SCS along 33° 00’ N. lat. (approximately at Myrtle Beach, South Carolina) into northern and southern sub-regional quotas	Establishing sub-regional quotas could have beneficial economic impacts, because it could allow fishermen to have flexibility in seasonal openings and to maximize their fishing effort during periods when sharks migrate into local waters or when regional time area closures are not in place, better accounting for the regional differences in the fisheries, and potentially allowing for year-round fisheries.	This alternative could have adverse economic impacts, because it could potentially limit the shark landings, and thus revenue, by fishermen in each sub-region, and, because it does not take the quota linkages into account, it could cause the non-blacknose SCS season to close very early in the northern sub-region, leading to lost revenues there.

Alternative	Net Economic Benefits	Net Economic Costs
Alternative C3: Apportion the Atlantic regional quotas for LCS and SCS along 34° 00' N. Lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional	Same as Alternative C2.	Same as Alternative C2.
Alternative C4: Apportion the Atlantic regional commercial quotas for certain LCS and SCS management groups along 34° 00' N. Lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas and maintain SCS quota linkages in the southern sub-region of the Atlantic region; remove the SCS quota linkages in the northern sub-region of the Atlantic region and prohibit the harvest and landings of blacknose sharks in the North Atlantic region	In addition to the potential beneficial economic impacts of establishing regional sub-quotas discussed under Alternative C2, removing the SCS quota linkages within the northern Atlantic sub-region would have beneficial economic impacts, as active fishermen in this region would be able to continue fishing for non-blacknose SCS without the fishing activities in the southern Atlantic sub-region determining the timing of the non-blacknose SCS fishery closure.	In addition to the potential adverse economic impacts of establishing regional sub-quotas discussed under Alternative C2, removing the SCS quota linkages in the northern sub-region, but not the southern sub-region, and prohibiting blacknose shark landings in the northern sub-region would have neutral impacts for southern sub-regional fishermen, who would not face a change, and minor adverse economic impacts for northern sub-regional fishermen, since blacknose shark landings would be prohibited.
Alternative C5: Establish an Atlantic non-blacknose SCS TAC of 353.2 mt dw and adjust the non-blacknose SCS commercial quota to 128 mt dw (282,238 lb dw)	There are no economic benefits associated with this alternative, because the quota would be below the current base quota of 176.1 mt dw and the current adjusted quota of 264.1 mt dw, which accounted for underharvested quota in the previous fishing year.	This alternative would have moderate adverse impacts due to the quota being capped at a lower level than what is currently being landed in the non-blacknose SCS fishery, leading to a loss in annual revenue for shark fishermen.
Alternative C6: Establish a non-blacknose SCS TAC of 401.3 mt dw and maintain the current commercial base annual quota of 176.1 mt dw (388,222 lb dw)	This alternative is neutral on its face, since it would maintain the current commercial quota; however, recent non-blacknose SCS landings have been below the current commercial quota, so if the entire quota is caught, this alternative could allow for increased landings and thus, additional revenue.	Since the quota would not be adjusted for underharvests, due to the unknown status of bonnethead sharks, the non-blacknose SCS fishermen could be capped at a lower quota in a given year than in the current fishery, and thus experience decreased annual revenue.

Alternative	Net Economic Benefits	Net Economic Costs
Alternative C7: *Establish a non-blacknose SCS TAC of 489.3 mt dw and increase the commercial quota to 264.1 mt dw (582,333 lb dw) – Preferred Alternative*	The increased quota under this alternative could allow for landings to increase in the future, providing additional revenues for fishermen targeting non-blacknose SCS.	This alternative would likely result in neutral economic costs. In the northern sub-region, recent landings of non-blacknose SCS have been less than half of the commercial quota under this alternative, so it is unlikely that fishermen would catch this entire quota in the short-term. In the southern sub-region, because the non-blacknose SCS quota would continue to be limited by the landings of blacknose sharks due to the linkage between them, landings of non-blacknose SCS and the associated revenue are not expected to significantly increase in the southern sub-region.
Alternative C8: *Do not implement sub-regional quotas in the Atlantic region; establish a management boundary in the Atlantic region along 34° 00' N. lat. (approximately at Wilmington, North Carolina) for the SCS fishery; maintain SCS quota linkages south of the 34° 00' N. Lat. management boundary; and prohibit the harvest and landings of blacknose sharks north of the 34° 00' N. lat. management boundary – Preferred Alternative*	This alternative would likely result in minor beneficial economic impacts. The management boundary for blacknose sharks under this alternative would allow fishermen north of 34° 00' N. lat. the flexibility to continue fishing for non-blacknose SCS if the blacknose shark quota is reached. Thus, providing additional revenues for fishermen targeting non-blacknose SCS north of 34° 00' N. lat.	This alternative would likely result in neutral economic costs since it would maintain the quota linkages south of 34° 00' N. lat. that are already in place for SCS management groups. In addition, NMFS would maintain the quota linkage between the aggregated LCS and hammerhead shark management groups.
Alternative D1: No Action: Do not implement sub-regional quotas in the Gulf of Mexico region; do not adjust the non-blacknose SCS quota to reflect the results of the 2013 assessments for Atlantic sharpnose and bonnethead sharks; do not adjust the quota linkages in the Gulf of Mexico region; do not prohibit the harvest of hammerhead sharks in the Gulf of Mexico region or any portion of the Gulf of Mexico region	This alternative would likely result in neutral beneficial economic impacts, as fisheries would continue to operate under current conditions, with shark fishermen continuing to fish at current rates.	In the long-term, this alternative would have minor adverse economic impacts, due to the continued negative effects of federal and state regulations related to shark finning and sale of shark fins, declining ex-vessel prices of fins, and continued changes in shark fishery management measures.

Alternative	Net Economic Benefits	Net Economic Costs
Alternative D2: Apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks along 89° 00' W. longitude into western and eastern sub-regional quotas	Establishing sub-regional quotas could have beneficial economic impacts, because it could allow fishermen flexibility to have flexibility in seasonal openings and to maximize landings of LCS within their associated sub-regions during periods when sharks migrate into local waters or when regional time area closures are not in place, better accounting for the regional differences in the fisheries, and potentially allowing for year-round fisheries.	This alternative could have adverse economic impacts, because it could potentially limit the shark landings, and thus revenue, by fishermen in each sub-region, and, because it does not take the quota linkages into account, it could cause the aggregated LCS season to close very early in the western sub-region, leading to lost revenue there.
Alternative D3: *Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks into western and eastern sub-regional quotas along 88° 00' W. longitude – Preferred Alternative*	Same as Alternative D2.	Same as Alternative D2.
Alternative D4: Apportion the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks along 89° 00' W. longitude into western and eastern sub-regional quotas and maintain the LCS quota linkages for aggregated LCS and hammerhead sharks in the eastern sub-region of the Gulf of Mexico region; remove the linkage in the western sub-region of the Gulf of Mexico region and prohibit the harvest and landing of hammerhead sharks in that sub-region	In addition to the potential beneficial economic impacts of establishing regional sub-quotas discussed under Alternative D2, removing quota linkages within the western Gulf of Mexico sub-region would have beneficial economic impacts, as fishermen active in this region would be able to continue fishing for aggregated LCS sharks without fishing activities in the eastern Gulf of Mexico sub-region determining the timing of the aggregated LCS fishery closure.	In addition to the potential adverse economic impacts of establishing regional sub-quotas discussed under Alternative D2, removing the aggregated LCS quota linkages in the western sub-region, but not the eastern sub-region, and prohibiting hammerhead shark landings in the western sub-region would have neutral impacts for eastern sub-regional fishermen, who would not face a change, and minor adverse economic impacts for western sub-regional fishermen, since hammerhead shark landings would be prohibited.
Alternative D5: Establish a non-blacknose SCS TAC of 931.9 mt dw and maintain the current base annual quota of 45.5 mt dw (100,317 lb dw)	There are no economic benefits associated with this alternative, because the quota would be equal to the current base quota, which is below the adjusted quota of 68.3 mt dw.	Maintaining the current commercial base annual quota would likely result in moderate adverse socioeconomic impacts, as it limits the amount of non-blacknose SCS that could be landed and would potentially result in an early closure due to the small non-blacknose SCS quota.

Alternative	Net Economic Benefits	Net Economic Costs
Alternative D6: Establish a non-blacknose SCS TAC of 954.7 mt dw and increase the commercial quota to the current adjusted annual quota of 68.3 mt dw (150,476 lb dw)	Under the 2014 adjusted base annual quota, the non-blacknose SCS quota is higher than the current base annual quota, but blacknose shark interactions are still kept at a minimum, thus increasing the likelihood of maximizing profits from non-blacknose SCS landings.	This alternative would not increase the quota to the extent outlined in the 2013 stock assessments due to the uncertainties in SEDAR 34, the unknown stock status of bonnethead sharks in the Gulf of Mexico region, and uncertainty about the data and life history information for finetooth sharks, and therefore, it potentially denies fishermen opportunities to profit from increased landings of non-blacknose SCS.
Alternative D7: Establish a non-blacknose SCS TAC of 1,064.9 mt dw and increase the commercial quota to 178.5 mt dw (393,566 lb dw)	Under an increased commercial quota, fishermen could potentially land more non-blacknose SCS, resulting in increased annual revenues, particularly if they were able to land the entire increased commercial quota without increasing interactions with blacknose sharks.	With a larger quota, increased fishing effort may result in the early closure of the non-blacknose SCS fishery before the quota is reached, particularly with the increased likelihood of blacknose interactions. In the long-term, if an increased quota leads to overfishing of one or more of the non-blacknose SCS, the additional restrictions needed at that time could lead to fewer economic benefits.
Alternative D8: *Establish a non-blacknose SCS TAC of 999.0 mt dw, increase the commercial quota to 112.6 mt dw (248,215 lb dw), and prohibit the retention of blacknose sharks in the Gulf of Mexico – Preferred Alternative*	Under this increased commercial quota, fishermen would land more non-blacknose SCS, resulting in increased annual revenues, particularly since they would be able to land the entire increased commercial quota without being limited by the linkage to blacknose shark quota.	NMFS expects the increase in the commercial quota for non-blacknose SCS to have neutral impacts on the non-blacknose SCS stocks because projections from the bonnethead and Atlantic sharpnose shark stock assessments indicated that there was a 70 percent chance both stocks could withstand harvest levels almost double current levels. In addition, this non-blacknose SCS TAC and commercial quota level would cap the non-blacknose SCS quota at a level that would ensure that blacknose shark regulatory discards do not exceed the 2015 base annual blacknose shark quota.
Alternative E1: No Action: Do not remove upgrading restrictions for shark limited access permit holders	There are no economic benefits associated with this alternative beyond those that already exist, since there would be no change in the status quo.	This alternative would have minor adverse economic impacts, since those fishermen that are currently limited by upgrading restrictions would continue to be constrained by these restrictions associated with shark directed limited access permits.

Alternative	Net Economic Benefits	Net Economic Costs
Alternative E2: *Remove current upgrading restrictions for shark limited access permit holders – Preferred Alternative*	Eliminating these restrictions would have short- and long-term minor beneficial impacts, since it would give fishermen more flexibility to buy, sell, or transfer shark permits without worrying about upgrading restrictions.	This alternative would have neutral economic costs, since it would alleviate restrictions at no costs to fishermen.

6.6 CONCLUSION

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; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order. Pursuant to the procedures established to implement section 6 of E.O. 12866, the Office of Management and Budget has determined that this action is significant. A summary of the expected net economic benefits and costs of each alternative, which are based on supporting text in Chapter 4, can be found in Table 6.1.

7.0 FINAL REGULATORY FLEXIBILITY ANALYSIS

This Final Regulatory Flexibility Analysis (FRFA) is conducted to comply with the Regulatory Flexibility Act (5 U.S.C. §§ 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 a 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 minimize any significant effects on small entities. Certain data and analysis required in a FRFA are also included in other Chapters of this document. Therefore, this FRFA incorporates by reference the economic analyses and impacts in Chapter 4 of this document.

7.1 STATEMENT OF THE NEED FOR AND OBJECTIVES OF THIS FINAL RULE

Please see Chapter 1 for a full description of the objectives of Amendment 6 to the 2006 Consolidated HMS FMP and implementing regulations including the preferred fishery management actions. The management goals and objectives of the preferred alternatives are to provide for the sustainable management of shark species under authority of the Secretary consistent with the requirements of the Magnuson-Stevens Act and other statutes which may apply to such management, including the ESA, MMPA, and ATCA. The Magnuson-Stevens Act mandates that the Secretary provide for the conservation and management of HMS through development of an FMP for species identified for management and to implement the FMP with necessary regulations. In addition, the Magnuson-Stevens Act directs the Secretary, in managing HMS, to prevent overfishing of species while providing for their optimum yield on a continuing basis and to rebuild fish stocks that are considered overfished. The management objectives of the preferred alternatives are to amend the 2006 Consolidated HMS FMP to implement management measures for the Atlantic shark fisheries that will achieve the objectives of increasing management flexibility to adapt to the changing needs of the Atlantic shark Atlantic shark fisheries, prevent overfishing while achieving on a continuing basis optimum yield, and rebuilding overfished shark stocks.

7.2 A SUMMARY OF THE SIGNIFICANT ISSUES RAISED BY THE PUBLIC COMMENTS IN RESPONSE TO THE INITIAL REGULATORY ANALYSIS, A SUMMARY OF THE ASSESSMENT OF THE AGENCY OF SUCH ISSUES, AND A STATEMENT OF ANY CHANGES MADE IN THE RULE AS A RESULT OF SUCH COMMENTS

Section 604(a)(2) of the RFA requires a summary of the significant issues raised by the public comments in response to the IRFA, a summary of the assessment of the Agency of such issues, and a statement of any changes made in the rule as a result of such comments. NMFS received many comments on the proposed rule and Draft EA during the public comment period. Summarized public comments and NMFS' responses to them are included in Appendix A of this document. Section 604(a)(3) of the RFA requires the Agency to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA) in response to the proposed rule, and a detailed statement of any change made in the rule as a result of such comments. NMFS did not receive any comments from the Chief Counsel for Advocacy of the SBA nor the public in response to this document.

7.3 DESCRIPTION AND ESTIMATE OF THE NUMBER OF SMALL ENTITIES TO WHICH THE FINAL RULE WILL APPLY

Section 604(a)(4) requires Agencies to provide an estimate of the number of small entities to which the rule would apply. The Small Business Administration (SBA) has established size criteria for all major industry sectors in the United States, including fish harvesters. The SBA size standards are $20.5 million for finfish fishing, $5.5 million for shellfish fishing, and $7.5 million for other marine fishing, for-hire businesses, and marinas (79 FR 33467; June 12, 2014). NMFS considers all HMS permit holders to be small entities because they had average annual receipts of less than $20.5 million for finfish-harvesting. The commercial shark fisheries are comprised of fishermen who hold shark directed or incidental limited access permits and the related shark dealers, all of which NMFS considers to be small entities according to the size standards set by the SBA.

As discussed in Section 3.6.2, the final rule would apply to the 464 commercial shark permit holders in the Atlantic shark fishery, based on an analysis of permit holders as of October 2014. Of these permit holders, 206 have directed shark permits and 258 hold incidental shark permits. A further breakdown of these permit holders is provided in Table 3.8. Not all permit holders are active in the fishery in any given year. Active directed permit holders are defined as those with valid permits that landed one shark based on HMS electronic dealer reports. Based on 2014 HMS electronic dealer data, 24 shark directed permit holders were active in the Atlantic and 20 shark directed permit holders were active in the Gulf of Mexico. NMFS has determined that the final rule would not likely affect any small governmental jurisdictions. More information regarding the description of the fisheries affected, and the categories and number of permit holders can be found in Chapter 3.

7.4 DESCRIPTION OF THE PROJECTED REPORTING, RECORDKEEPING, AND OTHER COMPLIANCE REQUIREMENTS OF THE PROPOSED RULE, INCLUDING AN ESTIMATE OF THE CLASSES OF SMALL ENTITIES WHICH WILL BE SUBJECT TO THE REQUIREMENTS OF THE REPORT OR RECORD

Section 604(a)(5) of the Regulatory Flexibility Act requires Agencies to describe any new reporting, record-keeping and other compliance requirements. The action does not contain any new collection of information, reporting, record-keeping, or other compliance requirements.

7.5 DESCRIPTION OF THE STEPS THE AGENCY HAS TAKEN TO MINIMIZE THE SIGNIFICANT ECONOMIC IMPACT ON SMALL ENTITIES CONSISTENT WITH THE STATED OBJECTIVES OF APPLICABLE STATUES, INCLUDING A STATEMENT OF THE FACTUAL, POLICY, AND LEGAL REASONS FOR SELECTING THE ALTERNATIVE ADOPTED IN THE FINAL RULE AND THE REASON THAT EACH ONE OF THE OTHER SIGNIFICANT ALTERNATIVES TO THE RULE CONSIDERED BY THE AGENCY WHICH AFFECT SMALL ENTITIES WAS REJECTED

One of the requirements of an FRFA is to describe any alternatives to the rule which accomplish the stated objectives and which minimize any significant economic impacts. These impacts are discussed below and in Chapters 4 and 6 of this document. Additionally, the RFA (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, or any part thereof, for small entities.

In order to meet the objectives of this final rule, consistent with the Magnuson-Stevens Act other applicable law, such as ESA, NMFS cannot establish differing compliance requirements for small entities or exempt small entities from compliance requirements. Thus, there are no alternatives discussed that fall under the first and fourth categories described above. NMFS does not know of any performance or design standards that would satisfy the aforementioned objectives of this rulemaking while, concurrently, complying with the Magnuson-Stevens Act. As described below, NMFS analyzed several different alternatives in this final rulemaking and provides rationales for identifying the preferred alternatives to achieve the desired objectives.

The alternatives considered and analyzed are described below. The FRFA assumes that each vessel will have similar catch and gross revenues to show the relative impact of the proposed action on vessels.

Permit Stacking

Under Alternative A1, the preferred alternative, NMFS would not implement permit stacking for the shark directed limited access permit holders. NMFS would continue to allow only one directed limited access permit per vessel and thus one retention limit. The current retention limit of 36 LCS per trip would result in potential trip revenues of $1,184 (1,224 lb of meat, 61 lb of fins) per vessel, assuming an ex-vessel price of $0.58 for meat and $7.68 for fins. It is likely that this alternative could possibly have minor adverse economic impacts in the long term, because if fishermen are unable to retain an increased number of LCS per trip by stacking permits, the profitability of each trip could decline over time, due to declining prices for shark products and increasing prices for gas, bait, and other associated costs. The No Action alternative could also have neutral indirect impacts to those supporting the commercial shark fisheries, since the retention limits, and thus current fishing efforts, would not change under this alternative.

Under Alternative A2, NMFS would allow fishermen to concurrently use a maximum of two shark directed permits on one vessel, which would result in aggregated, and thus higher, trip limits. Under the current LCS retention limit of 36 LCS, this would allow a vessel with two stacked permits to have a LCS retention limit of 72 LCS per trip. This new retention limit would result in potential trip revenues of $2,368 (2,448 lb of meat, 122 lb of fins) per vessel, assuming an ex-vessel price of $0.58 for meat and $7.68 for fins, which is an increase of $1,184 per trip compared to the status quo alternative. For fishermen that currently have two directed limited access permits, this alternative would have short-term minor beneficial economic impacts because these fishermen would be able to stack their permits and avail themselves of the retention limit of 72 LCS per trip. The higher retention limit is likely to make each trip more profitable for fishermen, as well as more efficient, if they decide to take fewer trips and in turn save money on gas, bait, and other associated costs. However, the current number of directed permits in the Atlantic region is 136, and 130 of those permits have different owners. In the Gulf of Mexico, of the 83 directed shark permits, 73 have different owners. Therefore, it is unlikely that many of the current directed shark permit holders would be able to benefit from this alternative in the short-term. In addition, the cost of one directed shark permit can run anywhere between $2,000 and $5,000, which could be difficult for many shark fishermen to afford. For fishermen that do not currently have more than one directed shark permit, this alternative could have long-term minor beneficial impacts if these fishermen are able to acquire an additional permit and offset the cost of the additional permit by taking advantage of the potential economic benefits of the higher retention limits. Nevertheless, this alternative is unlikely to have beneficial economic impacts for the shark fishery as whole because only shark fishermen that could afford to buy multiple shark permits would benefit from the higher retention limit and higher revenues whereas those shark fishermen that cannot afford to buy a second directed shark permit would be at a disadvantage, unable to economically benefit from the higher retention limits. Given the current make-up of the shark fishery, which primarily consists of small business fishermen with only one permit, and the cost of the additional permit, this could potentially lead to negative economic impacts among the directed shark permit holders if those fishermen that currently have multiple directed permits or that could afford to buy an additional directed permit gain an economic advantage.

Under Alternative A3, NMFS would allow fishermen to concurrently use a maximum of three shark directed permits on one vessel, which would result in aggregated, and thus higher, trip limits. Under the current LCS retention limit of 36 LCS, this would mean that a vessel with three stacked permits would have a LCS retention limit of 108 LCS per trip. This alternative would allow shark directed permit holders to retain three times as many LCS per trip then the current retention limit. This new retention limit would result in potential trip revenues of $3,552 (3,672 lb of meat, 184 lb of fins) per vessel, assuming an ex-vessel price of $0.58 for meat and $7.68 for fins, which is an increase of $2,368 per trip compared to the status quo alternative. The higher retention limit is likely to make each trip more profitable for fishermen, as well as more efficient, if they decide to take fewer trips and in turn save money on gas, bait, and other associated costs. Similar to Alternative A2, this alternative would have short-term minor beneficial economic impacts for fishermen that currently have three shark directed limited access permits, because these fishermen would be able to stack their permits and avail themselves of the retention limit of 108 LCS per trip. As mentioned above, the current number of shark directed permit holders is 219, with 93 percent having different owners. Therefore, it is unlikely that many of the current directed shark permit holders currently hold three directed shark permits and would be able to benefit from this alternative in the short-term. For fishermen who do not currently have more than one directed shark permit, this alternative could have larger long-term beneficial economic impacts than Alternative 2, if these fishermen are able to acquire two additional permits and offset the cost of the additional permits by taking advantage of the potential economic benefits of retaining up to 108 LCS per trip. However, for the same reasons discussed for Alternative A2, this alternative is unlikely to have economic benefits for those shark fishermen that cannot afford to buy two additional directed permits, and thus would be unable to economically benefit from a higher retention limit. Thus, given the current make-up of the shark fishery, Alternative A3 could potentially lead to more inequity and unfairness among the directed shark permit holders than Alternative A2, especially if those fishermen that currently have multiple directed permits or that could afford to buy additional directed permits gain an economic advantage under this alternative.

Commercial Retention Limits

Alternative B1 would not change the current commercial LCS retention limit for directed shark permit holders. The retention limit would remain at 36 LCS other than sandbar sharks per trip for directed permit holders. This retention limit would result in potential trip revenues of $1,184 (1,224 lb of meat, 61 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins. It is likely that this alternative would have short-term neutral economic impacts, since the retention limits would not change under this alternative. However, not adjusting the retention limit would have long-term minor adverse economic impacts, due to the expected continuing decline in prices for shark products and increase in gas, bait, and other associated costs, which would lead to declining profitability of individual trips. In recent years, there have been changes in federal and state regulations, including the implementation of Amendment 5a and state bans on the possession, sale, and trade of shark fins, which have impacted shark fishermen. In addition to federal and state regulations, there have also been many international efforts to prohibit shark finning at sea, as well as campaigns targeted at the shark fin soup markets. All of these efforts have impacted the market and demand for shark fins. In addition, NMFS has seen a steady decline in ex-vessel prices for shark fins in all regions since 2010.

Alternative B2, the preferred alternative, would increase the LCS retention limit to a maximum of 55 LCS other than sandbar sharks per trip for shark directed permit holders and reduce the sandbar shark research fishery quota to 90.7 mt dw (199,943 lb dw). NMFS would also set the default LCS retention limit to 45 LCS other than sandbar sharks per trip for shark directed permit holders but could adjust the retention limits to account for spatial, temporal, and other differences in the shark fisheries. This alternative would allow shark directed permit holders to retain 19 more LCS per trip than the current retention limit if the retention limit were increased to 55 LCS other than sandbar sharks per trip during the fishing season. Under a retention limit of 55 LCS other than sandbar sharks per trip, the potential trip revenues would be $1,809 (1,870 lb of meat, 94 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins. Under the 45 LCS other than sandbar sharks per trip, the potential trip revenues would be lower at $1,488 (1,530 lb of meat, 77 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins. This alternative would have short- and long-term direct minor beneficial economic impacts under both commercial retention limits, since shark directed permit holders could land more sharks per trip when compared to the current retention limit of 36 LCS per trip. The higher retention limit is likely to make each trip more profitable for fishermen, as well as more efficient, if they decide to take fewer trips, and in turn save money on fuel, bait, and other associated costs. Regarding the shark research fishery, this alternative could cause an average annual loss of $68,307, since the sandbar research fishery quota would be reduced by 57,113 lb dw. If NMFS continues to select the same number of vessels as in 2015, this alternative would impact 7 shark research vessel participants. Based on this number, the total average annual gross revenue loss for each shark research fishery vessel would be $9,758 per vessel. This potential lost income for the research fishery could be positive for commercial fishermen, since the increased retention limit could make trips more profitable. NMFS estimates that this reduction in the sandbar research fishery quota would have neutral economic impacts, based on current limited resources available to fund observed trips in the fishery and the current harvest level of the sandbar research fishery quota. In 2014, the vessels participating in the Atlantic shark research fishery landed 54.2 mt dw (119,527 lb dw), or 46 percent, of the available sandbar shark quota. Under the new sandbar shark quota with the Atlantic shark research fishery, the 2014 landings would result in 60 percent of the new sandbar shark quota being landed. If available resources increase in the future for more observed trips in the fishery, then this alternative could have minor adverse economic impacts if the full quota is caught and the fishery has to close earlier in the year.

Alternative B3 would increase the LCS retention limit to a maximum of 72 LCS other than sandbar sharks per trip for shark directed permit holders and reduce the sandbar shark research fishery quota to 82.7 mt dw (182,290 lb dw). This alternative would double the current retention limit. This new retention limit would result in potential trip revenues of $2,368 (2,448 lb of meat, 124 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins. This alternative would have short- and long-term minor beneficial economic impacts, since shark directed permit holders could land twice as many LCS per trip. Shark directed trips would become more profitable, but more permit holders could become active in order to avail themselves of this higher trip limit, and potentially causing a derby fishery and bringing the price of shark products even lower. Thus, NMFS needs to balance providing the flexibility of increasing the efficiency of trips and the associated economic benefits with the negative

economic impacts of derby fishing and lower profits. This alternative could have neutral impacts for fishermen participating in the Atlantic shark research fishery, since the 2014 landings (54.2 mt dw; 119,527 lb dw) would result in 66 percent of the new sandbar shark quota being landed. Under Alternative B3, the new sandbar shark quota could result in average annual lost revenue of $89,420 for those fishermen participating in the shark research fishery, but the income could be recouped by the increased retention limit outside the shark research fishery. If NMFS continues to select the same number of vessels as in 2015, this alternative would impact 7 shark research vessel participants. Based on this number, the total average annual gross revenue loss for each shark research fishery vessel would be $12,774 per vessel. If available resources increase in the future for more observed trips in the fishery, then this alternative still would have neutral economic impacts, since the observed trips would be distributed throughout the year, to ensure the research fishery remains open and obtains biological and catch data all year round.

Alternative B4 would increase the LCS retention limit to a maximum of 108 LCS other than sandbar sharks per trip for shark directed permit holders and reduce the sandbar shark research fishery quota to 65.7 mt dw (144,906 lb dw). This alternative would allow shark directed permit holders to retain three times as many LCS per trip as the current retention limit. This new retention limit would result in potential trip revenues of $3,552 (3,672 lb of meat, 184 lb of fins), assuming an ex-vessel price of $0.58 for meat and $7.68 for fins. This alternative could have short- and long-term moderate beneficial economic impacts, since shark directed permit holders could land three times the current LCS retention limit. This increased retention limit could result in 3,672 lb dw of LCS per trip, which could bring the fishery almost back to historical levels of 4,000 lb dw LCS per trip. While a retention limit of 108 LCS per trip would make each trip more profitable and potentially require fishermen to take fewer trips per year, this large increase in the retention limit would likely result in more permit holders becoming active in the LCS fishery. Thus, the shark fishery could return to a derby fishery, with quotas being caught at a faster rate and the fishing season shortened. Additionally, in order to increase the retention limit to 108 LCS per trip, the sandbar shark research quota would need to be reduced to an amount comparable to the 2014 landing in the shark research fishery, which could have minor adverse impacts on fishermen in the shark research fishery, who would lose revenue associated with this loss of quota.

Atlantic Regional and Sub-Regional Quotas

Alternative C1, the No Action alternative, would not change the current management of the Atlantic shark fisheries. This alternative would likely result in short-term direct neutral economic impacts, as the shark fisheries would continue to operate under current conditions, with shark fishermen continuing to fish at current rates. Based on the 2014 ex-vessel prices, the annual gross revenues for the entire fleet from aggregated LCS and hammerhead shark meat in the Atlantic region would be $313,464, while the shark fins would be $85,009. Thus, total average annual gross revenues for aggregated LCS and hammerhead shark landings in the Atlantic region would be $398,473 ($313,464 + $85,009), which is 9 percent of the entire revenue for the shark fishery. Based on eDealer landings, there are approximately 35 active directed shark permit holders that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holders in the Atlantic region would be $11,385 per vessel. For the non-blacknose SCS and blacknose shark

landings, the annual gross revenues for the entire fleet from the meat would be $318,289, while the shark fins would be $85,594. The total average annual gross revenues for non-blacknose SCS and blacknose shark landings in the Atlantic region would be $403,883 ($318,289 + $85,594), which is 9 percent of the entire revenue for the shark fishery. Based on eDealer landings, there are approximately 26 active directed shark permit holders that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $15,534 per vessel. However, this alternative would likely result in long-term minor adverse economic impacts. Negative impacts would be partly due to the continued negative effects of federal and state regulations related to shark finning and sale of shark fins, which have resulted in declining ex-vessel prices of fins since 2010, as well as continued changes in shark fishery management measures. Additionally, under the current regulations, fishermen operating in the south of the Atlantic region drastically impact the availability of quota remaining for fishermen operating in the north of the Atlantic region. If fishermen in the south fish early in the year and NMFS does not adjust the LCS retention limit, they have the ability to land a large proportion of the quota before fishermen in the north have the opportunity to fish, due to time/area closures and seasonal migrations of LCS and SCS, potentially resulting in indirect long-term minor adverse economic impacts. However, NMFS would intend to use existing regulations to monitor the LCS quotas and adjust the retention limit as needed to ensure equitable fishing opportunities throughout the region. This approach could result in some minor beneficial impacts over the long-term. Indirect short-term economic impacts resulting from any of the actions in Alternative C1 would likely be neutral because the measures would maintain the status quo with respect to shark landings and fishing effort. However, this alternative would likely result in indirect long-term minor beneficial economic impacts. Beneficial economic impacts and increased revenues associated with ensuring equitable fishing opportunities through trip limit adjustments experienced by fishermen within Atlantic shark fisheries would carry over to the dealers and supporting businesses they regularly interact with.

Alternative C2 would apportion the Atlantic regional quotas for LCS and SCS along 33° 00’ N. lat. (approximately at Myrtle Beach, South Carolina) into northern and southern sub-regional quotas and potentially adjust the non-blacknose SCS quota based on the results of the 2013 assessments for Atlantic sharpnose and bonnethead sharks. Establishing sub-regional quotas could allow for flexibility in seasonal openings within the Atlantic region. Different seasonal openings within sub-regions would allow fishermen to maximize their fishing effort during periods when sharks migrate into local waters or when regional time/area closures are not in effect. This would benefit the economic interests of North Carolina and Florida fishermen, the primary constituents impacted by the timing of seasonal openings for LCS and SCS in the Atlantic, by placing them in separate sub-regions with separate sub-regional quotas.

Under this alternative, the northern Atlantic sub-region would receive 21.0 percent of the total aggregated LCS quota (35.4 mt dw; 78,236 lb dw) and 34.9 percent of the total hammerhead shark quota (9.5 mt dw; 20,848 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for aggregated LCS and hammerhead shark meat in the northern Atlantic sub-region would be $70,560, while the shark fins would be $18,819. Thus, total average annual gross revenues for aggregated LCS and hammerhead shark landings in the northern Atlantic sub-region would be $89,379 ($70,560 + $18,819). Based on eDealer landings, there are

approximately 14 active directed shark permit holders in the northern Atlantic sub-region that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in this sub-region would be $6,384 per vessel. When compared to the other alternatives, the northern Atlantic sub-region would have minor beneficial economic impacts under Alternative C2, because this alternative would result in the highest total average annual gross revenues for aggregated LCS and hammerhead sharks. In the southern Atlantic sub-region, fishermen would receive 79.0 percent of the total aggregated LCS quota (133.5 mt dw; 294,316 lb dw) and 65.1 percent of the total hammerhead shark quota (17.6 mt dw; 38,888 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for aggregated LCS and hammerhead shark meat in the southern Atlantic sub-region would be $242,903, while the shark fins would be $66,190. The total average annual gross revenues for aggregated LCS and hammerhead shark landings in the southern Atlantic sub-region would be $309,093 ($242,903 + $66,190). Based on eDealer landings, there are approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in this sub-region would be $14,719 per vessel. When compared to the other alternatives, the southern Atlantic sub-region would have minor adverse economic impacts under Alternative C2, because this alternative would result in lower total average annual gross revenues for aggregated LCS and hammerhead sharks.

Under Alternative C2, NMFS would determine the blacknose shark quota for each sub-region using the percentage of landings associated with blacknose sharks within each sub-region and the new non-blacknose SCS quotas in conjunction with Alternatives C5, C6, and C7. The northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota, while the southern Atlantic sub-region would receive 66.5 percent of the total non-blacknose SCS quota in this alternative. For the blacknose sharks, the northern Atlantic sub-region would receive 6.2 percent of the total blacknose shark quota (1.1 mt dw; 2,464 lb dw), while the southern Atlantic sub-region would receive 93.8 percent of the total blacknose shark quota (16.9 mt dw; 37,285 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for blacknose shark meat in the northern Atlantic sub-region would be $1,953, while the shark fins would be $493. Thus, total average annual gross revenues for blacknose shark landings in the northern Atlantic sub-region would be $2,446 ($1,953 + $493). Based on eDealer landings, there are approximately 5 active directed shark permit holders in the northern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $489 per vessel. Based on the 2014 ex-vessel prices, the annual gross revenues for blacknose shark meat in the southern Atlantic sub-region would be $29,082, while the shark fins would be $7,457. The total average annual gross revenues for blacknose shark landings in the southern Atlantic sub-region would be $36,539 ($29,082 + $7,457). Based on eDealer landings, there are approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $1,740 per vessel.

Alternative C3 would apportion the Atlantic regional quotas for LCS and SCS along 34° 00’ N. lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas and potentially adjust the non-blacknose SCS quota based on the results of the

2013 assessments for Atlantic sharpnose and bonnethead sharks. This alternative would likely result in direct short-term minor beneficial impacts, and ultimately direct long-term moderate beneficial impacts. However, drawing the regional boundary between the northern and southern Atlantic sub-regions along 34° 00' N. lat. would result in more equitable sub-regional quotas, in comparison to the boundary considered in Alternative C2. Under this alternative, the northern Atlantic sub-region would receive 18.4 percent of the total aggregated LCS quota (31.0 mt dw; 68,550 lb dw) and 34.9 percent of the total hammerhead shark quota (9.5 mt dw; 20,848 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for aggregated LCS and hammerhead shark meat in the northern Atlantic sub-region would be $63,296, while the shark fins would be $14,697. Thus, total average annual gross revenues for aggregated LCS and hammerhead shark landings in the northern Atlantic sub-region would be $77,993 ($63,296 + $14,697). Based on eDealer landings, there are approximately 14 active directed shark permit holders in the northern Atlantic sub-region that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in this sub-region would be $5,571 per vessel. When compared to Alternative C2, the northern Atlantic sub-region would have minor adverse economic impacts under this alternative. In the southern Atlantic sub-region, fishermen would receive 81.6 percent of the total aggregated LCS quota (137.9 mt dw; 304,002 lb dw) and 65.1 percent of the total hammerhead shark quota (17.6 mt dw; 38,888 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for aggregated LCS and hammerhead shark meat in the southern Atlantic sub-region would be $250,168, while the shark fins would be $68,219. The total average annual gross revenues for aggregated LCS and hammerhead shark landings in the southern Atlantic sub-region would be $318,387 ($250,168 + $68,219). Based on eDealer landings, there are approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in this sub-region would be $15,161 per vessel.

As in Alternative C2, NMFS would determine the blacknose shark quota for each sub-region using the percentage of landings associated with blacknose sharks within each sub-region in Alternative C3 and the new non-blacknose SCS quotas in conjunction in Alternatives C5, C6, and C7. Under Alternative C3, the northern Atlantic sub-region would receive 32.9 percent of the total non-blacknose SCS quota, while the southern Atlantic sub-region would receive 67.1 percent of the total non-blacknose SCS quota. For the blacknose sharks, the northern Atlantic sub-region would receive 4.6 percent of the total blacknose shark quota (0.8 mt dw; 1,828 lb dw), while the southern Atlantic sub-region would receive 95.4 percent of the total blacknose shark quota (16.7 mt dw; 37,921 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for blacknose shark meat in the northern Atlantic sub-region would be $1,426, while the shark fins would be $366. Thus, total average annual gross revenues for blacknose shark landings in the northern Atlantic sub-region would be $1,792 ($1,426 + $366). Based on eDealer landings, there are approximately 5 active directed shark permit holders in the northern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $358 per vessel. Based on the 2014 ex-vessel prices, the annual gross revenues for blacknose shark meat in the southern Atlantic sub-region would be $29,578, while the shark fins would be $7,584. The total average annual gross revenues for blacknose shark landings in the southern Atlantic sub-region would be $37,162 ($29,578 + $7,584). Based on eDealer landings, there are

approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $1,770 per vessel. This alternative would have neutral economic impacts for the northern Atlantic sub-region fishermen when compared to Alternative C2, and would have beneficial economic impacts for the southern Atlantic sub-region fishermen when compared to Alternative C2.

Alternative C4 would apportion the Atlantic regional quotas for certain LCS and SCS management groups along 34° 00' N. lat. (approximately at Wilmington, North Carolina) into northern and southern sub-regional quotas, maintain SCS quota linkages in the southern sub-region of the Atlantic region, remove the SCS quota linkages in the northern sub-region of the Atlantic region, and prohibit the harvest and landings of blacknose sharks in the northern Atlantic sub-region. The economic impacts of apportioning the Atlantic regional quotas for LCS and SCS along 34° 00' N. lat. into northern and southern sub-regional quotas would have the same impacts as described in alternative C3 above. Removing quota linkages within the northern Atlantic sub-region would have beneficial impacts, as active fishermen in this region would be able to continue fishing for non-blacknose SCS without the fishing activities in the southern Atlantic sub-region, where the majority of blacknose sharks are landed, impacting the timing of the non-blacknose SCS fishery closure. Economic advantages associated with removing quota linkages, allowing the northern Atlantic sub-region to land a larger number of non-blacknose SCS, would outweigh the income lost from prohibiting landings of blacknose sharks ($1,426) for fishermen in the northern sub-region, particularly given the minimal landings of blacknose sharks attributed to the northern sub-region. In the southern Atlantic region, no economic impacts are expected by maintaining the quota linkages already in place for SCS. Thus, by removing quota linkages in the northern Atlantic region, in combination with apportioning the Atlantic regional quota at 34° 00' N. lat. to allow fishermen to maximize their fishing effort, and thereby maximize revenue, during periods when sharks migrate into local waters or when regional time/area closures are not in place, Alternative C4 would result in overall direct and indirect, short- and long-term moderate beneficial economic impacts.

Alternative C5 would establish a non-blacknose SCS TAC of 353.2 mt dw and reduce the non-blacknose SCS commercial quota to 128 mt dw (282,238 lb dw). When combined with the other alternatives to establish sub-regional non-blacknose SCS quotas, the economic impacts of Alternative C5 would vary based on the alternative. Under Alternative C2, the northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota (42.9 mt dw; 94,550 lb dw) and the southern Atlantic sub-region would receive 65.5 percent of the total non-blacknose SCS quota (85.1 mt dw; 187,668 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $69,967, while the shark fins would be $18,910. Thus, total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $88,877 ($69,967 + $18,910). Based on eDealer landings, there are approximately 5 active directed shark permit holders in the northern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $17,775 per vessel. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $138,889, while the shark fins would be $37,538. The total average annual gross revenues for non-

blacknose SCS landings in the southern Atlantic sub-region would be $176,427 ($138,889 + $37,538). Based on eDealer landings, there are approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holder in Atlantic would be $8,401 per vessel. Sub-regional quotas under Alternatives C2 are about a two percent increase in landings allocated to the northern region for non-blacknose SCS when compared to Alternative C3. This percentage would lead to a slight increase in some of the sub-regional quotas within the northern Atlantic sub-region, as compared to Alternative C3, and would result in short-term minor beneficial economic impacts, and ultimately long-term moderate beneficial economic impacts in the northern Atlantic sub-region.

Using the quotas considered under Alternative C5 and the sub-regional split under Alternatives C3 and C4, the northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota (42.1 mt dw; 92,856 lb dw), while the southern Atlantic sub-region would receive 67.1 percent of the total non-blacknose SCS quota (85.9 mt dw; 189,382 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $68,714, while the shark fins would be $18,571. The total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $87,285 ($68,714 + $18,571). Based on eDealer landings, there are approximately 5 active directed shark permit holders in the northern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holder in Atlantic would be $17,457 per vessel. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $140,142, while the shark fins would be $37,876. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $178,018 ($140,142 + $37,876). Based on eDealer landings, there are approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $8,477 per vessel. Overall, the non-blacknose SCS commercial quota considered under this alternative is almost thirty percent less than the current base quota and less than half of the current adjusted quota for this management group. Therefore, NMFS believes this alternative would have short- and long-term minor adverse economic impacts due to the quota being capped at a lower level than what is currently being landed in the non-blacknose SCS fisheries, leading to a loss in annual revenue for these shark fishermen. In addition, the adverse impacts would be compounded by the unknown stock status of bonnethead, which would prevent NMFS from carrying forward underharvested quota. Thus, the commercial quota of 128 mt dw would not be adjusted and the fishermen would be limited to this amount each year, which could lead to shorter seasons and reduced flexibility, potentially affecting fishermen's decisions to participate.

Under Alternative C6, NMFS would establish a non-blacknose SCS TAC and maintain the current base annual quota of 176.1 mt dw (388,222 lb dw). When combined with the other alternatives to establish sub-regional non-blacknose SCS quotas, the economic impacts of Alternative C6 would vary based on the sub-regional quotas. Under Alternatives C2, the northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota (59.0 mt dw; 130,054 lb dw) and the southern Atlantic sub-region would receive 66.5 percent of

the total non-blacknose SCS quota (117.1 mt dw; 258,168 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $96,240, while the shark fins would be $26,011. Thus, total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $122,251 ($96,240 + $26,011). Based on eDealer landings, there are approximately 5 active directed shark permit holders in the northern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $24,450 per vessel. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $191,044, while the shark fins would be $51,634. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $242,678 ($191,044 + $51,634). Based on eDealer landings, there are approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $11,556 per vessel. Sub-regional quotas under Alternative C2 would lead to some slightly higher sub-regional quotas within the northern Atlantic sub-region, as compared to Alternative C3, and would result in short-term minor beneficial impacts, and ultimately long-term moderate beneficial economic impacts in the northern Atlantic sub-region.

Using the quotas considered under Alternative C6 and the sub-regional split considered under Alternatives C3 and C4, the northern Atlantic sub-region would receive 32.9 percent of the total non-blacknose SCS quota (57.9 mt dw; 127,725 lb dw), while the southern Atlantic sub-region would receive 67.1 percent of the total non-blacknose SCS quota (118.2 mt dw; 260,497 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $94,517, while the shark fins would be $25,545. The total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $120,062 ($94,517 + $25,545). Based on eDealer landings, there are approximately 5 active directed shark permit holders in the northern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $24,012 per vessel. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $192,768, while the shark fins would be $52,099. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $244,867 ($192,768 + $52,099). Based on eDealer landings, there are approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holder in Atlantic would be $11,660 per vessel. Overall, Alternative C6 would lead to a lower quota in the northern Atlantic sub-region, as compared to current landings under the higher base quota. Because this alternative would maintain the non-blacknose SCS commercial quota, it is likely to have short-term neutral economic impacts. Recent non-blacknose SCS landings have been below 176.1 mt dw, thus, this commercial quota could allow for increased landings and additional revenue if the entire quota is caught, which could have beneficial economic impacts. However, since the quota of 176.1 mt dw would not be adjusted for underharvests due to the unknown status of bonnethead sharks, the fishermen would be capped at a lower quota than is possible in the current non-blacknose SCS

fisheries if there is underharvest, potentially leading to long-term minor adverse economic impacts. NMFS does not expect fishing effort to dramatically increase for non-blacknose SCS in the southern region of the Atlantic, since landings would continue to be limited by blacknose shark landings and the linkage between these two groups.

Under Alternative C7, a preferred alternative, NMFS would establish a non-blacknose SCS TAC of 489.3 mt dw and increase the quota to the current adjusted base annual quota of 264.1 mt dw (582,333 lb dw) which is equal to the 2014 adjusted non-blacknose SCS quota. Based on the 2014 ex-vessel prices, the annual gross revenues for the entire fleet from non-blacknose SCS meat in the Atlantic region would be $430,926 while the shark fins would be $116,467. Thus, total average annual gross revenues for non-blacknose shark landings in the Atlantic region would be $547,393 ($430,926 + $116,467), which is 12 percent of the entire revenue for the shark fishery. The economic impacts of Alternative C7 would vary when combined with Alternatives C2 through C4 to establish sub-regional non-blacknose SCS quotas as considered in the Draft EA, and a new preferred Alternative C8 that would maintain the status quo of a regional quota for the blacknose and non-blacknose SCS management groups and would establish a management boundary to modify the blacknose and non-blacknose SCS quota linkage. Under Alternative C2, the northern Atlantic sub-region would receive 33.5 percent of the total non-blacknose SCS quota (88.4 mt dw; 195,082 lb dw) and the southern Atlantic sub-region would receive 66.5 percent of the total non-blacknose SCS quota (175.7 mt dw; 387,251 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $144,360, while the shark fins would be $39,016. Thus, total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $183,376 ($144,360 + $39,016). Based on eDealer landings, there are approximately 5 active directed shark permit holders in the northern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in Atlantic would be $36,675 per vessel. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $286,566, while the shark fins would be $77,450. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $364,016 ($286,566 + $77,450). Based on eDealer landings, there are approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holder in Atlantic would be $17,334 per vessel.

Under C7 and either Alternative C3 or C4, the northern Atlantic sub-region would receive 32.9 percent of the total non-blacknose SCS quota (86.9 mt dw; 191,588 lb dw), while the southern Atlantic sub-region would receive 67.1 percent of the total non-blacknose SCS quota (177.2 mt dw; 390,745 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the northern Atlantic sub-region would be $141,775, while the shark fins would be $38,318. The total average annual gross revenues for non-blacknose SCS landings in the northern Atlantic sub-region would be $180,093 ($141,775 + $38,318). Based on eDealer landings, there are approximately 5 active directed shark permit holders in the northern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holder in

Atlantic would be $36,019 per vessel. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the southern Atlantic sub-region would be $289,152, while the shark fins would be $78,149. The total average annual gross revenues for non-blacknose SCS landings in the southern Atlantic sub-region would be $367,301 ($289,152 + $78,149). Based on eDealer landings, there are approximately 21 active directed shark permit holders in the southern Atlantic sub-region that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holder in Atlantic would be $17,491 per vessel.

Under Alternative C7 and a new preferred Alternative C8, the commercial quota for the SCS fishery would be 264.1 mt dw (582,333 lb dw) for the Atlantic region, which is equal to the 2014 adjusted non-blacknose SCS quota. Based on the 2014 ex-vessel prices, the annual gross revenues for the entire fleet from non-blacknose SCS meat in the Atlantic region would be $430,926, while the shark fins would be $116,467. Thus, total average annual gross revenues for non-blacknose shark landings in the Atlantic region would be $547,393 ($430,926 + $116,467), which is 13 percent of the entire revenue for the shark fishery. Based on eDealer landings, there are approximately 26 active directed shark permit holders that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holder in the Atlantic region would be $21,054 per vessel.

The quota considered under Alternative C7 is an increase compared to the non-blacknose SCS commercial quotas under Alternatives C5 or C6. Since underharvested quota would no longer be carried forward, this quota would provide a buffer, potentially providing for landings to increase in the future, and thus, providing some beneficial economic impacts in the long-term due to the potential to gain additional revenue. The increased landings could result in additional revenues of up to $302,526 in total average annual gross revenue for non-blacknose shark landings relative to Alternative C6, the preferred alternative in the Draft EA. However, recent landings of non-blacknose SCS have been less than half of the commercial quota under this alternative (in part because of increasing blacknose landings), so it is unlikely that fishermen would catch this entire quota in the short-term (unless this alternative is combined with alternative C8), such that this alternative would have neutral economic impacts. When combined with Alternative C8, the increased quota in Alternative C7 could have positive economic impacts for fishermen.

Alternative C8, one of the preferred alternatives, would maintain the current aggregated LCS (168.9 mt dw; 372,552 lb dw) and hammerhead shark (27.1 mt dw; 59,736 lb dw) regional quotas in the Atlantic region, establish a management boundary for the SCS fishery, and prohibit the retention of blacknose sharks north of the management boundary at 34° 00’ N. lat. Based on historical landings and 2014 ex-vessel prices, the annual gross revenues for blacknose meat in the Atlantic region south of 34° 00’ N. lat. would be $29,578, while the blacknose shark fins would be $7,584. Thus, total average annual gross revenues for blacknose landings in the Atlantic region south of 34° 00’ N. lat. would be $37,162 (29,578 + $7,584). Based on eDealer landings, there are approximately 21 active directed shark permit holders that landed SCS in 2014 south of 34° 00’ N. lat. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holder south of 34° 00’ N. lat. would be $1,770 per vessel. No economic impacts are expected from maintaining the current LCS and

hammerhead regional quotas structure as fishermen would continue to fish at current rates and would not be limited by sub-regional quotas. However, NMFS would intend to use existing regulations to monitor the LCS quotas and adjust the retention limit as needed to ensure equitable fishing opportunities throughout the region. This approach could result in some minor beneficial impacts over the long-term. Establishing a management boundary and removing quota linkages north of 34° 00' N. lat. in this alternative would have beneficial impacts for fishermen north of the management boundary, as active fishermen in the area above 34° 00' N. lat. would be able to continue fishing for non-blacknose SCS without being constrained by the fishing activities south of 34° 00' N. lat., where the majority of blacknose sharks are landed. Given the fact that in recent years the SCS fishery has closed before the non-blacknose SCS quota has been harvested, fishermen north of the management boundary who would be able to continue to fish after the fisheries are closed south of the management boundary, could have substantial economic gains under this alternative. Economic benefits associated with removing quota linkages between non-blacknose SCS and blacknose sharks, allowing fishermen north of the management boundary to land a larger number of non-blacknose SCS, would outweigh for the fishermen north of the boundary the income lost from prohibiting landings of blacknose sharks. This is in part due to the minimal landings of blacknose sharks north of 34° 00' N. lat. and the request of fishermen in the Atlantic to remove the linkage between the two management groups in order to continue fishing for non-blacknose SCS when the blacknose quota is reached. In the area south of 34° 00' N. lat., no change in economic impacts is expected by maintaining the quota linkages already in place for the SCS fishery as this alternative is essentially status quo. Fishermen south of the management boundary line would be able to continue fishing for non-blacknose SCS based upon how successful they are at avoiding blacknose sharks. If blacknose shark bycatch remains low, fishermen would have the opportunity to continue fishing the non-blacknose SCS quota. Thus, by implementing management measures considered in Alternative C8, this alternative would result in overall direct and indirect, short- and long-term minor beneficial economic impacts.

Gulf of Mexico Regional and Sub-Regional Quotas

Alternative D1, the No Action alternative, would maintain the current regional quotas and quota linkages in the Gulf of Mexico region and continue to allow harvest of hammerhead sharks throughout the entire Gulf of Mexico region. This alternative would likely result in short-term neutral direct economic impacts, because shark fishermen would continue to operate under current conditions, with shark fishermen continuing to fish at similar rates. Based on the 2014 ex-vessel prices, the annual gross revenues for the entire fleet from blacktip, aggregated LCS, and hammerhead shark meat in the Gulf of Mexico region would be $497,148, while the shark fins would be $472,355. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the Gulf of Mexico region would be $969,503 ($497,148+ $472,355), which would be 22 percent of the entire shark fishery. Based on eDealer landings, there are approximately 28 active directed shark permit holders that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in the Gulf of Mexico would be $34,625 per vessel. For the non-blacknose SCS and blacknose shark landings, the annual gross revenues for the entire fleet from the meat would be $39,995, while the shark fins would be $30,610. The total average annual gross revenues for non-blacknose SCS and blacknose shark landings in the

Gulf of Mexico region would $70,605 ($39,995 + $30,610), which is 2 percent of the entire revenue for the shark fishery. Based on eDealer landings, there are approximately 8 active directed shark permit holders that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in the Gulf of Mexico would be $8,826 per vessel. Alternative D1 would likely result in short-term neutral direct economic impacts because shark fishermen would continue to operate under current conditions and to fish at similar rates. However, this alternative would likely result in long-term minor adverse economic impacts. Negative impacts would be partly due to the continued negative impact of federal and state regulations related to shark finning and sale of shark fins, which have resulted in declining ex-vessel prices of fins since 2010, as well as continued changes in shark fishery management measures. In addition, under the No Action alternative, the non-blacknose SCS quota would not be modified. This could potentially lead to negative economic impacts, since the non-blacknose SCS quotas could be increased based on results from the most recent stock assessment. Additionally, under the current regulations, differences in regional season opening dates would impact the availability of quota remaining in the Gulf of Mexico. Florida fishermen prefer to begin fishing the LCS quotas in the beginning of the year, when sharks are in local waters. However, opening the season at the beginning of the year puts Louisiana fishermen at a slight economic disadvantage, as many Louisiana fishermen prefer to delay fishing, maximizing fishing efforts during the religious holiday Lent when prices for shark meat are higher. Indirect short-term economic impacts resulting from any of the actions in Alternative D1 would likely be neutral because the measures would maintain the status quo with respect to shark landings and fishing effort. However, this alternative would likely result in indirect long-term minor adverse economic impacts. Negative economic impacts and decreased revenues associated with financial difficulties experienced by fishermen within the Gulf of Mexico shark fisheries would carry over to the dealers and supporting businesses they regularly interact with. In addition, this alternative would not achieve the goals of this rulemaking of increasing management flexibility to adapt to the changing needs of the Atlantic shark fisheries.

Alternative D2 would apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS and hammerhead sharks along 89° 00’ W. longitude into western and eastern sub-regional quotas. Establishing sub-regional quotas would provide flexibility in seasonal openings within the Gulf of Mexico region. Different seasonal openings within sub-regions would allow fishermen to maximize their fishing effort during periods when sharks migrate into local waters or during periods when sales of shark meat are increased (e.g., in Louisiana, during Lent). Allowing fishermen in these states more flexibility, by implementing sub-regions, could result in a higher proportion of the quota being landed and increased average annual gross revenues. This would benefit the economic interests of the Louisiana and Florida fishermen, the primary constituents impacted by the timing of seasonal openings for LCS and SCS in the Gulf of Mexico, by placing them in separate sub-regions with separate sub-regional quotas. No negative impacts are expected for either the fishermen or the length of the fishing season since NMFS will be able to transfer quota between sub-regions to ensure that the full quota is harvested.

Under this alternative, the eastern Gulf of Mexico sub-region would receive 30.8 mt dw in blacktip shark, 88.8 mt dw in aggregated LCS, and 13.4 mt dw in hammerhead shark quotas. Based on the 2014 ex-vessel prices, the annual gross revenues for blacktip, aggregated LCS, and

hammerhead shark meat in the eastern Gulf of Mexico sub-region would be $153,897, while the shark fins would be $145,758. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the eastern Gulf of Mexico sub-region would be $299,655 ($153,897 + $145,758). Based on eDealer landings, there are approximately 11 active directed shark permit holders in the eastern Gulf of Mexico sub-region that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in this sub-region would be $27,241 per vessel. When compared to Alternative D3, the eastern Gulf of Mexico sub-region would have minor beneficial economic impacts under Alternative D2, because this alternative would result in the highest total average annual gross revenues for blacktip, aggregated LCS, and hammerhead sharks. In the western Gulf of Mexico sub-region, fishermen would receive 225.8 mt dw in blacktip shark, 68.7 mt dw in aggregated LCS, and 11.9 mt dw in hammerhead shark quotas. Based on the 2014 ex-vessel prices, the annual gross revenues for blacktip, aggregated LCS, and hammerhead shark meat in the eastern Gulf of Mexico sub-region would be $343,251, while the shark fins would be $326,597. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the eastern Gulf of Mexico sub-region would be $669,502 ($343,251 + $326,251). Based on eDealer landings, there are approximately 17 active directed shark permit holders in the western Gulf of Mexico sub-region that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in this sub-region would be $39,382 per vessel.

Alternative D2 would result in $19,753 more in annual gross revenues for the eastern Gulf of Mexico sub-region, as compared to Alternative D3. This alternative would have direct short-term minor beneficial economic impacts as a result of implementing a sub-regional quota structure, combined with higher sub-regional quotas and therefore increased potential gross revenue, received by the eastern Gulf of Mexico sub-region. However, despite the increase in the quota for the eastern Gulf of Mexico sub-region, in the long-term, there could be minor adverse economic impacts based on the boundary line chosen to separate the sub-regions in the Gulf of Mexico. Placing the boundary between the eastern and western Gulf of Mexico sub-regions along 89° 00’ W. long. (i.e., between fishing catch areas 11 and 12) may not create sufficient geographic separation between the major stakeholders in the Gulf of Mexico (i.e., Louisiana and Florida), as opposed to the boundary in Alternative D3. As the range of Louisiana fishermen extends east beyond this boundary, placing the boundary along 89° 00’ W. long. would allow active shark fishermen in the western sub-region to utilize both sub-regional quotas while active shark fishermen in the eastern sub-region would be limited to just the eastern sub-region quota. As such, this alternative could result in less equitable economic benefits to fishermen in both sub-regions. Fishermen in the western sub-region could potentially increase their gross annual revenues by harvesting some of the eastern sub-regional quota, which would be lost by fishermen from the eastern sub-region, who could lose some of their potential annual revenue as a result of not fully harvesting the eastern sub-regional quota.

Alternative D3, one of the preferred alternatives, would apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks along 88° 00’ W. long. into western and eastern sub-regional quotas. Under this alternative, the eastern Gulf of Mexico sub-region would receive 9.8 percent of the total blacktip quota (25.1 mt dw; 55,439 lb dw), 54.3 percent of the total aggregated LCS quota (85.5 mt dw; 188,593 lb dw), and 52.8 percent of the

total hammerhead shark quota (13.4 mt dw; 29,421 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for blacktip, aggregated LCS, and hammerhead shark meat in the eastern Gulf of Mexico sub-region would be $143,735 while the shark fins would be $136,167. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the eastern Gulf of Mexico sub-region would be $279,902 ($143,735 + $136,167). Based on eDealer landings, there are approximately 11 active directed shark permit holders in the eastern Gulf of Mexico sub-region that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in this sub-region would be $25,446 per vessel. The eastern Gulf of Mexico sub-region would have minor adverse economic impacts under Alternative D3, because this alternative would result in lower total average annual gross revenues for blacktip, aggregated LCS, and hammerhead sharks than under Alternative D2. In the western Gulf of Mexico sub-region, fishermen would receive 90.2 percent of the total blacktip quota (231.5 mt dw; 510,261 lb dw), 45.7 percent of the total aggregated LCS quota (72.0 mt dw; 158,724 lb dw), and 47.2 percent of the total hammerhead shark quota (11.9 mt dw; 23,301 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for blacktip, aggregated LCS, and hammerhead shark meat in the western Gulf of Mexico sub-region would be $251,403, while the shark fins would be $101,055. Thus, total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the western Gulf of Mexico sub-region would be $689,601 ($353,412 + $336,189). Based on eDealer landings, there are approximately 17 active directed shark permit holders in the western Gulf of Mexico sub-region that landed LCS in 2014. Based on this number of individual permits, the total average annual gross revenues for the active directed permit holders in this sub-region would be $40,565 per vessel, which would be more than the average annual gross revenue per vessel under Alternatives D1 or D2.

Alternative D3 would result in $19,753 less in annual gross revenues to the eastern Gulf of Mexico sub-region, which would receive slightly smaller sub-regional quotas under this alternative, as compared to under Alternative D2. However, despite the economic disadvantages resulting from slightly smaller sub-regional quotas for the eastern Gulf of Mexico sub-region, overall there would be short-term minor beneficial economic impacts and long-term moderate beneficial economic impacts under this alternative, based on where the Gulf of Mexico sub-region would be split. Placing the boundary between the eastern and western Gulf of Mexico sub-regions along 88° 00’ W. long. (i.e., between fishing catch areas 10 and 11) would create better geographic separation between the major stakeholders in the Gulf of Mexico (i.e., Louisiana and Florida), as opposed to the boundary in Alternative D2. This would provide more equitable economic benefits to fishermen in both sub-regions, by allowing them increased likelihood of fully harvesting their sub-regional quotas, and maximizing the potential annual revenue they could gain upon implementation of sub-regional quotas in the Gulf of Mexico.

Alternative D4 would apportion the Gulf of Mexico regional quotas for blacktip, aggregated LCS, and hammerhead sharks along 89° 00’ W. longitude into western and eastern sub-regional quotas, maintain LCS quota linkages in the eastern sub-region of the Gulf of Mexico region, remove the LCS quota linkages in the western sub-region of the Gulf of Mexico region, and prohibit the harvest of hammerhead sharks in the western Gulf of Mexico sub-region. In the Draft EA for Amendment 6, NMFS originally considered this alternative to have neutral economic impacts, as there were negligible landings of hammerhead sharks in western sub-

region between 2008-2013. However, based on updated landing data resulting in comparable hammerhead shark sub-regional quotas (13.4 mt dw for the eastern Gulf of Mexico sub-region, and 11.9 mt dw for the western Gulf of Mexico sub-region), it is now apparent that there would be some negative economic impacts if NMFS were to prohibit hammerhead sharks in the western sub-region. Given this information, prohibiting retention of hammerhead sharks in the western sub-region would result in a large number of regulatory discards, and would also have negative economic impacts on fishermen in this sub-region. Under Alternative D4, there would be loss of $25,941 for active shark fishermen operating within the western Gulf of Mexico region if they were unable to retain hammerhead sharks. Additionally, based on public comment on the preference for a boundary line at 88° 00' W. long., placing the boundary line at 89° 00' W. long. would allow fishermen operating in the western sub-region an opportunity to harvest from both sub-regional quotas. While implementing sub-regional quotas in the Gulf of Mexico would allow fishermen to maximize their fishing effort at times when fishing would be most profitable for them, thereby maximizing revenue, placing the boundary line at 89° 00' W. long. would decrease the likelihood of fishermen from each respective sub-region fully harvesting their sub-regional quota, and maximizing the potential annual revenue they could gain upon implementation of sub-regional quotas in the Gulf of Mexico. Thus, Alternative D4 would likely result in both direct and indirect short- and long-term minor adverse economic impacts across the entire Gulf of Mexico region, as there would be potential losses from prohibiting landings of hammerhead sharks in the western Gulf of Mexico and from choosing a boundary that does not create sufficient geographic separation between the major stakeholders in the Gulf of Mexico.

Under Alternative D5, NMFS would establish a non-blacknose SCS TAC of 931.9 mt dw and maintain the current base annual quota of 45.5 mt dw (100,317 lb dw). However, given the impact of federal and state regulations related to shark finning and sale of shark fins, which have resulted in declining ex-vessel prices of fins since 2010, on fishermen in the Gulf of Mexico, maintaining the current base annual quota would likely have negative economic impacts. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS and blacknose shark meat in the Gulf of Mexico region would be $36,114, while the shark fins would be $29,293. Thus, total average annual gross revenues for non-blacknose SCS landings would be $65,407 ($36,114 + $29,293). Based on eDealer landings, there are approximately 8 active directed shark permit holders that landed SCS in 2014. Based on this number of individual permits, the total average annual gross revenue for the active directed permit holder in Atlantic would be $8,176 per vessel. When compared to Alternative D8, the preferred alternative, this alternative would result in $96,429 ($161,836 - $65,407) less in total gross annual revenue, or $12,054 less per vessel. Alternative D5 would likely result in both direct and indirect short- and long-term moderate adverse economic impacts, as fishermen would continue to experience reduced revenue throughout the region, as would the dealers and supporting business that they regularly interact with.

Under Alternative D6, NMFS would establish a non-blacknose SCS TAC of 954.7 mt dw and increase the quota to the current adjusted annual quota of 68.3 mt dw (150,476 lb dw). Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the Gulf of Mexico region would be $54,171, while the shark fins would be $43,939. Thus, total average annual gross revenues for non-blacknose SCS landings would be $90,110 ($54,171 + $43,939). There are approximately 8 active directed shark permit holders in the entire Gulf of

Mexico that landed SCS in 2014, which would result in average annual gross revenues for all SCS species of $11,264 per vessel. Given current financial difficulties faced by fishermen, associated with declining ex-vessel prices and restrictions on the sale of shark fins, the beneficial economic impacts of increasing the annual quota by 22.8 mt dw (from the quota under Alternative D5) would likely be minimal. Thus, it is likely that Alternative D6 could result in both direct and indirect short- and long-term neutral to minor adverse economic impacts.

Under Alternative D7, NMFS would establish a non-blacknose SCS TAC of 1,064.9 mt dw and increase the quota to 178.5 mt dw (393,566 lb dw). Under this alternative, the commercial quota would be increased to twice the current 2013 landings, which is almost four times the current base annual quota for non-blacknose SCS. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the Gulf of Mexico region would be $141,684, while the shark fins would be $114,921. Thus, total average annual gross revenues for non-blacknose SCS landings would be $256,605 ($141,684 + $114,921). There are approximately 8 active directed shark permit holders in the entire Gulf of Mexico, which would result in average annual gross revenues for all SCS species of $32,076 per vessel. The quota considered under this alternative would result in an increase of $94,769 ($256,605 - $161,836) in annual revenues or an increase of $11,846 per vessel, over the quota considered in preferred Alternative D8. Alternative D7 could have short-term beneficial economic impacts, since the commercial quota under this alternative is almost four times the current base quota for non-blacknose SCS. However, if the increase in quota results in overfishing for blacknose and/or finetooth sharks, additional restrictions would be likely in the future, which would likely have large negative economic impacts.

Alternative D8, one of the preferred alternatives, would establish a non-blacknose SCS TAC of 999.0 mt dw, increase the quota to 112.6 mt dw (248,215 lb dw), and prohibit the retention of blacknose sharks in the Gulf of Mexico. Under this alternative, the commercial quota would be increased to almost twice the 2013 landings, which is almost four times the current base annual quota for non-blacknose SCS, but then would be adjusted down to account for blacknose shark discards that would occur as a result of the prohibition on retaining blacknose sharks. Based on the 2014 ex-vessel prices, the annual gross revenues for non-blacknose SCS meat in the Gulf of Mexico region would be $89,357, while the shark fins would be $72,479. Thus, total average annual gross revenues for non-blacknose SCS landings would be $345,551 ($125,941 + $219,610). Fishermen could potentially land more non-blacknose SCS under this alternative than under either Alternatives D5 or D6, resulting in increased annual revenues. While the quota would be lower than under Alternative D7, by prohibiting blacknose sharks, this would remove the linkage between blacknose sharks and non-blacknose sharks, and increase the likelihood that fishermen could harvest the entire non-blacknose SCS quota. Additional revenue gained from increasing the non-blacknose SCS quota would outweigh a loss of $5,199 from prohibiting blacknose in the Gulf of Mexico. Potential loss of gross revenue by shark fishermen due to the prohibition on blacknose may also be less than $5,199, as fishermen have demonstrated an ability to largely avoid blacknose sharks with the use of gillnet gear. Fishermen in the Gulf of Mexico have also been requesting a prohibition on landing and retention of blacknose sharks since Amendment 3 to the 2006 Consolidated HMS FMP, when blacknose sharks were separated from the SCS management group and linked to the newly created non-blacknose SCS management group. The small blacknose shark quota has resulted in

early closure before the non-blacknose SCS quota could be harvested. However, in recent years, blacknose sharks have not been the limiting factor in initiating closure of the linked SCS management groups in the Gulf of Mexico; instead, it has been landings of non-blacknose SCS either exceeding or being projected to exceed 80 percent of the quota. Thus, Alternative D8 would likely result in both direct and indirect short- and long-term moderate beneficial economic impacts, since the commercial quota under this alternative would be higher than the current base quota for non-blacknose SCS.

Upgrading Restrictions

Under Alternative E1, the No Action alternative, NMFS would maintain the current upgrading restrictions in place for shark limited access permit holders. Thus, shark limited access permit holders would continue to be limited to upgrading a vessel or transferring a permit only if it does not result in an increase in horsepower of more than 20 percent or an increase of more than 10 percent overall, gross registered tonnage, or net tonnage from the vessel baseline specifications. The No Action alternative could result in direct and indirect minor adverse economic impacts if fishermen continue to be constrained by limits on horsepower and vessel size increases. Fishermen would also be limited by these upgrading restrictions when buying, selling, or transferring shark directed limited access permits. .

Alternative E2, a preferred alternative, would remove current upgrading restrictions for shark directed permit holders. Eliminating these restrictions would have short- and long-term minor beneficial economic impacts, since it would allow fishermen to buy, sell, or transfer shark directed permits without worrying about the increase in horsepower of more than 20 percent or an increase of more than 10 percent in length overall, gross registered tonnage, or net tonnage from the vessel baseline specifications. In addition, the upgrade restriction for shark permit holders was implemented to match the upgrading restrictions for the Northeast multispecies permits. NMFS is currently considering removing the upgrading restrictions for the Northeast multispecies permits, and if those are removed, then removing the upgrading restrictions for shark directed permit holders could aid in maintaining consistency for fishermen who hold multiple permits.

8.0 COMMUNITY PROFILES

Section 102(2)(a) of the National Environmental Policy Act 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." Federal agencies should address the aesthetic, historic, cultural, economic, social, or health effects which may be direct, indirect, or cumulative. The Magnuson-Stevens Act also requires, among other matters, consideration of social impacts. Consideration of the social impacts associated with fishery management measures is a growing concern as fisheries experience variable participation and/or declines in stocks.

Profiles for HMS fishing communities were included in Chapter 9 of the 2006 Consolidated HMS FMP and updated in Chapter 6 of the 2012 and 2013 Stock Assessment and Fishery Evaluation Reports for Atlantic Highly Migratory Species. These profiles are incorporated here by reference. The shark fisheries of the Atlantic and Gulf of Mexico extend from Maine to Texas and include Puerto Rico and the U.S. Virgin Islands. Directed shark fishing occurs on a seasonal basis, depending on area and the length of the fishing season, and these vessels fish for different species at other times of the year. In the Atlantic, the majority of the commercial directed shark permit holders are concentrated in New Jersey, North Carolina, and Florida, thus, these are the states most likely to be impacted by this action. However, as described above, NMFS expects the impacts of the preferred alternatives to be beneficial to these permit holders. In the Gulf of Mexico, most of the commercial directed shark permit holders are in Louisiana and Florida, and therefore, these are the states that would likely be affected by this rulemaking. Based on the 2014 eDealer database, the top fishing ports for total shark landings were Venice, LA, Hatteras, NC, Port Orange, FL, Wanchese, NC, Cape Canaveral, FL, Bon Secour, AL, Bayou La Batre, AL, Charleston Harbor, SC, Fort Myer, FL, and Fort Pierce, FL. As described above, NMFS expects the socioeconomic impacts of the preferred alternatives to be either neutral or beneficial to the fishermen in these states.

9.0 OTHER CONSIDERATIONS

9.1 MAGNUSON-STEVENS ACT

NMFS has determined that this final action is consistent with the Magnuson-Stevens Act and other applicable laws, subject to further consideration after public comment. The analyses in this document are consistent with the Magnuson-Stevens Act National Standards (NSs) (see 50 C.F.R. Part 600, Subpart D for National Standard Guidelines).

NS 1 requires NMFS to prevent overfishing while achieving on a continuing basis, Optimum Yield (OY), from each fishery for the U.S. fishing industry. As summarized in other chapters, over the past several years, NMFS has undertaken numerous management actions, including Amendment 2, Amendment 3, and Amendment 5a to address overfishing and to rebuild Atlantic shark stocks. The preferred alternatives in this document are consistent with ongoing management efforts to rebuild, manage, and conserve target species in accordance with the NS 1 guidelines, and 16 U.S.C. § 1854(e)(4). The preferred alternative that would increase the retention limit to 55 LCS other than sandbar sharks, with a default limit of 45 LCS other than sandbar sharks, and adjust the sandbar shark quota in the Atlantic shark research fishery is consistent with NS 1 because this alternative prevents overfishing of shark species and has positive economic impacts by allowing for more profitable shark fishing trips. In addition, this alternative provides for continuing the rebuilding of sandbar sharks. As described in Chapter 2, dead discards of sandbar sharks are already considered under the current TAC and reducing the sandbar shark research quota should cover any additional mortality that could occur with the higher retention limit. Preventing overfishing of sandbar sharks, while providing opportunities to harvest the Gulf of Mexico blacktip, aggregated LCS, and hammerhead shark management groups is consistent with NS 1. Sub-regional quotas would be established in the Gulf of Mexico regions based upon historical landings and best available scientific information. To allow increased access to the Atlantic non-blacknose SCS resource, the preferred alternative would prohibit blacknose shark landings north of 34 degrees N lat. Removing the quota linkage between blacknose sharks and the non-blacknose SCS group north of 34 degrees N lat. should allow fishermen to achieve OY for the non-blacknose SCS species. Similarly, to allow increased access to the Gulf of Mexico non-blacknose SCS quota, the preferred alternative would prohibit blacknose shark landings in the entire Gulf of Mexico region. Removing the quota linkage between blacknose sharks and non-blacknose SCS should allow fishermen to achieve OY for the non-blacknose SCS species. Consistent with the SEDAR 34 stock assessments for Atlantic sharpnose and bonnethead sharks, the preferred alternatives would adjust mortality levels to prevent overfishing of these species, while allowing fishermen to harvest these species, on a continuing basis.

NS 2 requires that conservation and management measures be based on the best scientific information available. The preferred alternatives in this document are consistent with NS 2 guidelines. For the non-blacknose SCS quotas and TACs, the alternatives are based on the latest SEDAR 34 stock assessments for Atlantic sharpnose and bonnethead sharks and SEDAR 13 for finetooth sharks, which NMFS has determined to be the best scientific information available. For all the alternatives, including the permit stacking, increase in LCS retention limit, and apportionment of Gulf of Mexico regional LCS quotas into sub-regions, NMFS also used self-

reported fisheries logbook data, dealer reports, and observer reports. These sources represent the best scientific information available.

NS 3 requires that, to the extent practicable, an individual stock of fish be managed as a unit throughout its range and interrelated stocks of fish be managed as a unit or in close coordination. The preferred alternatives for the Atlantic shark fishermen are consistent with NS 3 because they would apply to shark species throughout their ranges in U.S. federal waters from Maine to Texas, including the Gulf of Mexico and the Caribbean Sea. These alternatives would also apply to federally-permitted vessels fishing for Atlantic sharks on the high seas. Federal permit requirements and quotas would apply to all shark fishermen fishing for sharks.

NS 4 requires that conservation and management measures do not discriminate between residents of different states. Furthermore, if it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation should be fair and equitable to all fishermen; be reasonably calculated to promote conservation; and should be carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges. None of the preferred alternatives discriminate against the residents of any states. The preferred alternative that would increase the LCS retention limit is equitable since it applies to all directed shark permit holders. The preferred alternatives for sub-regional LCS quotas in the Gulf of Mexico regions consider the equitability of the alternatives to all regional fishermen and allow fishermen to maximize their fishing efforts. NMFS believes the preferred dividing line for the sub-regions in the Gulf of Mexico would be the most fair and equitable and beneficial for all fishermen in that region, because they would give fishermen in the sub-regions the most control over when the fishing season starts. The sub-regional quotas are fair and equitable since they are based on historical landings and the best scientific information available. NMFS believes the preferred alternative to not implement permit stacking is the most fair and equitable alternative for this fishery at this time, because only shark fishermen that have or could afford to buy multiple shark permits would benefit from the higher retention limit and higher revenues, whereas those shark fishermen that cannot afford to buy a second directed shark permit would be at a disadvantage, unable to economically benefit from the higher retention limits. Because the majority of fishermen in the shark fishery have only one permit (in the Atlantic region, 130 of the 136 shark directed permits have different owners; in the Gulf of Mexico region, 73 of the 83 shark directed permits have different owners), permit stacking would not benefit most shark fishermen in the short-term, and it could possibly lead to inequity among directed shark LAP holders. Lastly, NMFS believes that removing the upgrading restrictions for the directed shark limited access permit holders is fair and equitable since all directed shark limited access permit holders could benefit from this measure.

NS 5 requires that conservation and management measures should, where practicable, consider efficiency in the utilization of fishery resources, with the exception that no such measure has economic allocations as its sole purpose. The preferred alternatives in this rulemaking were specifically designed to be consistent with NS 5. The preferred alternatives would establish a new retention limit for LCS, adjust the sandbar shark research quota, establish regional non-blacknose SCS quotas and TACs, create sub-regional LCS quotas in the Gulf of Mexico, prohibit blacknose shark landings in the Gulf of Mexico and in the Atlantic north of 34 degrees N lat. and remove current upgrading restrictions in order to improve efficiencies

throughout the fishery, while maintaining sustainable fisheries for and preventing overfishing of Atlantic sharks.

NS 6 states that conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches. The preferred alternatives in this document were specifically designed to be consistent with this NS by providing flexibility to fishermen and managers to address spatial and temporal variations in the Atlantic shark fisheries. The preferred alternatives would implement measures that consider the variations among, and contingencies in, fisheries, fishery resources, and catches. The preferred measures relate to either fishing effort or retention restrictions, including the LCS retention limit and sub-regional LCS quotas. In reaching these preferred management measures, NMFS analyzed the data considering spatial and temporal variations among the shark fisheries, fishery resources, and catches. Measures are already in place to ensure quotas are not exceeded in the presence of variations in the fishery and catches; however, retention limits and sub-regional quotas could change in the future if warranted by new stock assessments or changes in the fishery. Timely reporting of catch data and the requirement to close the fishery after 80 percent of the quota is utilized would allow for these measures to adjust to variations and contingencies, consistent with NS 6.

NS 7 states that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication. The preferred alternatives in this document are consistent with this NS because they would not implement new requirements that would be costly for fishermen or that duplicate any current requirements. Additionally, some of the preferred alternatives are aimed to minimize costs and increase efficiencies for fishermen. For example, as a part of this rulemaking, NMFS would remove current upgrading restrictions for shark directed permit holders. Eliminating these restrictions would have short- and long-term beneficial socioeconomic impacts, since it will allow fishermen to buy, sell, or transfer shark directed permits without worrying about the increase in horsepower of more than 20 percent or an increase of more than 10 percent in length overall, gross registered tonnage, or net tonnage from the vessel baseline specification. In addition, the upgrading restrictions for shark limited access permit holders were implemented to match the upgrading restrictions for the Northeast multispecies permits, but NMFS is also considering removing the Northeast restrictions. Thus, removing the upgrading restrictions for shark directed permit holders could aid in maintaining consistency for fishermen who hold multiple permits if the restrictions for the Northeast multispecies permits are also removed. In addition, preferred alternative B2 would increase the LCS retention limit to a maximum of 55 LCS other than sandbar sharks per trip for shark directed permit holders, but set a default commercial retention limit of 45 LCS other than sandbar sharks per trip, and establish a new Atlantic shark research fishery quota of 90.7 mt dw (199,943 lb dw) for sandbar sharks. This alternative would allow all shark directed permit holders to retain up to 19 more LCS per vessel per trip then the current retention limit. The higher retention limit is likely to make each trip more profitable for fishermen, as well as more efficient if they decide to take fewer trips, and in turn save money on gas, bait, and other associated costs.

NS 8 states that conservation and management measures shall, consistent with the conservation requirements of the Magnuson-Stevens 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 provide for the sustained participation of such communities, and to the extent practicable, minimize adverse economic impacts on such communities. The preferred alternatives are consistent with this NS. The preferred alternative that would implement an increased retention limit for LCS would provide beneficial economic impacts, since the higher retention limit is likely to make each trip more profitable for fishermen, as well as more efficient if they decide to take fewer trips, and in turn save money on gas, bait and other associated costs. The preferred alternative to implement sub-regional LCS quotas could allow for flexibility in seasonal openings within the Gulf of Mexico region. Different seasonal openings within the considered sub-regions would allow fishermen to maximize their fishing effort during periods when sharks migrate into local waters, when regional time/area closures are not in place, or during periods when sales of shark meat are increased (e.g., in Louisiana, during Lent).

NS 9 states that conservation and management measures shall, to the extent practicable, minimize bycatch, and to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch. The preferred alternatives are consistent with this NS. The preferred alternatives are not expected to cause significant changes in fishing effort, areas, or practices, and thus are not expected to lead to increases in potential bycatch or increased interactions with non-target, incidentally caught species, including protected species. The preferred alternative to increase the LCS retention limit should minimize bycatch, since fishermen could retain more sharks per trip and the potential sandbar shark mortality is already accounted for within the sandbar shark total allowable catch. The preferred alternatives to adjust the non-blacknose SCS quotas consider bycatch while focusing on capping fishing mortality. The preferred quota linkages would prevent bycatch of sharks by opening and closing shark management groups at the same time to prevent excessive mortality of one species to occur due to incidental capture while targeting other shark species. See Section 3.7 for more information about bycatch reduction in shark fisheries.

NS 10 states that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea. The preferred alternatives in the document are consistent with this NS because no impact to safety of life at sea is anticipated to result from these preferred alternatives. The management measures in the preferred alternatives would not require fishermen to travel greater distances, fish in bad weather, or otherwise fish in an unsafe manner.

9.2 CONSIDERATION OF MAGNUSON-STEVENS ACT SECTION 304(G) MEASURES

Section 304(g) of the Magnuson-Stevens Act sets forth requirements specific to the preparation and implementation of an FMP or FMP amendment for HMS. See 16 U.S.C. § 1854(g) for full text. The summary of the requirements of Section 304(g) and an explanation of how NMFS is consistent with these requirements are below. The impacts of the preferred alternatives and how they meet these requirements are described in more detail in Chapters 2 and 4 of the document.

1. *Consult with and consider the views of affected Councils, Commissioners, and advisory groups.*

NMFS published a proposed rule on January 20, 2015 (80 FR 2648). The proposed rule included management options that explored specific changes to the current regional quota retention limits, and permit structures, which could potentially be implemented in the short-term (i.e., one to two years). The Magnuson-Stevens Act requires NMFS to "consult with and consider the comments and views of affected Councils, commissioners and advisory groups appointed under Acts implementing relevant international fishery agreements pertaining to highly migratory species, and the [HMS] advisory panel in preparing and implementing any fishery management plan or amendment." The HMS AP consists of representatives from the commercial and recreational fishing sectors, academia, and non-governmental organizations. Each of the 5 Regional Fishery Management Councils and the two State Fisheries Commissions has a seat on the HMS AP. NMFS held several public hearings and presented the proposed rule to the Gulf of Mexico, South Atlantic, and Mid-Atlantic Regional Fishery Management Councils and both the Atlantic and Gulf Fisheries Commissions to get comments on the range of alternatives considered in the Draft EA. NMFS also requested comments from the New England and Caribbean Fishery Management Councils but given the timing of the rule and the workload of the Councils, NMFS did not present directly to these Councils; no written comments were received from either Council. In March 2015, NMFS specifically solicited opinions and advice from the HMS AP on the potential range of alternatives presented in the Amendment 6 proposed rule. Based on the comments received from the HMS AP, Councils and Commissions and other public commenters, NMFS developed the preferred alternatives for the Final EA and rule.

2. *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. This combined HMS AP provides representation from the commercial and recreational fishing industry, academia, non-governmental organizations, states, the Regional Fishery Management Councils, and the Atlantic and Gulf States Marine Fisheries Commissions. This amendment will not change the HMS AP, and NMFS convened a meeting of the HMS AP during the proposed rule comment period of Amendment 6 to discuss and collect comments on potential shark management measures.

3. *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.*

Throughout this document, NMFS has described the effects of the preferred management measures and any impacts on U.S. fishermen. The preferred alternatives are necessary to meet Magnuson-Stevens Act mandates to rebuild overfished stocks and prevent overfishing while achieving optimum yield, which in the long term are not expected to disadvantage U.S. fishermen in relation to foreign competitors.

4. *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 with a reasonable opportunity to harvest such allocation, quota, or at such fishing mortality level.*

There are currently no international agreements for LCS or SCS quotas, allocations, or fishing mortality levels. Therefore, this requirement is not applicable for these species. However, hammerhead sharks (including scalloped hammerhead sharks) and silky sharks are the subject of a binding recommendation by ICCAT. This binding recommendation is limited in scope and applies only to those vessels participating in ICCAT fisheries. These vessels include pelagic longline vessels and recreational vessels with tunas, billfish, and/or swordfish on board. These vessels make up a very small percentage of domestic hammerhead and silky shark catch; therefore, the international management measures do not have a large impact. Furthermore, ICCAT does not establish quota levels for LCS and SCS species. Quotas are domestically established and the preferred alternatives would not preclude fishermen from fulfilling the current shark management group quotas.

5. *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. Amendment 6 to the 2006 Consolidated HMS FMP is the culmination of one of those reviews.

6. *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 CITES to implement comparable international fishery management measures. NMFS will work with U.S. Fish and Wildlife Service to implement CITES Appendix II listings for porbeagle, oceanic whitetip, and great, scalloped, and smooth hammerhead sharks. To the extent that some of the management measures in this amendment are exportable, NMFS will work to provide capacity building for foreign nations with the goal of sharing techniques and scientific knowledge to implement similar management measures.

7. *Ensure that conservation and management measures under this subsection:*
    a. *Promote international conservation of the affected fishery;*
    b. *Take into consideration traditional fishing patterns of fishing vessels of the United States and the operating requirements of the fisheries;*
    c. *Are fair and equitable in allocating fishing privileges among United States fishermen and do not have economic allocation as the sole purpose; and*
    d. *Promote, to the extent practicable, implementation of scientific research programs that include the tagging and release of Atlantic HMS.*

All of the objectives indicate how NMFS would promote the international conservation of the affected fisheries in order to obtain optimum yield while maintaining traditional fisheries and fishing gear and minimizing economic impacts on U.S. fishermen. The management measures in the preferred alternatives in this rulemaking are expected to meet these goals. More specifically:

a. As detailed in Item 4 above, there are currently no international agreements for LCS and SCS quotas, allocations, or fishing mortality levels. Hammerhead sharks (including scalloped hammerhead sharks) and silky sharks are the subject of a binding

recommendation by ICCAT, but this recommendation is limited in scope and applies only to those vessels participating in ICCAT fisheries. NMFS will continue to work with the international community to promote conservation in fisheries that span international jurisdictions, as with the hammerhead and silky sharks.

b. The preferred alternatives explicitly take traditional fishing patterns into account when establishing sub-regional quotas and revised trip limits. The quotas for non-blacknose SCS were developed using the best available science from the most recent stock assessments.
c. As noted in Item b above, preferred sub-regional LCS quotas would be allocated based upon historical landings information in the Gulf of Mexico to ensure fair and equitable access to the resource.
d. 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; however, these actions would not impact existing programs either.

9.3 E. O. 13132

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

10.0 LIST OF PREPARERS

This Environmental Assessment, Regulatory Impact Review, and Final Regulatory Flexibility Analysis were prepared by LeAnn Hogan, Guy` DuBeck, Alexis Jackson, Delisse Ortiz, Karyl Brewster-Geisz, and Margo Schulze-Haugen from the HMS Management Division, Office of Sustainable Fisheries. Please contact the HMS Management Division for a complete copy of current regulations for the Atlantic HMS commercial and recreational fisheries.

Highly Migratory Species Management Division
NMFS SSMC3 F/SE1
1315 East-West Highway
Silver Spring MD, 20910
phone: (301) 427 -8503 fax: (301) 713-1917

11.0 LIST OF AGENCIES/PERSONS CONSULTED

Discussions relevant to the formulation of the preferred alternatives and the analyses for this document involved input from several NMFS components and constituent groups, including: NMFS General Counsel for Enforcement and Fisheries and Protected Resources Sections, NMFS Southeast Fisheries Science Center, NMFS Office for Law Enforcement, NMFS Office of Science and Technology, and the members of the HMS AP (which includes representatives from the commercial and recreational fishing industries, environmental and academic organizations, state representatives, and fishery management councils).

On September 10, 2010 (75 FR 57235), NMFS published an ANPR to solicit public comments on potential adjustments to regulations governing the Atlantic shark fisheries to address several specific issues affecting the management of those fisheries. NMFS held several public meetings regarding the ANPR and received many comments, as explained above.

Based on the comments received on the ANPR, on September 16, 2011, NMFS published a NOI (76 FR 57709) to prepare an FMP Amendment that would consider catch shares for the Atlantic shark fisheries. The NOI also established a control date for eligibility to participate in a catch share program and also announced the availability of a white paper that explored potential design elements of a shark catch share program. NMFS held several public meetings and received many comments regarding the NOI, as explained above.

In April 2014, NMFS released a Predraft for Amendment 6 to the 2006 Consolidated HMS FMP (Amendment 6). A Predraft document allows NMFS to obtain additional information and input from HMS AP members 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) on potential alternatives prior to development of the formal FMP Amendment and proposed rule. The Predraft explored potential management options for the future management of the Atlantic shark fisheries, taking into consideration comments received on the ANPR and NOI.

Since issuing the ANPR, NOI, and Predraft, and reviewing the comments received, NMFS has continued to consider various ways to move forward to address recurring issues through regulations that provide managers and fishermen with increased management and implementation flexibility while maintaining conservation measures. NMFS published another NOI (May 27, 2014; 79 FR 30064) announcing its intent to prepare an EA instead of an EIS and that the agency is moving away from the catch share concept for this particular Amendment.

On January 20, 2015 (80 FR 2648) NMFS published a proposed rule for Amendment 6 to the 2006 Consolidated HMS FMP and the public comment period was open until April 3, 2015. NMFS solicited public comments at several public hearings, and Council and Commission meetings on the range of alternatives considered in the Draft EA and proposed rule. All the written comments are available online at http://www.regulations.gov/#!searchResults;rpp=25;po=0;s=NOAA-NMFS-2010-0188;fp=true;ns=true. For more information on each of these documents and a summary of the comments received please refer to Section 1.1 of this document or visit the Atlantic HMS website at http://www.nmfs.noaa.gov/sfa/hms/.

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13.0 APPENDIX A. RESPONSE TO COMMENTS

Permit Stacking

Comment 1: NMFS received overall support for not implementing permit stacking under Alternative A1, including from the North Carolina Division of Marine Fisheries (NCDMF), South Carolina Department of Natural Resources (SCDNR), Virginia Marine Resources Commission (VAMRC), the Mid-Atlantic Fishery Management Council (MAFMC), and the Florida Fish and Wildlife Conservation Commission (FWC).

Response: NMFS preferred the No Action alternative in the Draft EA for Amendment 6 and proposed rule, which would not implement permit stacking and continue to allow only one directed limited access permit per vessel and thus one retention limit. All the comments received supported the No Action alternative and agreed with NMFS' rationale that while permit stacking may have beneficial socioeconomic impacts for those fishermen that already have multiple directed shark permits or that can afford to buy additional permits, it would disadvantage those fishermen unable to buy additional permits. Permit stacking would create inequitable fishing opportunities among directed permit holders if those fishermen that currently have multiple directed permits or that could afford to buy additional directed permits gain an economic advantage from the higher retention limit resultant from permit stacking. Therefore, based on these comments, NMFS is maintaining the status quo in this action and is not implementing permit stacking.

Commercial Shark Retention Limit

Comment 2: Commenters, including the NCDMF, SCDNR, and VAMRC, supported NMFS's proposal to increase the commercial retention limit to 55 LCS per trip, while other commenters preferred a lower retention limit of 45 LCS per trip. Those commenters were concerned that the higher retention limit would increase participation in the fishery and cause the quotas to be harvested faster, especially since the quotas were not increasing. NMFS also received comments that the increased retention limit would only help state-water fishermen and not federally-permitted fishermen because the state-water fishermen have shorter travel times to fishing grounds and fewer fishing restrictions than the federally-permitted shark fishermen.

Response: NMFS agrees with the comments that an increased LCS retention limit could cause the quotas to be harvested faster and could result in permit holders who have not participated in recent years re-entering the commercial shark fishery or selling their permits to fishermen who want to enter the commercial shark fishery. Because new or returning fishermen do not have the same experience as current fishermen in avoiding sandbar sharks while also avoiding other prohibited species such as dusky sharks, NMFS believes that increasing the retention limit too much could potentially have negative impacts such as increased sandbar shark discards. NMFS' goal with the preferred LCS retention limit of 55 LCS per trip is to increase the profitability of shark trips within current LCS quotas. Thus, as described in Chapters 2 and 4 in the Final EA, NMFS continues to prefer to increase the commercial retention limit to a maximum of 55 LCS other than sandbar sharks per trip. However, based on public comment and due to concerns that new or returning shark fishermen may not have the experience needed to

avoid certain shark species, NMFS is establishing a default commercial retention limit of 45 LCS other than sandbar sharks per trip. If the quotas are being harvested too slowly or too quickly, NMFS may use current regulations to adjust the trip limit inseason to account for spatial and temporal differences in the shark fishery. Adjusting the commercial LCS retention limit on an inseason basis will allow NMFS the ability to ensure equitable fishing opportunities throughout a region or sub-region. With regard to state-water shark fishermen, many states do not have species-specific commercial fishing permits, and instead rely on a general commercial fishing permit. In other words, a state commercial fishing permit allows fishermen to fish commercially for any species of fish, not just sharks. Fishermen who fish in state waters must comply with the state fishing regulations. Fishermen that have a directed or incidental federal shark commercial permit must abide by federal regulations, including retention limits, and must sell to a federally permitted dealer when fishing in federal or state waters. Overall, NMFS believes that establishing a default commercial retention of 45 LCS other than sandbar sharks per trip would benefit federally-permitted fishermen by providing increased profitability of shark trips within current LCS quotas, and increasing management flexibility to adapt to the changing needs of the Atlantic shark fisheries.

Comment 3: Some commenters were concerned that the ratios of LCS to sandbar shark used for calculating the commercial retention limits and the adjusted sandbar shark research fishery quota were incorrect. In addition, some commenters expressed concern that NMFS does not know the catch composition of state-water fishermen and therefore could not accurately estimate what impact an increased retention limit would have on the sandbar shark research fishery quota.

Response: NMFS used observer data from 2008 through 2013 to calculate the ratio of LCS to sandbar shark to analyze the impacts of modifying the commercial retention limit and adjusting the shark research fishery sandbar shark quota. While most of these data are from federal waters and not state waters, these data are the best data available to determine the catch composition ratio of LCS to sandbar sharks in the fishery. As described in Chapters 2 of the Final EA, based on public comment and discussions with the SEFSC, NMFS revised the calculations slightly, resulting in adjustments to the sandbar shark research fishery quota. Specifically, in the Draft EA, NMFS calculated the number of directed trips where directed shark permit holders reported landing at least one LCS in their vessel logbook report from 2008 through 2012. Using this definition of a directed trip overestimated the number of directed shark trips taken every year. In the Final EA, NMFS calculated the number of directed trips when LCS accounted for at least two-thirds of the landings in vessel logbook reports from 2008 through 2013; this is the same approach the observer program uses to determine which vessels should be observed in the LCS fishery. Based on the variability in the directed shark trips by region and year, and the fact that the increased retention limit might result in fewer trips, NMFS decided to use the average number of directed shark trips in the calculations for the adjusted sandbar shark research fishery quota. Using the revised directed shark trips calculations, NMFS is adjusting the sandbar shark fishery quota in Alternative B2 from 75.7 mt dw in the proposed rule to 90.7 mt dw in the final rule. The increased sandbar shark fishery quota should not impact the research fishery at current funding levels, since the sandbar shark fishery quota under Amendment 6 would still be less than the current quota of 116.6 mt dw, and should ensure that a sufficient amount of sandbar quota is available for the sandbar shark research fishery while accounting for sandbar shark interactions in the LCS fishery under a higher retention limit.

Comment 4: NMFS received a comment to change the commercial shark retention limit back to a weight limit. The commenter would prefer a 2,000 lb trip limit rather than a number trip limit. The commenter believes that it would be easier to enforce trip tickets and dealer landings if it was a weight limit since the weight of 36 LCS per trip can vary and it is easier for fishermen to land more than the current trip limit.

Response: Currently, the commercial retention limit is 36 LCS other than sandbar sharks per trip, which was implemented in 2008 under Amendment 2 to the 2006 Consolidated HMS FMP (Amendment 2). Before 2008, the commercial retention limit was 4,000 lb dw LCS per trip. NMFS changed the commercial retention limit from a weight based trip limit to a number of sharks per trip because the 4,000 lb dw LCS trip limit would have caused the sandbar shark TAC and blacktip shark quotas that were implemented in Amendment 2 to be exceeded. NMFS believes that a retention limit that is based on number of sharks per trip is easier to monitor and makes compliance with these regulations easier for fishermen. In addition, a retention limit based on number of sharks per trip eases at-sea and at-port enforcement of retention limit regulations. Thus, for these reasons, NMFS did not consider changing the retention limit from a number of sharks back to weight based retention limits in this rulemaking.

Comment 5: NMFS received comments to establish the commercial shark retention limit by gear type. Specifically, the commenters suggested a limit of 55 LCS per trip for fishermen using bottom longline gear and a limit of 105 LCS per trip for fishermen using gillnet gear. The commenters stated that with one retention limit for all gear types, bottom longline fishermen would always have a greater profit per trip than gillnet fishermen because bottom longline fishermen catch larger sharks than gillnet fishermen.

Response: As described in the Draft EA for Amendment 6 under Alternative G, NMFS considered separate retention limits by gear type, but did not further analyze this alternative. Observer data from 2008-2013 confirms that gillnet fishermen are catching smaller LCS than fishermen using bottom longline gear. These smaller LCS are likely juvenile sharks. If NMFS were to separate the retention limits for LCS by gear type and increase the limit for gillnet fishermen, gillnet fishermen would be landing a higher number of juvenile LCS. Given the susceptibility of many shark species to overfishing and the number of LCS that have either an unknown or overfished status, NMFS does not want to increase mortality on one particular life stage of any shark species without stock assessment analyses indicating that the species and/or stock can withstand that level of fishing pressure. In addition, setting different retention limits for bottom longline and gillnet gears could complicate enforcement of the regulations. It is for these reasons that NMFS did not further analyze the impacts of setting retention limits based on gear types in the Draft and Final EA for Amendment 6.

Atlantic and Gulf of Mexico Regional and Sub-Regional Quotas

Overall

Comment 6: Some commenters, including NCDMF, noted that the fishing season opening dates have a direct impact on fishing effort and participation from any particular region

and expressed concern regarding the years chosen to calculate the sub-regional quotas based on landing history. Specifically, commenters were concerned that some of the years chosen may have disadvantaged their area.

Response: In this rulemaking, because of similar concerns expressed at the Predraft stage, NMFS took into consideration how the seasonal opening dates have impacted fishing effort and participation. For example, in the alternatives where NMFS considered apportioning the Atlantic blacknose and non-blacknose SCS quotas into sub-regions, NMFS used data from 2011 through 2012 since these were the only years that the blacknose shark quota linkage did not affect fishing effort for non-blacknose SCS. In the Gulf of Mexico region, NMFS used the range of data from 2008 through 2013 in the sub-regional data calculations for the blacktip and aggregated LCS quotas since the seasonal opening dates did not impact the fishing effort and participation in those years. However, as explained in response to comment 8 below, based on public comments opposed to implementing sub-regional quotas in the Atlantic region, NMFS changed the preferred alternative in the Final EA and is not implementing sub-regional LCS and SCS quotas in the Atlantic region. This change is aligned with one of the objectives of Amendment 6, which is intended to respond to the changing needs of the Atlantic shark fisheries.

Comment 7: Some commenters expressed concern regarding how NMFS plans to count the landings for each sub-regional quota. Commenters are concerned that fishermen near the boundary lines will change where they fish or just state that they were fishing in the other sub-region when quota in their sub-region is close to 80 percent. In addition, commenters have expressed concern that NMFS will not be able to enforce where the sharks are caught and which sub-regional quota the landings are counted towards. Instead, commenters preferred that NMFS count the landings where the shark is landed instead of where it is caught.

Response: When NMFS started managing shark quotas regionally, NMFS also began monitoring shark quotas based on where the shark was landed. NMFS found this approach did not work for the shark fishery for a variety of reasons. NMFS found there are a number of shark fishermen who land their sharks at private docks or at docks that are not owned by the dealer purchasing the sharks. Once landed, the fisherman transports the sharks to the dealer via truck or other methods. At that time, the "landings" were counted against where the dealer was located and not where the fish were actually landed. When the dealer is located in a different region from the fisherman, it causes problems particularly if the management of the shark species was split into regions based on the results of stock assessments. Additionally, fishermen do not always fish for sharks and land those sharks in the same region. With the implementation of the HMS electronic reporting system (eDealer) in 2013, NMFS began monitoring shark quotas based on where the sharks were reported to be caught. NMFS has found few problems with this approach since the implementation of eDealer and has not experienced any problems with managing landings reported on either side of an established management boundary (e.g. the Miami-Dade line which separates the Atlantic and Gulf of Mexico regions). NMFS will continue to monitor landings via eDealer and count shark landings based on where they are caught instead of where they are landed. This approach should allow NMFS to count shark landings more accurately against the appropriate regional and sub-regional shark quotas. eDealer will incorporate the new sub-regional quota areas in the GOM to ensure shark landings in the Gulf are counted against the appropriate GOM sub-regional quota. However, if in the

future, NMFS notices discrepancies regarding where sharks are caught versus landed (e.g., in a comparison between observer data and dealer data), NMFS may reconsider this issue.

Comment 8: NMFS received multiple comments to revise or remove all quota linkages between the SCS and LCS management groups in both the Atlantic and Gulf of Mexico regions. In the Atlantic region, commenters requested that all quota linkages be removed. In the Gulf of Mexico region, commenters requested that the non-blacknose SCS and blacknose linkage be removed, and that the blacktip shark management group be linked to the aggregated LCS and hammerhead shark management groups in each sub-region.

Response: The current LCS and SCS quota linkages were created for shark species that are in separate management groups, but that have the potential to be caught together on the same shark fishing trip (e.g. non-blacknose SCS and blacknose sharks). If the quota for one management group has been filled and the management group is closed, that species could still be caught as bycatch by fishermen targeting other shark species, possibly resulting in excess mortality and negating some of the conservation benefit of management group closures. In addition, shark quota linkages were put into place as part of the rebuilding plans for shark species that are overfished in order to reduce excess mortality of the overfished species during commercial fishing for other shark species. Thus, NMFS closes the linked shark management groups together. However, based on public comment and additional analyses, NMFS is adjusting the quota linkage changes that were proposed in Draft Amendment 6. Specifically, in the Atlantic region, NMFS is establishing a management boundary at 34° 00’ N. latitude for the SCS fishery. NMFS is prohibiting landings of blacknose sharks and removing the quota linkage between the non-blacknose SCS and blacknose sharks north of 34° 00’ N. latitude. NMFS is keeping the quota linkage between non-blacknose SCS and blacknose sharks south of 34° 00’ N. latitude, since fishermen would still be allowed to land blacknose sharks in this area and most of the blacknose sharks are landed there. NMFS is also maintaining the current quota linkages between the aggregated LCS and hammerhead shark management groups in the Atlantic region. In the Gulf of Mexico, based on public comment and additional analyses, NMFS is removing the quota linkage between the non-blacknose SCS and blacknose sharks in the Gulf of Mexico region and prohibiting the retention and landings of blacknose sharks. In order to account for regulatory discards from the prohibition of blacknose sharks, NMFS is adjusting the Gulf of Mexico non-blacknose SCS commercial quota taking into account the Gulf of Mexico blacknose shark TAC. As for the blacktip, aggregated LCS, and hammerhead shark management groups, NMFS is maintaining the current quota linkages for these management groups in the Gulf of Mexico because of unknown status of aggregated LCS and the overfished and overfishing status of the hammerhead shark complex.

Comment 9: NMFS received a comment to consider the International Commission for the Conservation of Atlantic Tunas (ICCAT) rule that prohibited landings of hammerhead sharks with pelagic longline gear in the sub-regional quota calculations. The commenter believes that landing percentages by sub-region would be different pre- and post-rulemaking, and should not include the range of years since the fishery has changed due to the rulemaking.

Response: To comply with ICCAT Recommendations 10-07 and 10-08, NMFS implemented a final rule (76 FR 53652; August 29, 2011) prohibiting the retention,

transshipping, landing, storing, or selling of hammerhead sharks (except bonnethead sharks) and oceanic whitetip sharks caught in association with ICCAT fisheries. This rule affected the commercial HMS pelagic longline fishery and recreational fisheries for tunas, swordfish, and billfish in the Atlantic Ocean, including the Caribbean Sea and Gulf of Mexico. In the Draft EA and proposed rule for Amendment 6, NMFS did not modify the landings from pelagic longline fishermen to account for that rule change as few hammerhead sharks were landed by pelagic longline fishermen between 2008 and 2011. Thus, including these calculations would not have impacted the sub-regional quota calculations or NMFS' decision regarding measures adopted in this final rule. In the Atlantic region, NMFS is not implementing sub-regional quotas for the hammerhead shark management group at this time. Instead, NMFS is maintaining the overall hammerhead quota in the Atlantic region. In the Gulf of Mexico region, NMFS is establishing sub-regional quotas for the hammerhead shark management group, but NMFS revised the data used for the sub-regional quota calculation using 2014 eDealer landings data to determine the sub-regional quotas. Since this data is well after the implementation of the ICCAT rule in 2011, the sub-regional quota calculations are based on landings after the rule was in place.

Atlantic Regional and Sub-Regional Quotas

Comment 10: NMFS received some support for sub-regional quotas in the Atlantic region, including from the NCDMF, SCDNR, VAMRC, and MAFMC. Both the SCDNR and VAMRC supported the preferred Alternative C4 for the LCS and SCS fishery management groups, but expressed concern for equitable fishing opportunities when the opening date for the LCS management groups is chosen. The NCDMF, MAFMC, and other constituents supported the preferred Alternative C4, but for only the SCS management group. They were not in support of implementing sub-regional quotas for the aggregated LCS and hammerhead shark management groups, requesting that NMFS examine other options for these groups. The NCDMF and MAFMC requested that NMFS implement seasons for the aggregated LCS fishery with 50 percent of the quota being available on January 1 and 50 percent of the quota being available on July 1 or July 15. Other commenters requested that NMFS use inseason trip limit adjustments for the LCS fishery instead of sub-regional quotas. The FWC did not support any of the sub-regional quota alternatives as proposed, but the FWC consulted with Florida fishery participants and FWC supports dividing the Atlantic at 34° 00' N latitude if NMFS establishes sub-regions for either the SCS or LCS fisheries.

Response: Based on public comment and additional analyses, NMFS developed a new preferred alternative, Alternative C8, which maintains the status quo for the LCS and SCS regional commercial quotas and does not apportion these quotas into sub-regions. NMFS will continue to determine season opening dates and adjust the LCS retention limits inseason in order to provide equitable fishing opportunities to fishermen throughout the Atlantic region.

In addition, NMFS is establishing a management boundary line in the Atlantic region along 34° 00' N. latitude for the SCS fishery. South of 34° 00' N. latitude, NMFS is maintaining the quota linkage between non-blacknose SCS and blacknose sharks. North of 34° 00' N. latitude, NMFS is prohibiting the commercial retention of blacknose sharks and removing the quota linkage between non-blacknose SCS and blacknose sharks. Additionally, in order to account for blacknose shark discard mortality north of 34° 00' N. latitude, NMFS is reducing the

Atlantic blacknose shark quota from 18 mt to 17.2 mt dw, based on historical landings of blacknose sharks in that area. In establishing this management boundary, as long as quota is available, fishermen south of 34° 00' N. latitude could fish for, land, and sell both blacknose and non-blacknose SCS. However, as soon as either quota is harvested, the entire commercial SCS fishery south of 34° 00' N. latitude will close. For fishermen south of 34° 00' N. latitude, this is status quo. However, in a change from status quo, fishermen north of 34° 00' N. latitude could fish for, land, and sell non-blacknose SCS as long as quota is available, but would not be allowed to land or possess blacknose sharks. Overall, establishing this management boundary could result in commercial fishermen north of 34° 00' N. latitude possessing and landing non-blacknose SCS if non-blacknose SCS quota is available at the same time as commercial fishermen south of 34° 00' N. latitude cannot possess or land any SCS because of the quota linkage between blacknose and non-blacknose SCS. Prohibiting blacknose sharks and removing quota linkages north of 34° 00' N. latitude could have beneficial social and economic impacts for those fishermen, as fishermen in the area above 34° 00' N. latitude would be able to continue fishing for non-blacknose SCS without being constrained by the fishing activities south of 34° 00' N. latitude, where the majority of blacknose sharks are landed. Additionally, these management measures will not hinder blacknose shark rebuilding or have negative impacts on any other SCS because fishermen above and below the management boundary will still be fishing under quotas that are consistent with the most recent stock assessments. However, fishermen south of 34° 00' N. latitude will likely not see any short- or long-term social or economic benefits and will need to continue to avoid blacknose sharks, consistent with the rebuilding plan, in order to land non-blacknose SCS.

Comment 11: The SCDNR did not support Alternative C3, which would create sub-regional quotas at 33°00' N Latitude, since the sub-regional quota line would split the State of South Carolina and cause confusion with the fishermen and dealers in the area.

Response: As discussed above, NMFS is not implementing sub-regional quotas in the Atlantic based on comments received and additional analyses. NMFS created a new preferred alternative, Alternative C8, which maintains the status quo for the LCS and SCS regional commercial quotas and creates a new management boundary at 34° 00' N. lat. for the blacknose and non-blacknose SCS management groups in the Atlantic region.

Comment 12: NMFS received overall comments on the opening and closing of the LCS and SCS management groups in the Atlantic region. The comments ranged from opening the LCS management group on January 1 or March 1 to maintaining a consistent season opening date every year for the LCS management groups to opening and closing the LCS and SCS management groups together.

Response: NMFS will evaluate several "Opening Commercial Fishing Season" criteria (§ 635.27(b)(3)) as well as the new management measures in this final action when determining the opening dates for the Atlantic shark fisheries. The "Opening Fishing Season" criteria consider factors such as the available annual quotas for the current fishing season, estimated season length and average weekly catch rates from previous years, length of the season and fishermen participation in past years, impacts to accomplishing objectives of the 2006 Consolidated HMS FMP and its amendments, temporal variation in behavior or biology target species (e.g. seasonal

distribution or abundance), impact of catch rates in one region on another, and effects of delayed season openings. NMFS will publish the season opening dates of the Atlantic shark fishery and the shark fishery quotas in the 2016 Atlantic shark season specifications proposed and final rules.

Comment 13: NMFS received a number of requests, including from the NCDMF, SCDNR, VAMRC, and MAFMC, to change the Atlantic non-blacknose SCS TAC and quota from Alternative C6 to Alternative C7, to increase the non-blacknose SCS TAC and quota to the highest amount analyzed, because the fishery should not be limited by the bonnethead shark stock assessment, since bonnethead sharks do not comprise a large portion of landings.

Response: After consulting with the HMS Advisory Panel and other constituents and re-reviewing the data from the stock assessments, NMFS is preferring Alternative C7 and implementing a non-blacknose SCS TAC of 489.3 mt dw and a commercial quota of 264.1 mt dw (which is the current adjusted quota). This represents a higher non-blacknose SCS TAC and commercial quota than those preferred in the proposed rule under Alternative C6, likely resulting in shark fishermen taking more trips, in order to land the larger number of non-blacknose SCS allowed. NMFS does not believe that a higher non-blacknose SCS TAC and commercial quota would have a negative impact on the non-blacknose SCS management group, given the results of the SEDAR 34. The projections that were run for Atlantic sharpnose and bonnethead sharks in SEDAR 34 indicated that there was a 70 percent chance that both species would not become overfished or experience overfishing at current harvest levels and could withstand harvest above current levels. NMFS preferred Alternative C6 in the proposed rule to be cautious regarding the "unknown" status of bonnethead sharks. However, based on public comments and after reviewing the combined Gulf of Mexico and Atlantic non-blacknose SCS landings in 2014, NMFS found that bonnethead sharks represented only 6 percent of landings, and therefore, limiting the quota based on bonnethead sharks would be overly conservative. Thus, the higher non-blacknose SCS commercial quota under Alternative C7 would continue to allow fishermen to land these species at current levels, while maintaining the Atlantic sharpnose and bonnethead stocks at sustainable levels, without unnecessarily limiting the quota, and thus limiting economic gains, due to bonnethead sharks. Regarding finetooth sharks, while results from the SEDAR 13 stock assessment for finetooth sharks should be viewed cautiously, NMFS does not anticipate this quota would negatively impact the finetooth shark stock. The quota under Alternative C7 is significantly lower than the maximum non-blacknose SCS quota put in place (332.4 mt dw), which still provided for sustainable harvest of non-blacknose SCS. This combined with the fact that finetooth sharks represented only 21 percent of combined Gulf of Mexico and Atlantic non-blacknose SCS landings in 2014, compared to Atlantic sharpnose representing 73 percent, further supports that this quota would have minimal impacts on the finetooth shark stock. The higher non-blacknose SCS commercial quota under the new preferred Alternative C7 will continue to allow fishermen to land these species at current levels, while maintaining the Atlantic sharpnose, bonnethead, and finetooth shark stocks at sustainable levels.

Comment 14: NMFS received a comment stating that NMFS should implement a commercial retention limit for blacknose sharks that ranged from 100-200 lb dw per trip or establish an incidental SCS retention limit of 16 blacknose sharks per trip to directed and incidental shark limited access permit holders in the Atlantic Region.

Response: In the Final EIS for Amendment 5a to the 2006 Consolidated HMS FMP, NMFS included the consideration of a commercial retention limit for blacknose sharks in Section 2.3 Alternatives Considered But Not Further Analyzed. Blacknose sharks are known to form large schools, and even skilled fishermen with a high success rate of avoiding blacknose sharks may still encounter schools. Applying a blacknose shark retention limit of 16 sharks per trip could result in sets with high regulatory dead discards because the trip limit would be too low to cover the rare events where large numbers of blacknose sharks are incidentally encountered. NMFS also examined the blacknose shark landings from the HMS electronic dealer data in 2013 and 2014 on a per trip basis. In 2013, 285 trips landed blacknose sharks and, in 2014, there were 178 trips that landed blacknose sharks. The majority of these trips landed less than 200 lbs of blacknose sharks per trip. While a blacknose shark commercial retention limit could reduce the incentive for fishermen to avoid catching blacknose sharks, the creation of a commercial retention limit for blacknose sharks could also increase the incentive to maximize landings of blacknose sharks on each trip, thus causing the blacknose quota to be harvested faster and leading to a closure of both the blacknose and non-blacknose SCS quotas. Therefore, NMFS prefers to address blacknose shark landings and discards by linking the blacknose shark and non-blacknose SCS quotas, which should provide greater and more effective incentive for reducing landings of blacknose sharks than a retention limit, thus more effectively managing the blacknose fishery in a manner that maximizes resource sustainability, while minimizing, to the greatest extent possible, socioeconomic impacts.

Gulf of Mexico Regional and Sub-Regional Quotas

Comment 15: NMFS received general support for the idea of sub-regional quotas in the Gulf of Mexico and requests for specific changes to the preferred alternative. The FWC, after consulting with Florida fishery participants, supported dividing the Gulf of Mexico at 88° 00’ W longitude. Other commenters also supported changing the sub-regional quota line to 88° 00’ or 88° 30’ W longitude. In general, commenters suggested moving away from the proposed 89° 00’ W longitude as they felt this boundary would not create enough geographic separation between the fishing activities of fishermen from the western Gulf of Mexico and those in the eastern Gulf of Mexico. These commenters felt that fishermen from the western Gulf of Mexico were close enough to the boundary that they would easily fish on both sides of the boundary, ultimately compromising the fishing opportunities of fishermen from the eastern Gulf of Mexico (who were further from the boundary between the sub-regions). Commenters also indicated that hammerhead sharks are landed in the western Gulf of Mexico and requested some hammerhead shark quota to the western Gulf of Mexico sub-region so hammerhead sharks can be landed and not discarded.

Response: NMFS proposed to apportion the GOM regional commercial quotas for LCS into western and eastern sub-regions along 89° 00’ W. longitude, maintain the hammerhead and aggregated LCS linkages in the eastern sub-region, and remove this linkage and prohibit hammerhead sharks in the western sub-region. In the proposed rule, NMFS also evaluated alternatives which apportion the GOM regional commercial quotas for LCS into western and eastern sub-regions along 89° 00’ W. and 88° 00’ W. longitude with maintaining the hammerhead and aggregated LCS linkages in the eastern and western sub-regions. In those alternatives, for the western sub-region of the Gulf of Mexico, the aggregated LCS quota would

be linked to a very small hammerhead shark quota (0.1 mt dw; 334 lb dw). Due to the management difficulty of managing such a small quota and to avoid having the aggregated LCS fishery close early, NMFS preferred to prohibit hammerhead sharks in the western sub-region. Based on public comments and additional analyses, and after consulting with the HMS AP, NMFS is apportioning the GOM regional commercial quotas for aggregated LCS, hammerhead, and blacktip shark management groups into eastern and western sub-regional quotas along 88° 00' W. long. As the range of Louisiana fishermen extends east beyond 89° 00' W. longitude, placing the boundary at this location would have allowed active shark fishermen in the western sub-region to utilize both sub-regional quotas while active shark fishermen in the eastern sub-region would be limited to just the eastern sub-region quota. As such, this sub-regional boundary would have resulted in less equitable economic benefits to fishermen in both sub-regions. NMFS agrees that this is a more appropriate boundary between the sub-regions, as it would provide better geographic separation between the major stakeholders in the GOM, in order to prevent active shark fishermen in the western sub-region from utilizing both sub-regional quotas to the detriment of shark fishermen who fish entirely in the eastern sub-region. This change in the sub-regional split should provide more equitable economic benefits to fishermen in both sub-regions, by allowing them increased likelihood of fully harvesting their sub-regional quota, and maximizing the potential annual revenue they could gain upon implementation of sub-regional quotas in the GOM.

Additionally, NMFS is no longer prohibiting retention of hammerhead sharks in the western sub-region of the GOM. Under the preferred alternative in the Draft EA, 99.4 percent of the hammerhead shark base annual quota would have been apportioned to the eastern sub-region, while only 0.6 percent would have gone to the western sub-region. Based on these percentages, NMFS felt it was appropriate to maintain the linkage between aggregated LCS and hammerhead sharks in the eastern GOM sub-region because of the overlap of ranges of these management groups. In addition, in the Draft EA, the preferred alternative would have eliminated the linkage between aggregated LCS and hammerhead sharks in the western Gulf of Mexico sub-region and prohibited the harvest and landings of hammerhead sharks in the western Gulf of Mexico sub-region, due to predicted challenges associated with monitoring a small quota of 0.1 mt dw. However, based on public comment, NMFS took another look at the GULFIN landings data originally used for the calculation of the hammerhead shark sub-regional quotas. NMFS became aware that there were errors in how hammerhead sharks were reported in GULFIN, and also that the new hammerhead shark management group (implemented mid-season in 2013 under Amendment 5a to the 2006 Consolidated HMS FMP) impacted the landings data in GULFIN. Due to these issues, landings of hammerhead sharks reported in GULFIN likely underestimate the magnitude and regional distribution of landings in the GOM. To corroborate public comments that indicated there were increased landings of hammerhead sharks in the western sub-region, NMFS reviewed eDealer data from 2014, and decided in this final rule to apportion the hammerhead shark quota between the two sub-regions. This change is consistent with and furthers the fundamental purpose and intent of the rule, as expressed in the proposed rule, to set quotas for the sub-regions that accurately reflect landings in each sub-region. Using the eDealer data better satisfies that intent because it better reflects the current hammerhead shark landings in the Gulf of Mexico. The resultant sub-regional quotas will prevent large numbers of hammerhead sharks from being unnecessarily discarded in the western sub-region.

Comment 16: NMFS received support for Alternative D7 in the GOM region, which would increase the non-blacknose SCS TAC and quotas to the highest amounts analyzed. Commenters felt this alternative would not limit SCS fisheries based on the results of the bonnethead shark stock assessment. Commenters also requested that NMFS remove the quota linkage between the non-blacknose SCS and blacknose shark management groups and prohibit the retention of blacknose sharks in the GOM because the small blacknose shark quota has the potential to close the non-blacknose SCS fishery before the entire non-blacknose SCS quota can be harvested

Response: In the Draft EA, NMFS proposed to establish a GOM non-blacknose SCS TAC of 954.7 mt dw and a commercial quota of 68.3 mt dw (current adjusted quota) based on the SEDAR 34 stock assessment, which accounted for uncertainty in the bonnethead assessment. However, NMFS has developed a new preferred alternative in the Final EA (Alternative D8) based on these comments and additional analyses, establishing a non-blacknose SCS TAC of 999.0 mt dw and increasing the commercial quota to 112.6 mt dw (248,215 lb dw). This new preferred alternative retains the non-blacknose SCS quota originally considered under Alternative D7, but also prohibits blacknose sharks in the GOM and adjusts the commercial quota to account for blacknose shark discards, so that the level of discards would not exceed the 2015 base annual blacknose shark quota of 2.0 mt dw. Because projections from the GOM bonnethead and Atlantic sharpnose shark stock assessments indicated that there was a 70 percent chance that both stocks could withstand harvest levels almost double current levels, NMFS believes there is a relatively low likelihood that the higher non-blacknose SCS TAC and commercial quota would negatively impact the Atlantic sharpnose, bonnethead, or finetooth shark stocks. Based on public comments and a review of landings data, NMFS found that bonnethead sharks represented only 6 percent of the combined Gulf of Mexico and Atlantic non-blacknose SCS landings in 2014, and therefore, limiting the quota based on bonnethead sharks is overly conservative. Finetooth sharks represented only 21 percent of combined Gulf of Mexico and Atlantic non-blacknose SCS landings in 2014, compared to Atlantic sharpnose representing 73 percent, indicating that the increased quota would have minimal impacts on finetooth sharks. Additionally, the higher non-blacknose SCS commercial quota under Alternative D8 would continue to allow fishermen to land these species at current levels, while maintaining the Atlantic sharpnose and bonnethead stocks at sustainable levels, without unnecessarily limiting the quota due to bonnethead sharks and limiting economic gains.

Additionally, while the commercial non-blacknose SCS quota in Alternative D8 would be lower than the quota considered under Alternative D7, removal of the quota linkage between blacknose and non-blacknose SCS (due to the prohibition of blacknose sharks) would increase the likelihood that fishermen in the GOM could harvest the entire non-blacknose SCS quota. In the Draft EA for Amendment 6, NMFS had stated that prohibiting all landings of blacknose sharks could possibly result in a loss of revenue for fishermen who land small amounts of blacknose sharks (as all interactions would be turned into discards). The socioeconomic benefits gained by access to a larger non-blacknose SCS quota, which would no longer be linked to the blacknose shark quota, would outweigh the potential revenue gained from being able to retain and land blacknose sharks. Fishermen in the GOM have also been requesting a prohibition on landing and retention of blacknose sharks since Amendment 3 to the 2006 Consolidated HMS FMP, when blacknose sharks were separated from the SCS management group and linked to the

newly created non-blacknose SCS management group. The small blacknose shark quota has resulted in early closure before the non-blacknose SCS quota could be harvested. However, in recent years, blacknose sharks have not been the limiting factor in initiating closure of the linked SCS management groups in the Gulf of Mexico; instead, it has been landings of non-blacknose SCS either exceeding or being projected to exceed 80 percent of the quota. This combined with the fact that fishermen have demonstrated an ability to largely avoid blacknose sharks with the use of gillnet gear, suggest that mortality of blacknose sharks under Alternative D8 could be lower than that under the current quota.

Modifying Commercial Vessel Upgrading Restrictions

Comment 17: Constituents, including the NCDMF, SCDNR, MAFMC, and FWC, supported NMFS's proposal to remove the commercial vessel upgrading restriction under Alternative E2.

Response: In the Draft EA for Amendment, NMFS preferred to remove the current upgrading restrictions for shark limited access permit holders. All the comments received supported this measure. Therefore, in part based on these comments, NMFS is removing the upgrading restrictions for shark limited access permit holders in the final rule.

Comment 18: NMFS received comments to further investigate the need for upgrading restrictions in other HMS permits.

Response: NMFS appreciates the comments and recognizes the need to potentially investigate whether it is appropriate to remove upgrading restrictions for the other commercial HMS permits. However, this request is outside of the scope of this current shark fishery rulemaking. NMFS may consider the need for upgrading restrictions in other HMS permits in a future rulemaking.

General Comments

Comment 19: NMFS received comments to stop all shark fishing.

Response: National Standard 1 requires NMFS to prevent overfishing while achieving, on a continuing basis, optimum yield from each fishery for the U.S. fishing industry. NMFS continually monitors the federal shark fisheries, and based on the best available scientific information, takes action needed to conserve and manage the fisheries. The primary goal of Amendment 6 is to implement management measures for the Atlantic shark fisheries that will achieve the objectives of increasing management flexibility to adapt to the changing needs of the shark fisheries, prevent overfishing while and achieving on a continuing basis optimum yield, and rebuilding overfished shark stocks.

Comment 20: NMFS received multiple comments referring to the SEDAR shark stock assessment for Atlantic sharpnose and bonnethead sharks. One commenter believes the SEDAR process is flawed and gravely over-estimates the shark population in the world. Other commenters focused on the list of future SEDAR stock assessments and the timeline of those

stock assessments. The NCDMF and other commenters requested that NMFS perform a SEDAR stock assessment on sandbar and dusky sharks as soon as possible. Another commenter would like NMFS to do another SEDAR stock assessment on the Gulf of Mexico blacktip shark and blacknose shark stocks.

Response: Most of the domestic shark stock assessments follow the SEDAR process. This process is also used by the South Atlantic, Gulf of Mexico, and Caribbean Fishery Management Councils and is designed to provide transparency throughout the stock assessment. Generally, SEDAR stock assessments are focused on available data, assessment models, and peer review. Sometimes these stages include face to face meetings; other times, the stages are conducted solely by webinar or conference calls. All meetings, webinars, and conference calls are open to the public. All reports from all stages of the process are available online athttp://sedarweb.org/ .

With regard to the timing of upcoming LCS and SCS SEDAR assessments, NMFS aims to conduct a number of shark stock assessments every year and to regularly reassess these stocks. The number of species that can be assessed each year depends on whether assessments are establishing baselines or are only updates to previous assessments. Assessments also depend on ensuring there are data available for a particular species. Tentatively, in addition to the shark assessments being conducted by ICCAT, NMFS is considering a dusky shark shark update assessment in 2016 and an update assessment for GOM blacktip sharks in 2017. NMFS has not yet decided on which species to assess in 2018.

Comment 21: NMFS received multiple comments on the status of the sandbar shark population. Commenters expressed concern that the impact of the increased sandbar shark population is now impacting other fisheries (e.g., amberjack, red snapper, grouper, tilefish). In addition, commenters believe that NMFS should implement a small retention limit (1-5 per trip) of sandbar sharks in the commercial fishery.

Response: Before the most recent assessment, sandbar sharks were determined to be overfished and experiencing overfishing in a 2005/2006 stock assessment. NMFS established a rebuilding plan for this species in Amendment 2 in July 2008 (NMFS 2008a). Under that rebuilding plan, NMFS determined that sandbar sharks would rebuild by the year 2070 with a total allowable catch of 220 mt ww (158.3 mt dw). Also, as part of that rebuilding plan, NMFS maintained the bottom longline mid-Atlantic shark closed area, prohibited the landing of sandbar sharks in the recreational fishery, and established a shark research fishery in the commercial fishery. Only fishermen participating in the limited shark research fishery can land sandbar sharks.

The SEDAR 21 sandbar shark stock assessment (2011) evaluated the status of the stock based on new landings and biological data, and projected future abundance under a variety of catch levels in the U.S. Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. The base model used in the SEDAR 21 sandbar shark assessment, an age-structured production model, indicated that the stock is overfished (spawning stock fecundity (SSF)2009/SSFMSY=0.66), but no longer experiencing overfishing (F2009/FMSY=0.62). According to the SEDAR 21, the sandbar shark stock status is improving, and the current rebuilding timeframe, with the 2008 TAC of 220 mt

ww, provides a greater than 70 percent probability of rebuilding by 2070. Having a 70 percent probability of rebuilding is the level of success for rebuilding of sharks that was established in the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks and carried over in the 2006 Consolidated HMS FMP. This stock assessment also indicates that reducing the TAC from the current 220 mt ww to 178 mt ww would provide a 70 percent chance of rebuilding the stock by the year 2066, a reduction of four years from the current rebuilding timeframe. Because the current TAC already provides a greater than 70 percent probability of rebuilding, and because overfishing is not occurring and the stock status is improving, in Amendment 5a to the 2006 Consolidated HMS FMP, NMFS maintained the current TAC and rebuilding plan, consistent with the Magnuson-Stevens Act requirements and the National Standard Guidelines.

In the Final EA for Amendment 6, NMFS considered the implementation of a sandbar shark commercial quota (Section 2.6, Alternative F) that would allow commercial fishermen to incidentally land a limited number of sandbar sharks outside the Atlantic shark research fishery. NMFS explored several different options of distributing the unused sandbar shark research quota. While some commenters requested a limited number of sandbar sharks, between 1 to 5 per trip, the available sandbar shark quota would only provide between 1 and 7 sandbar sharks per vessel *per year*, not per trip. Under all options considered, NMFS is concerned about monitoring and enforcing such small individual annual retention limits without the monitoring mechanisms that are possible under a catch share scenario. NMFS is also concerned that changes to the shark research fishery could have negative effects on the status of the sandbar shark stock, which has improved and stabilized since the inception of the research fishery in 2008. In addition, NMFS is concerned about potential identification issues and impacts to dusky sharks if fishermen were allowed to incidentally land sandbar sharks outside the shark research fishery. Thus, due to these concerns and the benefits to the sandbar and dusky sharks of current management measures, NMFS prefers to continue to only allow commercial sandbar shark landings as part of the shark research fishery. NMFS may reexamine the commercial sandbar shark quotas once a new stock assessment has been completed.

Comment 22: The NCDMF and FWC request that NMFS consider increasing the federal fishery closure trigger for the shark management groups from 80 percent to greater than 90 percent because the implementation of weekly reporting requirements for dealers and electronic reporting requirements has improved quota monitoring abilities, and increased the timeliness and accuracy of dealer reporting.

Response: NMFS' goal is to allow shark fishermen to harvest the full quota without exceeding it in order to maximize economic benefits to stakeholders while achieving conservation goals, including preventing overfishing. Based on past experiences with monitoring quotas for HMS species, NMFS believes that the 80-percent threshold works well, allowing for all or almost all of the quota to be harvested without exceeding the quota. As such NMFS expects that, in general, the quotas would be harvested between the time that the 80-percent threshold is reached and the time that the season actually closes. In addition, NMFS must also account for late reporting by shark dealers even with the improved electronic dealer system and provide a buffer to include landings received after the reporting deadline in an attempt to avoid overharvests. At the spring 2015 HMS Advisory Panel meeting, NMFS discussed some of the difficulties in monitoring the shark fishery quotas. Some of the difficulties

in monitoring shark fishery quotas include late dealer reporting, state exemptions allowing shark landings following federal closures of some shark management groups, and late receipt of paper-based trip ticket state dealer data. The reasons listed above have contributed in some cases to the overharvest of some of the shark management groups. As such, NMFS believes that closing the fishery at 90 percent of the harvested quota would not provide a sufficient buffer and could lead to overharvests. These overharvests could result in reduced quotas in the future since all overharvests would be accounted for when establishing subsequent shark fishing seasons and quotas.

FINAL FINDING OF NO SIGNIFICANT IMPACT

Finding of No Significant Impact for a Final Rule to Implement Amendment 6 to the 2006 Consolidated HMS FMP

The Highly Migratory Species (HMS) Management Division of the Office of Sustainable Fisheries submits the attached Environmental Assessment (EA) for Atlantic HMS fisheries for Secretarial review under the procedures of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This final EA analyzes the ecological, social, and economic impacts of 25 alternatives that consider management measures for the Atlantic commercial directed shark fisheries and was developed as an integrated document that includes a Regulatory Impact Review and Final Regulatory Flexibility Analysis. The responses in the Finding of No Significant Impact statement are supported by the analyses in the EA as well as in the other National Environmental Policy Act (NEPA) documents referenced. Copies of the EA/Regulatory Impact Review/Final Regulatory Flexibility Analysis are available at the following address:

Highly Migratory Species Management Division, F/SE1
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910
Phone: (301)-427-8503
or

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

This action would implement: (1) a maximum of 55 and a default of 45 large coastal shark (LCS) other than sandbar sharks per trip for shark directed limited access permit holders; (2) sub-regional quotas in the Gulf of Mexico (GOM) region at 88 degrees W. long. for blacktip, aggregated LCS and hammerhead sharks; (3) non-blacknose small coastal shark (SCS) total allowable catch (TACs) and commercial quotas in the Atlantic and GOM based on the results of the 2013 stock assessments for Atlantic sharpnose and bonnethead sharks; (4) a prohibition of blacknose shark landings in the entire GOM; (5) maintaining the non-blacknose SCS and blacknose shark quota linkage south of 34 degrees N. latitude in the Atlantic region and a prohibition of blacknose shark landings north of 34 degrees N. latitude; and (6) changes to the current upgrading restrictions for shark limited access permit holders.

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

action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

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

No. The action is not expected to jeopardize the sustainability of any of the species in the LCS or SCS complexes. This action would cause only minor changes to the current landings and fishing effort. It is likely that there would be no adverse effects due to establishing sub-regional quotas, as allocating sub-regional quotas would not impact current fishing effort on quota-limited management groups. Increased LCS retention limits are also not likely to jeopardize the sustainability of the LCS stocks, as the quotas for these species other than sandbar sharks are not being modified in this action and the sandbar shark quota is being reduced to account for any dead discards that may happen as a result of the increased LCS retention limit. Additionally, potential adjustments to the non-blacknose SCS quotas are not expected to have any adverse impacts to these stocks, as the revised quotas would be based upon the most recent stock assessment results. For these reasons, this action is not expected to jeopardize the sustainability of LCS or SCS.

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

No. The action is not expected to jeopardize the sustainability of any non-target fish species because overall fishing effort is not expected to increase and non-target species catches would still be limited within the applicable, previously analyzed total allowable catches for regulated species. These quotas were established consistent with NMFS' obligations to end overfishing and rebuild overfished stocks and are consistent with the results of recent stock assessments. When considering each of the alternatives in this action, NMFS explicitly considered the impact on non-target shark species and, as a result of this action, NMFS believes that the final measures are not likely to increase effort in the fishery and, therefore, are unlikely to increase impacts on non-target species.

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

No. Impacts to EFH due to actions in this final amendment would likely be neutral and have no adverse effects because the preferred alternatives would cause minor changes to the current landings and fishing effort. There would be no adverse effects due to the increased LCS retention limit or sub-regional quotas in the Gulf of Mexico, as allocating regional quotas within sub-regions would not impact current fishing effort on quota-limited management groups. Additionally, potential increases to the non-blacknose SCS quotas are not expected to have any impacts on EFH because NMFS does not expect the overall fishing effort to increase beyond the results of the stock assessments. In the 2006 Consolidated HMS FMP and Amendment 1 to the 2006 Consolidated HMS FMP, NMFS reviewed the various gear types with the potential to affect EFH and, based on the best information available at that time, NMFS determined that

shark fishing is not likely to adversely affect EFH. Gears commonly used in the Atlantic shark fisheries include bottom longline, gillnet, and rod and reel gear. Amendment 1 to the 2006 Consolidated HMS FMP analyzed EFH impacts resulting from these gear types. Amendment 1 found that bottom longline and gillnet interact with the sea floor in areas deemed EFH by the regional councils or NMFS, but that the impact did not warrant additional conservation measures. There is no new information on the effects shark fishing gear would have on EFH. Certain fishing gears can have negative effects on EFH, but Amendment 6 measures are not expected to change the fishing gears authorized relative to the status quo. Thus, there is no evidence to suggest that implementing any of the preferred alternatives in this amendment would adversely affect EFH.

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

No. The implementation of increased LCS retention limits, sub-regional LCS quotas in the Gulf of Mexico, modifications to SCS quotas, the prohibition of blacknose sharks, and the removal of upgrading restrictions for shark limited access permit holders are not likely to have substantial adverse impacts on public health and safety because the actions are not expected to change current fishery practices and behaviors. Therefore, no effects to public health and safety are anticipated from their implementation.

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

No. There would not be any additional negative ecological impacts to endangered or threatened species, marine mammals, or the critical habitat of these species beyond those impacts currently analyzed in the Biological Opinion for the Atlantic shark and smoothhound shark fisheries. The 2012 Shark BiOp issued under the ESA determined that the continued operation of the Atlantic shark fisheries is not likely to jeopardize the continued existence of Atlantic sturgeon, smalltooth sawfish, or any species of ESA-listed large whale or sea turtles. In order to be exempt from take prohibitions established by Section 9 of the ESA, NMFS must comply with the RPMs and TCs listed in the 2012 Shark BiOp. The final 2013 MMPA List of Fisheries classified the Atlantic Ocean, Caribbean, and Gulf of Mexico large PLL fishery as Category I (frequent serious injuries and mortalities incidental to commercial fishing) and the southeastern Atlantic shark gillnet fishery as Category II (occasional serious injuries and mortalities). The following Atlantic HMS fisheries are classified as Category III (remote likelihood or no known serious injuries or mortalities): Atlantic tuna purse seine; Gulf of Maine and Mid-Atlantic tuna, shark and swordfish, hook-and-line/harpoon; southeastern Mid-Atlantic and Gulf of Mexico shark BLL; and Mid-Atlantic, southeastern Atlantic, and Gulf of Mexico pelagic hook-and-line/harpoon fisheries. Commercial passenger fishing vessel (charter/headboat) fisheries are subject to Section 118 and are listed as a Category III fishery. This action would not significantly increase fishing effort rates, levels, or locations or fishing mortality. The preferred alternatives would not increase effort in the LCS fisheries because the LCS quotas are not being modified in this action (except for the sandbar quota, which is being reduced). The preferred alternative to increase the higher LCS retention rate has the potential to cause the quota to be caught faster and to bring new fishermen into the fishery. Even if that does occur, NMFS does not expect that to

significantly change fishing effort rates or levels, since NMFS has the ability to take inseason actions to balance fishing rates. The preferred alternatives modifying the SCS quotas might increase overall fishing effort, but the quotas are based on the most recent stock assessments for Atlantic sharpnose and bonnethead sharks, which demonstrate that the quotas provide for sustainable harvest of these species.

In addition, final management measures are not expected to alter interactions with protected species. NMFS issued a final determination to list four separate DPSs of the scalloped hammerhead shark (*Sphyrna lewini*) under the ESA (79 FR 38214; July 3, 2014). The DPSs are Central and Southwest Atlantic, Indo-West Pacific, Eastern Atlantic, and Eastern Pacific. The Eastern Atlantic and Eastern Pacific DPSs are listed as endangered, and the Central and Southwest Atlantic and the Indo-West Pacific DPSs are listed as threatened. NMFS determined that each of the DPSs was significant and distinct based on genetic, behavioral, and physical factors, and in some cases, differences in the control of exploitation of the species across international boundaries. On August 27, 2014, NMFS published a final rule to list the following 20 coral species as threatened: five in the Caribbean, including Florida and the Gulf of Mexico (*Dendrogyra cylindrus*, *Orbicella annularis*, *Orbicella faveolata*, *Orbicella franksi*, and *Mycetophyllia ferox*); and 15 in the Indo-Pacific (*Acropora globiceps*, *Acropora jacquelineae*, *Acropora lokani*, *Acropora pharaonis*, *Acropora retusa*, *Acropora rudis*, *Acropora speciosa*, *Acropora tenella*, *Anacropora spinosa*, *Euphyllia paradivisa*, *Isopora crateriformis*, *Montipora australiensis*, *Pavona diffluens*, *Porites napopora*, and *Seriatopora aculeata*). Two Caribbean species currently listed as threatened (*Acropora cervicornis* and *Acropora palmata*) still warranted listing as threatened. The Central and Southwest Atlantic DPS of scalloped hammerhead shark and the seven Caribbean species of coral occur within the boundary of Atlantic HMS commercial and recreational fisheries. On October 30, 2014, based on the new listings, NMFS requested reinitiation of ESA section 7 consultation on the continued operation and use of HMS gear types (bandit gear, bottom longline, buoy gear, handline, and rod and reel) and associated fisheries management actions in the 2006 Consolidated Atlantic HMS FMP and its amendments. NMFS also provided supplemental information regarding the newly-listed species to be used in an ongoing consultation for the pelagic longline fishery. NMFS has preliminarily determined that the ongoing operation of the fisheries is consistent with existing biological opinions and is not likely to jeopardize the continued existence of the Central and Southwest DPS of scalloped hammerhead sharks or the threatened coral species or result in an irreversible or irretrievable commitment of resources which would foreclose formulation or implementation of any reasonable and prudent alternative measures for these species.

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

No. The preferred alternatives are not expected to have a substantial impact on biodiversity and ecosystem function within the affected area, because the final action is not expected to increase fishing effort or fishing mortality or change fishing practices, and/or interactions with non-target and endangered or threatened species. Thus, the final action as a whole is not likely to have substantial adverse impacts on biodiversity and/or ecosystem function within the Atlantic Ocean or Gulf of Mexico.

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

No. There are no anticipated significant natural or physical environmental effects associated with the final action and no significant social or economic impacts interrelated with natural or physical environmental effects that would result from the action. The ecological impacts of increasing retention limits for LCS, establishing sub-regional quotas for LCS in the Gulf of Mexico, adjusting the non-blacknose SCS quotas based on the most recent stock assessment, revising current quota linkages, and removing the current upgrade restrictions would likely be neutral. These final measures would likely result in either minor or moderate beneficial socioeconomic impacts because it would allow fishermen to land more sharks per trip within the current quotas, allow for flexibility in seasonal openings which would allow fishermen to maximize their fishing effort during periods when sharks migrate into local waters or when regional time area closures are not in place. However, NMFS does not expect any of these impacts to be significant since the final action is not expected to increase overall fishing mortality or fishing effort beyond the results of the stock assessments.

8. Are the proposed action's effects on the quality of the human environment expected to be highly controversial?

No. Amendment 6 has been developed over the course of more than four years, and NMFS has informed the public and/or accepted public comments at several times during the development process, including through an ANPR in 2010, a NOI and white paper in 2011, a predraft to Amendment 6 in April 2014, a NOI in May 2014 and the proposed rule published on January 20, 2015 (80 FR 2648) (see Section 1.1). NMFS has taken those comments into account in developing this final action. In particular, based on public comments, NMFS has decided not to move forward with catch shares for the Atlantic shark fisheries at this time and instead is considering management measures that can be implemented in the short-term that may better address the current issues facing these fisheries, while potentially economically benefiting the Atlantic shark fishery participants. Since the public has been involved in the development of this final action and it has been modified based on public comments, the effects of this action on the human environment are not expected to be highly controversial. However, the term "controversial" does not refer to the mere existence of opposition to, or interest in a proposed action; rather "controversial" refers to cases where a substantial dispute exists as to the size, nature, or effect of the major federal action. Such substantial dispute does not exist here, as the size, nature, and effect of the final actions are well-defined by the preferred alternatives.

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

No. This action would not result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas because fishing effort would occur in open areas of the Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea that do not contain such unique areas. In addition, the action

area does not contain any park land, prime farmlands, wetlands, or wild and scenic rivers, so there could be no impacts to these areas.

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

No. Effects on the human environment would be similar to those effects analyzed in similar shark actions since 1999, some of which have been considered in the Final Environmental Impact Statement (FEIS) prepared for the 2006 Consolidated HMS FMP as well as the EISs for the Amendments to the 2006 Consolidated HMS FMP. None of the previous actions resulted in highly uncertain effects or unique or unknown risks. This action considers implementation of increased LCS trip limits, sub-regional quotas for LCS in the Gulf of Mexico region, modifications to SCS quota linkages, non-blacknose SCS TACs and quotas and removal of upgrading restrictions for shark limited access permit holders, none of which involve unique or unknown risks.

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

No. NMFS does not anticipate there to be any significant cumulative ecological, economic, or social impacts. Overall, the preferred alternatives in this rulemaking for the LCS and SCS fisheries would have neutral cumulative ecological impacts, because they would have no significant impact on current landings or fishing effort or behavior. The neutral ecological impacts associated with the final actions make these actions favorable, particularly given their associated economic benefits to shark fishermen. The final actions would have no significant impact on current fishing levels, fishing mortality, bycatch, or bycatch rates. Additionally, there would be no major impacts on EFH, and the preferred actions would both maintain sustainable shark fisheries and maintain the status quo for species currently under a rebuilding plan. Overall, the preferred alternatives in this action for LCS and SCS fisheries have a combination of minor to moderate beneficial socioeconomic impacts and would likely increase the efficiency in these fisheries, increase equity across all shark fishermen and regions, and increase economic viability for the shark fishery participants by increasing the likelihood of obtaining optimum yield from the LCS and SCS fisheries. This action is a continuation of the 2006 Consolidated HMS FMP and its amendments, which have been considered in this document. The environmental impacts of those prior actions were evaluated at the time of the actions, and the combination of those impacts and impacts from Amendment 6 are not expected to result in cumulatively significant impacts.

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

No. The final actions would occur in the inshore and offshore waters of the Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea, and would not occur in any areas listed or eligible for listing in the National Register of Historic Places, and would not cause loss or destruction of significant

scientific, cultural, or historical resources because there are no significant scientific, cultural, or historic resources within the action area.

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

No. The final action is not expected to result in any change in fishing patterns or behaviors to those previously analyzed in the 2006 Consolidated HMS FMP. Most vessels in the Atlantic shark fisheries are small vessels with limited range and hold capacity and do not travel between ecologically different bodies of water or exchange ballast water. Thus, they do not contribute to the introduction or spread of non-indigenous species.

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

No. The purpose of this rulemaking is to consider management measures for the Atlantic shark fisheries that can be implemented in the short-term that may better address the current issues facing these fisheries, while potentially economically benefiting the Atlantic shark fishery participants. It is NMFS' goal to implement management measures that will increase management flexibility to adapt to the changing needs of the Atlantic shark fisheries, prevent overfishing while achieving on a continuing basis optimum yield, and rebuild overfished shark stocks. Therefore, this action does not set a precedent for future action or represent a formal policy direction.

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

No. The action would be consistent with the Magnuson-Stevens Act and the HMS regulations at 50 CFR Part 635. NMFS has determined that these proposed measures are consistent to the maximum extent practicable with the enforceable policies of those coastal states in the Atlantic, Gulf of Mexico, and Caribbean that have approved coastal zone management programs. Letters were sent to those states requesting their concurrence when the proposed rule filed with the Federal Register. Eleven states replied within the response time period that the proposed regulations were consistent with the enforceable policies of the coastal management programs (Alabama, Connecticut, Delaware, Florida, Louisiana, Mississippi, North Carolina, New Hampshire, New Jersey, Rhode Island, Virginia). Another nine states did not response (Maine, Maryland, Massachusetts, South Carolina, Texas, New York, Georgia, U.S. Virgin Islands, and Puerto Rico) within the response time period nor did they request an extension in comment period; therefore, we presume their concurrence. The final action would not be expected to violate any Federal State or local law or requirements imposed for the protection of the environment.

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

No. The final action is not expected to result in cumulative adverse effects that could have a substantial effect on target species or non-target species. The final actions would not result in an increase in overall fishing effort in the Atlantic shark fisheries and therefore, would not have substantial effect on the target species. With regard to non-target species, NMFS anticipates that fishermen in the Atlantic shark fisheries would not have adverse impacts to ESA-listed species beyond those impacts analyzed in the 2012 Shark BiOp, which concluded that these fisheries would not jeopardize any ESA-listed species. Following the listing of the Central and Southwest Atlantic DPS of scalloped hammerhead and seven coral species in the Caribbean, NMFS requested reinitiation of ESA section 7 consultation for the 2006 Consolidated Atlantic HMS FMP activities as amended and as previously consulted on in the 2001 Atlantic HMS, the 2012 directed shark and smoothhound fishery, and the 2004 PLL biological opinions, to assess potential adverse effects of certain gear types on the Central and Southwest DPS of scalloped hammerhead shark and the seven coral species. NMFS recently reinitiated consultation for PLL gear and associated fishery management actions to address new information on levels of leatherback and loggerhead sea turtle take, including mortality rates and population status and the scalloped hammerhead shark DPS listings. The biological evaluation provided supplemental information for the reinitiated consultation on PLL gear and to support the request for ESA section 7 consultation for all other HMS gear types and the potential effects on the Central and Southwest DPS of scalloped hammerhead shark and threatened coral species.

DETERMINATION

In view of the information presented in this document and the analysis contained in the attached EA that was prepared to address permit stacking, LCS retention limits, LCS and SCS sub-regional quotas in the Atlantic and Gulf of Mexico regions, SCS quota linkages, the non-blacknose SCS quotas, and the upgrading restrictions for directed shark limited access permit holders, it is hereby determined that this action would not significantly impact the quality of the human environment as described above and in the EA. In addition, all impacts to potentially affected areas, including national, regional, and local, have been addressed to reach the conclusion of no significant impact. Accordingly, preparation of an EIS for this action is not necessary.

Alan D. Risenhoover
Director, Office of Sustainable Fisheries, NOAA

JUL 28 2015
Date