



NOV 18 2010

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act (NEPA), an environmental review has been performed on the following action.

TITLE: FINAL Environmental Assessment (EA) to Establish Quotas for the 2011 Commercial Fishing Season and Adaptive Management Measures for the Atlantic Shark Fishery

LOCATION: Atlantic Ocean, Gulf of Mexico, and Caribbean Sea

SUMMARY: The 2011 Atlantic Commercial Shark Season Specifications and Adaptive Management Measures final actions would adjust quotas for the 2011 fishing season for the different Atlantic shark species based on any over- and/or underharvests experienced during the 2009 and 2010 Atlantic commercial shark fishing seasons and announce the start of the fishing season for all Atlantic shark fisheries including the sandbar shark research fishery. The final actions would also implement adaptive management measures that would provide NMFS with the flexibility to delay the start of the shark fishing seasons through the annual specifications process and adjust trip limits through inseason actions to provide expanded shark fishing opportunities in all states in regions of the Atlantic, Gulf of Mexico, and Caribbean Sea. Background information on the issues and a description of the alternatives being considered for this rulemaking are described in detail in this environmental assessment.

**RESPONSIBLE
OFFICIAL:**

Emily Menashes
Acting Director
Office of Sustainable Fisheries
National Oceanic and Atmospheric Administration
1315 East West Highway, Silver Spring, MD 20910
301-713-2334
301-713-0596

The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact (FONSI), including the environmental assessment, is enclosed for your information.



Although NOAA is not soliciting comments on this completed EA/FONSI we will consider any comments submitted that would assist us in preparing future NEPA documents. Please submit any written comments to the Responsible Official named above.

Sincerely,

A handwritten signature in black ink, appearing to read "P. N. Doremus". The signature is fluid and cursive, with a large initial "P" and a long horizontal stroke.

Paul N. Doremus, Ph. D.
NOAA NEPA Coordinator

Enclosure

FINAL
ENVIRONMENTAL ASSESSMENT,
FINAL REGULATORY IMPACT REVIEW, AND
FINAL REGULATORY FLEXIBILITY ANALYSIS
FOR A
FINAL RULE
TO ESTABLISH QUOTAS FOR THE 2011 COMMERCIAL FISHING SEASON
AND ADAPTIVE MANAGEMENT MEASURES FOR THE
ATLANTIC SHARK FISHERY

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

December 2010

Final Rule to Establish Quotas for the 2011 Commercial Fishing Season and Adaptive Management Measures for the Atlantic Shark Fishery

Actions: Establish the 2011 quota levels and adaptive management measures for the Atlantic commercial large coastal shark (LCS), blacknose shark, non-blacknose small coastal shark (SCS), and pelagic shark fisheries.

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

Lead Agency: National Marine Fisheries Service

For Further Information: Guý DuBeck
Highly Migratory Species (HMS) Management Division
NOAA/NMFS
1315 East-West Highway: F/SF1
Silver Spring, MD 20910
(301) 713-2347

Abstract:

The 2011 Atlantic commercial shark season specifications adjusts quotas for the 2011 fishing season for the Atlantic shark fisheries based on any over- and/or underharvests during the 2009 and 2010 Atlantic commercial shark fishing seasons and announces the start of the fishing season for all Atlantic shark fisheries, including the shark research fishery. This rulemaking does not affect the annual base quotas or the methods for calculating adjusted quotas established in Amendments 2 and 3 to the 2006 Consolidated Highly Migratory Species (HMS) Fishery Management Plan (FMP) (73 FR 35778, June 24, 2008; corrected at 73 FR 40658, July 15, 2008; 75 FR 30484, June 1, 2010). In addition to establishing the 2011 quotas, in this final action, NMFS is also implementing criteria to add flexibility to shark management to allow for delays to the start of the different shark species/complex fishing seasons each year through the annual specifications process as well as to allow inseason actions to make adjustments to the shark trip limits, as necessary, to extend the fishing season. The included Environmental Assessment (EA) tiers from and incorporates by reference the pre-existing Amendment 2 to the 2006 Consolidated Highly Migratory Species HMS FMP (Amendment 2) and Amendment 3 to the 2006 Consolidated Highly Migratory Species HMS FMP (Amendment 3), as well as the scope and effect of activities analyzed in the April 2008 FEIS for Amendment 2 and the March 2010 FEIS for Amendment 3. These measures are meant to provide, to the extent practicable, the furtherance of equitable fishing opportunities for commercial shark fishermen in all regions and areas while also considering the ecological needs of the different species. In addition, having management flexibility would help accommodate any necessary adjustments to the fishery, such as adjusting the opening of seasons, in light of unanticipated events, such as the oil spill in the Gulf of Mexico or inclement weather.

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Background

In Amendment 2 to the 2006 Consolidated HMS Fishery Management Plan (FMP) (73 FR 35778, June 24, 2008; corrected at 73 FR 40658, July 15, 2008) (Amendment 2), NMFS changed the fishing seasons from trimester seasons to one season, which opens upon the effective date of the shark fishing season specifications' final rule, usually at the beginning of January of each year; established base quotas for sandbar sharks, non-sandbar LCS, and pelagic sharks; and split the non-sandbar LCS quota between the Atlantic and Gulf of Mexico regions. In order to prevent quota overharvests, the commercial fishing seasons for each shark complex/species close when 80 percent of the quota has been filled or is projected to be filled. It was the intent of Amendment 2, in order to rebuild overfished shark stocks, prevent overfishing, and stabilize shark markets, that the reduced quotas and retention limits for non-sandbar LCS would translate into an incidental fishery that would be open all year. A year-round commercial fishery would give the northern fishery participants an opportunity to catch a portion of the quota during the summer months when the sharks migrate northward and allow all participants to be able to land sharks incidentally as they target species in other fisheries. However, a year-round non-sandbar LCS fishery did not occur in 2009 and 2010, as the fishery reached the quota before the end of the year as described in more detail below.

In 2009, all the Atlantic commercial shark fisheries opened on January 23, 2009 (73 FR 79005, December 24, 2008). On June 6, 2009, the non-sandbar LCS fishery closed in the Gulf of Mexico region (74 FR 26803, June 4, 2009), and on July 1, 2009 (74 FR 30479, June 26, 2009), both the non-sandbar LCS fishery in the Atlantic region and the non-sandbar LCS research fishery closed. In the Atlantic region, due to the July 1, 2009, closing of the non-sandbar LCS fishery, the mid-Atlantic bottom longline (BLL) closure in federal waters from January 1 - July 31, the state water closure in Virginia, Maryland, Delaware and New Jersey from May 15 - July 15, and the limited availability of non-sandbar LCS in northern Atlantic waters at the beginning of the year (due to shark migratory patterns), the fishery participants from North Carolina north did not have a non-sandbar LCS fishing season in 2009. Thus, in 2009, NMFS received requests from constituents to consider delaying the 2010 non-sandbar LCS fishing season until July in the Atlantic to allow for more equitable shark fishing opportunities in the North Atlantic.

Based on public comment, NMFS delayed the opening of the 2010 non-sandbar LCS in the Atlantic region until July 15, 2010, allowing the furtherance of more equitable shark fishing opportunities as intended by Amendment 2. NMFS received comments from fishermen indicating that they did not want a delay in the 2010 opening of the Gulf of Mexico non-sandbar LCS season. As a result, NMFS opened the Gulf of Mexico region on February 4, 2010 (75 FR 250), the effective date of the final rule for the shark specifications. The Gulf of Mexico regional quota was taken faster than in previous years, and the fishery closed six weeks later on March 17, 2010 (75 FR 12700). Many fishery participants in the region could not harvest the 2010 Gulf of Mexico non-sandbar LCS quota due to the closure and because of inclement weather in portions of the Gulf of Mexico.

On May 11, 2010, NMFS issued an emergency rule to close portions of the Gulf of Mexico Exclusive Economic Zone (EEZ) to all fishing, in order to respond to the evolving nature of the Deepwater Horizon/BP oil spill in the Gulf of Mexico (75 FR 27217). Thus, a large portion of the fishing grounds for blacknose and non-blacknose SCS in the Gulf of Mexico, whose commercial fishing season opened on June 1, 2010, were closed for at least a portion of the commercial fishing season in 2010, and the status of some of the fishing grounds remain closed as of the drafting of this document.

NMFS conducted public outreach on this action, including four public hearings. The draft EA was released with the proposed rule for public comment on September 20, 2010 (75 FR 57240). The comment period closed on October 20, 2010. NMFS received 24 written comments and numerous comments at the public hearings regarding the proposed actions. These comments were taken into consideration upon finalizing the management measures for in this final EA and associated final rule. A summary of the key issues raised during the comment period and the Agency's response to comments is provided in the final rule for this action and the written comments can be found at www.regulations.gov.

Based on the shortened, realized fishing seasons and unforeseen events that have affected shark fishing opportunities, and public comment, the preferred management measures would allow NMFS more flexibility in extending fishing seasons and ensuring that participants from all areas within a region have an opportunity to harvest a portion of the available shark quotas in the Atlantic and Gulf of Mexico regions. These measures include ways to delay the opening of the different shark fisheries through the annual specifications process as well as allowing inseason actions to adjust shark trip limits to provide, to the extent practicable, furtherance of equitable fishing opportunities for commercial shark fishermen in all regions and areas while also considering the ecological needs of the different species.

1.2 Need

As previously described, NMFS determined that under existing measures the commercial shark fishery has experienced shorter fishing seasons as previously anticipated. Thus, NMFS considered two adaptive management approaches in this final EA for the shark fishery in the short-term (*i.e.*, by the start of the 2011 fishing season). One approach to the final adaptive management measures would maintain the status quo approach to trip limits (33 non-sandbar LCS/trip) as well as alternatives that allow flexibility regarding trip limits in order to extend fishing opportunities year-round. This approach would either maintain the current 33 non-sandbar LCS trip limits (sub-alternative 1A) or consider reductions in the trip limits to help ensure the fishing season extends throughout the year (sub-alternatives 1B and 1C)..

A second approach would allow flexibility in the opening of the season for Atlantic shark fisheries through the annual specifications process and inseason actions to adjust shark trip limits in either region to provide expanded opportunities for constituents across the fishery, as was the intent of Amendment 2. In addition, having such flexibility would help NMFS respond throughout the management region to any future unanticipated large and small scale events. Such unanticipated events could include large scale issues, such as the Deepwater Horizon/BP oil spill, or small scale issues, such as migration shifts for sharks due to warmer or colder water,

or inclement weather impacting fishermen. For these reasons, NMFS has identified the following needs for this action:

- To provide all fishery participants with opportunities, to the extent practicable, to harvest the Atlantic shark fishery quotas in the Atlantic and Gulf of Mexico regions; and,
- To develop flexibility measures to adjust the opening of the season for Atlantic shark fisheries to help accommodate, to the extent practicable, future unanticipated events in the Atlantic and Gulf of Mexico regions.

1.2 Need for Action and Objectives

The actions considered in this final EA and associated rule are intended to achieve the following purposes and objectives in a manner that minimizes, to the greatest extent possible, adverse environmental and socioeconomic impacts on the affected fisheries. Consistent with the 2006 Consolidated HMS FMP and its amendments, the Magnuson-Stevens-Act, and other relevant federal laws and the corresponding need set forth above, the specific objectives of this action are to:

- Consider measures to extend the shark fishing seasons according to Amendment 2, which intended to establish an incidental non-sandbar LCS fishery that lasted year-round. This would include the possible reduction in shark trip limits in the Gulf of Mexico and Atlantic regions;
- Consider a new management structure for the Atlantic shark fisheries that would preserve the directed nature of the fishery (*i.e.*, allowing fishermen to target sharks). This would include adjusting the opening of the fishing season each year to allow for flexibility in the fishery as well as developing criteria for inseason actions to adjust shark trip limits, as necessary;
- Provide fishery participants with opportunities to harvest the Atlantic shark fisheries' quotas in the Atlantic and Gulf of Mexico; and,
- Develop flexibility measures in the Atlantic shark fisheries management to accommodate unforeseen events, such as the Deepwater Horizon/BP oil spill or inclement weather.

2.0 SUMMARY OF ALTERNATIVES

Under Amendment 2, NMFS anticipated that shark fishermen would no longer target non-sandbar LCS due to a reduction in the non-sandbar LCS trip limit and prohibition of sandbar sharks outside of a shark research fishery. Historically, sandbar sharks accounted for the majority of the sharks caught in the directed LCS fishery. As such, as described in Amendment 2, NMFS felt that prohibiting sandbar sharks in combination with low retention limits for non-sandbar LCS would reduce the LCS fishery to incidental levels. NMFS expected this incidental LCS fishery would last year-round and provide all participants the opportunity to catch part of the non-sandbar LCS quota as they targeted other species in other fisheries. If fishermen retained sharks in this manner, NMFS estimated that under the existing regulations the shark season could be open year-round.

Since implementing Amendment 2, the quota for some of the regional shark species groups has lasted only for a short period of time instead of year-round. For example, in the Atlantic region in 2009, the non-sandbar LCS fishery lasted for approximately six months, and many constituents in the northern portion of the Atlantic region did not have an opportunity to harvest sharks, due to seasonal availability. As a result, in the annual specifications for 2010, NMFS opened the non-sandbar LCS fishery on July 15, 2010. Such a delay was anticipated to allow shark fishing opportunities for all fishermen in the Atlantic region. As another example, in 2010, the non-sandbar LCS for the Gulf of Mexico region opened on February 5, 2010, and the quota was taken within six weeks, which did not meet NMFS' or constituents' expectations. As described at the May 2010 HMS Advisory Panel meeting, to address these and other issues in the fishery, NMFS has begun to look at the shark fishery as a whole and how management can be more proactive and flexible. This current rulemaking looks at measures that can be taken to address some of the issues in the short term while the larger rulemaking looks at solutions that would occur in the long term.

This section provides a summary of the alternatives considered in this current rulemaking. This final EA considers two approaches for the shark fishery in the short-term (*i.e.*, by the start of the 2011 fishing season). One approach to the adaptive management measures would be to maintain the status quo approach to trip limits (33 non-sandbar LCS/trip) as well as consider alternatives to allow flexibility in changing trip limits in order to extend fishing opportunities year-round. This approach would either maintain the current 33 non-sandbar LCS trip limits (sub-alternative 1A) or consider reductions in the trip limits to help ensure the fishing season extends throughout the year (sub-alternatives 1B and 1C).

A second approach would allow flexibility in the opening of the seasons for the different Atlantic shark fisheries through the annual specifications process and inseason actions to adjust shark trip limits in either region to provide expanded opportunities for constituents across the fishery to harvest shark quotas. Having such flexibility would help NMFS respond throughout the management region to any future unanticipated large and small scale events. Such unanticipated events could include large scale issues, such as the Deepwater Horizon/BP oil spill, or small scale issues, such as shark migration shifts due to warmer or colder water or inclement weather.

Both approaches were analyzed in Amendment 2; however, as described in Amendment

2, NMFS did not select the second approach at that time because NMFS felt that fishermen would fish for non-sandbar LCS in an incidental manner only, and that the fishing season would thus extend throughout the year. As described earlier, however, after Amendment 2, fishermen continued to target non-sandbar LCS, even with the lowered allowable retention limits.

Neither approach would alter the objectives in the 2006 Consolidated HMS FMP or its amendments. Rather, these two approaches look at different ways of maintaining the shark fishery given rebuilding plans and other management measures, such as time/area closures, that were designed to rebuild overfished stocks, prevent overfishing, and provide opportunities to fish for some shark species, as appropriate. Neither approach would change the overall quota, the rebuilding plan, time/area closures, or other management measures other than the retention limits and opening dates. Only the opening dates and retention limits would change under these approaches in order to assure that the goals of Amendment 2 are met. Thus, the main differences between the approaches are how fast and at what time of year the quota will be taken. In considering these approaches, NMFS analyzed several alternatives in this EA. Additional information on environmental and socioeconomic impacts is provided in Chapters 4, 5, 6, 7, and 8 of this document.

Alternative 1 Revisit static trip limits (Approach 1)

Regulations implementing Amendment 2 were intended to allow a year-round fishery for non-sandbar LCS, assuming participants fished for non-sandbar LCS in an incidental fashion while targeting other species. However, the fishing season in 2009 in both the Atlantic and Gulf of Mexico regions, and in 2010 in the Gulf of Mexico region, remained open for only a short period each year. Having the season close before the end of the fishing year resulted in dead shark discards in the non-shark fisheries and precluded fishermen in certain areas, such as the North Atlantic, from participating in the non-sandbar LCS fishery as the quota was achieved before sharks migrated to that area. Therefore, in the following sub-alternatives, NMFS explores ways to add flexibility to the trip limit approach to help ensure consistency with Amendment 2's intent to maintain a year-round incidental fishery for non-sandbar LCS.

Sub-alternative 1A: No Action. Maintain the current vessel trip regulations for non-sandbar LCS

Under sub-alternative 1A, the No Action alternative, NMFS would maintain the existing regulations for the current trip limit established under Amendment 2¹. All other regulations regarding quota management would remain the same.

¹ Under Amendment 2, the trip limit for directed shark permit holders was reduced from 4,000 lb dw LCS to 33 non-sandbar LCS and 3 non-sandbar LCS for incidental permit holders through December 31, 2012. On January 1, 2013, the non-sandbar LCS quotas in the Atlantic and Gulf of Mexico will revert to the base quotas (188.3 mt dw and 439.5 mt dw, respectively) and the trip limit will increase to 36 non-sandbar LCS per trip for directed shark permit holders.

Sub-alternative 1B: Establish a new non-sandbar LCS trip limit that would extend the fishing season in the Gulf of Mexico region

Sub-alternative 1B would allow NMFS to modify the non-sandbar LCS trip limit, as needed, to extend the fishing season in the Gulf of Mexico region if the available quota has been harvested at a rate that would not ensure a reasonable season length in the past. The trip limit could be reduced from the current trip limit established under Amendment 2 down to zero non-sandbar LCS per trip at the beginning of the shark fishing season, which would remain static for the remainder of the fishing season. NMFS' decision to reduce the trip limit, and to what extent, would be based on the criteria under sub-alternative 2B.

Sub-alternative 1C: Establish a new non-sandbar LCS trip limit that would extend the fishing season in the Atlantic region

Sub-alternative 1C would allow NMFS to modify the non-sandbar LCS trip limit, as needed, to extend the fishing season in the Atlantic region if the available quota has been harvested at a rate that would not allow for a reasonable season length in the past. The trip limit could be reduced from the current trip limit established under Amendment 2 down to zero non-sandbar LCS per trip at the beginning of the shark fishing season, which would remain static for the remainder of the fishing season. NMFS' decision to reduce the trip limit, and to what extent, would be based on the criteria under sub-alternative 2B.

Alternative 2 Revisit season opening and closing dates and flexible trip limits (*Preferred Alternative; Approach 2*)

Trip limits implemented in Amendment 2 were intended to allow a year-round fishery for non-sandbar LCS. However, this has not occurred for the 2009 and 2010 fishing seasons; thus, NMFS is exploring ways to extend the shark fishing season and provide all fishery participants with opportunities, to the extent practicable, to harvest the quotas. NMFS considered the following alternatives to help achieve these objectives.

Sub-alternative 2A: Establish new opening dates for the shark fisheries based on certain criteria and process (*Preferred Alternative*)

Sub-alternative 2A would create new criteria and a process for selecting the opening dates of the shark fisheries through the annual specifications process. This alternative anticipates that the quotas for some fisheries, such as the non-sandbar LCS fisheries, would not last the entire fishing year. The goal of this alternative is to open the fisheries at times that are deemed to provide the most benefits for most of the fishermen, to the extent practicable, while also considering the ecological needs of the different species. NMFS would establish the yearly shark quotas and announce the opening of the fishing season through annual rulemaking with notice and public comment at the beginning of each fishing season.

In establishing opening dates, NMFS would consider the following criteria and other relevant factors:

1. The available annual quotas for the current fishing season for the different species/complexes based on any over- and/or underharvests experienced during the previous commercial shark fishing seasons;
2. Estimated season length based on available quota(s) and average weekly catch rates of different species/complexes in the Atlantic and Gulf of Mexico regions from the previous years;
3. Length of the season for the different species/complexes in the previous years and whether fishermen were able to participate in the fishery in those years;
4. Variations in seasonal distribution, abundance, or migratory patterns of the different species/complexes based on scientific and fishery based information;
5. Effects of catch rates in one part of a region precluding vessels in another part of that region from having a reasonable opportunity to harvest a portion of the different species/complexes quotas;
6. Effects of the adjustment on accomplishing the objectives of the 2006 Consolidated HMS FMP and its amendments; and/or,
7. Effects of a delayed opening with regard to fishing opportunities in other fisheries.

Sub-alternative 2B: Establish inseason trip limit adjustment criteria for the Atlantic shark fishery (*Preferred Alternative*)

This alternative would provide NMFS with the ability to adjust the trip limits via inseason actions based on certain criteria and process. This alternative anticipates that the quotas for some fisheries, such as the non-sandbar LCS fisheries, would not last the entire fishing year and builds in flexibility to try to extend the availability of the quota. The goal of the alternative is to lengthen the season to provide equitable fishing opportunities for commercial shark fishermen in all regions and areas while also considering the ecological needs of the different species. NMFS would modify the trip limit according to an inseason action with five days' advance notice from filing of such a change.

Sub-alternative 2B would establish certain criteria and a process that would allow NMFS to adjust the shark trip limits in order to mitigate complications that arise from the quota being harvested before fishermen in different areas of the fishery have a reasonable opportunity to harvest a portion of the quota, as evidenced in the non-sandbar LCS fishery for the Atlantic region in 2009 and the Gulf of Mexico region in 2010.

In adjusting the trip limit(s), NMFS would consider the following criteria and other relevant factors:

1. The amount of remaining shark quota in the relevant area or region, to date, based on dealer reports;
2. The catch rates of the relevant shark species/complexes, to date, based on dealer reports;
3. Estimated date of fishery closure based on when the landings are projected to reach 80 percent of the quota given the realized catch rates;
4. Effects of the adjustment on accomplishing the objectives of the 2006 Consolidated HMS FMP and its amendments;
5. Variations in seasonal distribution, abundance, or migratory patterns of the relevant shark species based on scientific and fishery-based knowledge; and/or,
6. Effects of catch rates in one part of a region precluding vessels in another part of that region from having a reasonable opportunity to harvest a portion of the relevant quota.

3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

NMFS is incorporating by reference Chapter 3 from the Final Amendment 3 to the 2006 Consolidated HMS FMP (Amendment 3), which describes the affected environment and provides a view of the current condition of the fishery, the biological status of shark stocks, the marine ecosystems in the fishery management unit, the social and economic condition of the fishing interests, and fishing communities.

More specifically, Chapter 3 of the Final Amendment 3 gives a brief history of shark management up through Amendment 3, which is the latest action to occur in the shark fisheries. It also provides the most up-to-date overview of state regulations for sharks, and includes the most recent status of the different shark stocks and description of the different species life histories and biology. In addition, it includes a brief overview of the distribution of sharks and provides a fishery data update up through 2008, including an overview of the different shark fisheries (bottom longline, gillnet, pelagic longline, and recreational fishing), and landings through 2008. The fishery data update also includes an overview of bycatch in the different fisheries based on 2008 observer reports.

Chapter 3 of the Final Amendment 3 also gives an overview of HMS permits and tournaments. The number and distribution of permits reported in Chapter 9 of this draft EA are based on the number of permits reported in Chapter 3 of the Final Amendment 3. In addition, Chapter 3 of the Final Amendment 3 gives an overview of commercial shark prices and revenues in the commercial and recreational shark fisheries through 2008. Chapter 3 also provides a community and social update and update on international trade and fish processing for the shark fisheries. Finally, Chapter 3 of the Final Amendment 3 provides an overview of bycatch, incidental catch, and interactions with protected resources in the different shark fisheries and outlines the standardized bycatch reporting methodology (SBRM) for NMFS. This last section also provides a description of the effectiveness of the existing time/area closures on reduction of bycatch. Please refer to Chapter 3 of the Final Amendment 3 for more detail regarding any of these topics.

4.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This chapter describes the environmental and socioeconomic impacts associated with the different alternatives described below.

4.1 Alternatives Considered

Alternative 1 Revisit static trip limits (Approach 1)

Sub-alternative 1A: No Action. Maintain the current vessel trip regulations for non-sandbar LCS

Sub-alternative 1B: Establish a new non-sandbar LCS trip limit that would extend the fishing season in the Gulf of Mexico region

Sub-alternative 1C: Establish a new non-sandbar LCS trip limit that would extend the fishing season in the Atlantic region

Alternative 2 Revisit season opening and closing dates and flexible trip limits (*Preferred Alternative*; Approach 2)

Sub-alternative 2A: Establish new opening dates for the shark fisheries based on certain criteria and process (*Preferred Alternative*)

Sub-alternative 2B: Establish inseason trip limit adjustment criteria for the Atlantic shark fishery (*Preferred Alternative*)

4.1.1 Environmental Impacts

Alternative 1

Regulations implemented under Amendment 2 were intended to allow a year-round fishery for non-sandbar LCS, assuming participants would retain non-sandbar LCS in an incidental fashion while targeting other species. However, the fishing season in 2009 in both the Atlantic and Gulf of Mexico regions and in 2010 in the Gulf of Mexico region, remained open for only a short period of each year. Having the season close before the end of the fishing year resulted in dead shark discards in non-shark fisheries and precluded constituents in certain areas, such as the North Atlantic, from participating in the non-sandbar LCS fishery as the quota was achieved before sharks migrated to that area. Therefore, NMFS is exploring ways through the sub-alternatives described below to extend the Atlantic shark fishing season while keeping the incidental nature of the non-sandbar LCS shark fishery as intended under Amendment 2.

Sub-alternative 1A

Under sub-alternative 1A, NMFS would maintain the trip limits established under Amendment 2, as explained above. A recent analysis of Coastal Fisheries logbook data using updated non-sandbar LCS weighted mean average weights (*i.e.*, 52.9 lb dw and 51 lb dw in the Gulf of Mexico and Atlantic regions, respectively) from 2008-2009 (*i.e.*, post Amendment 2)

indicates that approximately 11 percent of trips taken in the Atlantic region landed over the legal trip limit of 33 non-sandbar LCS per trip. In the Gulf of Mexico region approximately 18 percent landed over the legal trip limit of 33 non-sandbar LCS per trip. Approximately 81 percent of Atlantic trips took 27 or fewer non-sandbar LCS per trip, and 81 percent of the Gulf of Mexico trips took 29 or fewer non-sandbar LCS per trip. In addition, during 2008-2009, of those trips retaining less than 33 non-sandbar LCS, 72 percent in the South Atlantic and 67 percent in the Gulf of Mexico were estimated to have landed 17 or fewer of non-sandbar LCS. Therefore, according to 2008-2009 Coastal Fisheries logbook data, a majority of the trips have not harvested the full 33 non-sandbar LCS trip limit since the implementation of Amendment 2.

Table 4.1 shows the monthly average reported trip landings for non-sandbar LCS in the Gulf of Mexico and Atlantic regions. With one exception during January in the Gulf of Mexico, Table 4.1 indicates that, on average, the 33 non-sandbar LCS trip limit was usually not achieved in either the Gulf of Mexico or Atlantic regions. On average, 21 non-sandbar LCS were harvested per trip in the Gulf of Mexico region and 13 non-sandbar LCS were harvested per trip in the Atlantic region.

Table 4.1 Average monthly number of non-sandbar LCS reported per trip in the Coastal Fisheries logbook since the implementation of Amendment 2 (2008-2009).

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Overall Average
GULF OF MEXCIO													
2008-2009	36	27	27	25	18	18	24	17	11	17	22	20	21
ATLANTIC													
2008-2009	15	13	15	14	12	8	15	10	9	9	12	16	13

However, because quotas were achieved in a very short period of time in 2009 and 2010, NMFS surmised that fishermen were continuing directed fishing on non-sandbar LCS, and a portion of the fleet likely made multiple trips in a single day under the 33 non-sandbar LCS trip limit to make up for lost revenues experienced under Amendment 2 regulations. Analysis of dealer, Coastal Fisheries logbook, and observer data from before and after the implementation of Amendment 2 also suggest that the average weight of non-sandbar LCS was higher than what was estimated in Amendment 2. For instance, the analyses in Amendment 2 estimated the average non-sandbar LCS weight as 33.7 pound (lb) dressed weight (dw). However, based on 2008-2009 data (*i.e.*, post-implementation of Amendment 2), the average non-sandbar LCS weight in the Gulf of Mexico region is estimated as 52.9 lb dw and 51 lb dw in the Atlantic region. This increase in average weight could be due, in part, to a change in the species composition of catch within the non-sandbar LCS complex since the implementation of Amendment 2 and the prohibition of sandbar sharks. The relative composition (in percent and pounds dressed weight) of dealer landings of blacktip, bull, hammerhead, and lemon sharks (the four major species landed in the non-sandbar LCS complex being reported on dealer reports) during 2003-2009 is shown by region in Table 4.2. In 2009, bull and hammerhead shark landings in pounds dressed weight in the Gulf of Mexico region were the highest of the time series. In the South Atlantic, more bull and hammerhead sharks (in pounds dressed weight) were landed in 2009 than in 2008; however, both years were somewhat lower than what was landed 2003-2007. In terms of composition of catch, more bull sharks and hammerhead sharks made up the catch in 2008-2009 in the Gulf of Mexico region compared to 2003-2007. In the South

Atlantic, bull sharks comprised more of the catch in 2008-2009 than what was landed in 2003-2007, however, the composition of catch was variable over the years. Hammerheads comprised less of the catch in 2008-2009 in the South Atlantic compared to what was landed in 2003-2007 (Table 4.2). The increase in average size, in addition to the continued directed fishing effort, likely contributed to the quotas implemented under Amendment 2 not lasting the entire year in either the Atlantic or Gulf of Mexico region.

Table 4.2 Relative composition of four major shark species landed in the non-sandbar LCS complex from 2003-2009. Source: HMS dealer reports.

	Percent of 4 Major species				Weight of 4 Major species (lb dw)			
	South Atlantic							
Year	Blacktip	Bull	Hammer-head	Lemon	Blacktip	Bull	Hammer-head	Lemon
2003	73.26%	9.47%	13.59%	3.67%	480,552	62,099	89,164	24,095
2004	71.71%	4.51%	16.41%	7.37%	327,653	20,601	74,959	33,694
2005	56.94%	12.04%	18.80%	12.22%	267,548	56,593	88,330	57,432
2006	65.83%	12.66%	14.99%	6.51%	343,463	66,073	78,212	33,984
2007	34.32%	30.59%	17.05%	18.04%	64,867	57,807	32,223	34,097
2008	69.03%	15.61%	7.22%	8.14%	191,049	43,200	19,978	22,530
2009	64.08%	15.31%	13.09%	7.52%	197,527	47,193	40,362	23,167
All	65.06%	12.28%	14.70%	7.96%	1,872,659	353,566	423,228	228,999
Overall Avg.	62.17%	14.31%	14.45%	9.07%	267,523	50,509	60,461	32,714
	Gulf of Mexico							
Year	Blacktip	Bull	Hammer-head	Lemon	Blacktip	Bull	Hammer-head	Lemon
2003	85.05%	3.34%	5.56%	6.05%	794,411	31,166	51,919	56,532
2004	76.51%	6.51%	9.43%	7.56%	335,795	28,554	41,388	33,177
2005	70.92%	16.91%	7.35%	4.83%	249,907	59,604	25,884	17,004
2006	82.81%	10.48%	4.32%	2.40%	848,295	107,302	44,202	24,557
2007	86.78%	7.81%	1.99%	3.41%	979,159	88,131	22,505	38,472
2008	62.16%	24.74%	7.00%	6.10%	315,014	125,348	35,488	30,897
2009	59.71%	21.20%	11.78%	7.31%	416,553	147,858	82,152	51,015
All	77.51%	11.57%	5.97%	4.95%	3,939,134	587,963	303,538	251,654
Overall Avg.	74.85%	13.00%	6.78%	5.38%	562,733	83,995	43,363	35,951

As mentioned above, NMFS anticipated that due to the 33 non-sandbar LCS trip limit and prohibition of sandbar sharks, shark fishermen would target other fish species and only keep incidentally caught sharks. In Amendment 2, NMFS determined that this process would result in minimal discards. Based on data from shark observer programs prior to the implementation of Amendment 2, shark fishermen with directed shark permits who targeted other species (*e.g.*, snapper-grouper), caught, on average, 12 sharks per trip, including one sandbar shark. Therefore, the 33 non-sandbar LCS (or 36 as of 2013) trip limit implemented under Amendment 2 should have allowed fishermen to keep all legal sharks (except sandbar sharks) without creating excessive discards. While discards of sandbar sharks were expected to increase under

Amendment 2 due to the prohibition on retention outside the research fishery, the reduced sandbar quota was expected to decrease overall mortality and allow rebuilding of this species.

Data from observed shark trips in 2009 from outside the shark research fishery indicate that, on average, approximately 4 non-sandbar LCS and less than one sandbar shark have been discarded dead per trip on directed shark trips since the implementation of Amendment 2. While this is fewer sandbar shark discards on a trip basis than estimated under Amendment 2, it could be resulting in higher dead discards of non-sandbar LCS on a trip basis. In the short-term, this is not anticipated to have any direct environmental impacts on non-sandbar LCS as an increase in discards would not translate into a population level response in the short-term. However, if fishermen continue to target non-sandbar LCS with a 33 trip limit, sub-alternative 1A may result in minor adverse direct environmental impacts for non-sandbar LCS in the long-term due to increased dead discards.

Currently, NMFS does not have extrapolated estimates of protected resource interactions in the shark fisheries since the implementation of Amendment 2. However, the average annual number of directed shark trips by federal fishermen was estimated at 1,107 trips/year prior to the implementation of Amendment 2 (2003-2005). Since Amendment 2 (2008-2009), the average number of directed shark trips that landed non-sandbar LCS was 526 trips/year. Therefore, the number of directed shark fishing trips has decreased as anticipated under Amendment 2. Given this, indirect impacts in the short- and long-term under sub-alternative 1A would be neutral as interaction rates with protected resources are not expected to change compared to what was analyzed under Amendment 2.

Similarly, as shark fishing regulations would not change under sub-alternative 1A, short-term cumulative environmental impacts associated with the No Action alternative are anticipated to be neutral. However, given restrictions in other fisheries, such as the reduction in the SCS quota under Amendment 3, closures for bottom longline gear in the reef fish fishery in the Gulf of Mexico (April 26, 2010, 75 FR 21512), and new proposed measures for speckled hind (*Epinephelus drummondhayi*), warsaw grouper (*Epinephelus nigritus*), and snowy grouper (*Epinephelus niveatus*) in the South Atlantic, NMFS would anticipate an overall decrease in fishing effort that could result in minor beneficial cumulative environmental impacts.

Sub-alternative 1B

Sub-alternative 1B would establish a new non-sandbar LCS trip limit at the beginning of the shark fishing season, which would remain static for the remainder of the fishing season, and would extend the fishing season in the Gulf of Mexico region. As explained in chapter 2, sub-alternative 1B would modify the non-sandbar LCS trip limit, as needed, to extend the fishing season in the Gulf of Mexico region. The trip limit could be reduced from the current trip limit established under Amendment 2 down to zero non-sandbar LCS per trip based on the criteria established under preferred sub-alternative 2B. Sub-alternative 1B would also allow for an increase in the reduced trip limit, not to exceed the trip limit established under Amendment 2, according to the criteria established under sub-alternative 2B. All the adjustments to trip limits described below are anticipated to have short-term direct, indirect, and cumulative environmental impacts. Given the adjustments would only apply for a given fishing season, long-term impacts are not anticipated.

As such, a range of trip limits could be implemented under sub-alternatives 1B and 2B. Based on the amount of quota available in the Gulf of Mexico and the time of year, NMFS would use the criteria established under sub-alternative 2B to determine the appropriate trip limit for non-sandbar LCS in federal waters of the Gulf of Mexico. NMFS would also work with individual states to mirror trip limits in federal waters. The environmental impacts would depend on the trip limit chosen. Trip limits reduced anywhere from 32 to 29 non-sandbar LCS in the Gulf of Mexico are anticipated to have a neutral direct environmental impact in the short-term as the majority of trips retained 29 or fewer non-sandbar per trip from 2008-2009. Thus, no direct environmental impact to non-sandbar LCS, compared to the current status quo, is expected by such a change in the trip limits. In addition, there are no direct long-term impacts associated with this alternative as such a reduction would only be done over the short-term in order to slow landings down during a given season. Neutral short-term indirect environmental impacts on other species, such as protected resources, are also expected with a trip limit between 32 and 29 non-sandbar LCS as fishing effort and behavior would not be expected to change due to this reduction because the majority of trips retained 29 or less non-sandbar LCS per trip. Long-term indirect impacts are not anticipated given a reduction in the trip limit would not be a permanent change.

Reducing the trip limit between 28 and 21 non-sandbar LCS per trip could still result in neutral, direct, short-term environmental impacts as fishing effort is not expected to decrease with such a reduction. Data indicate (Table 4.1) that the overall average number of non-sandbar LCS retained in the Gulf of Mexico region was 21 non-sandbar LCS per trip. Therefore, fishermen would most likely continue to target sharks with a trip limit between 28 and 21 non-sandbar LCS per trip, resulting in direct environmental impacts similar to the status quo. The short-term indirect environmental impacts would also be expected to be neutral as NMFS would not anticipate fishing practices to change with trip limits of non-sandbar LCS between 28 and 21. Therefore, the indirect environmental impact on other finfish and protected resources would be the same as the status quo.

Reducing the trip limit to below 21 non-sandbar LCS (including as low as a zero trip limit) may still result in neutral short-term, direct environmental impacts as the reduction in trip limits overall would be expected to slow down the fishery to extend the fishing season; however, the overall quota would still be anticipated to be harvested, and thus, the associated trip limits would have the same direct environmental impacts on the non-sandbar LCS population as the status quo. In addition, NMFS anticipates that at some reduced trip limit, it would no longer be economically viable to target sharks, and shark fishermen would stop targeting non-sandbar LCS. Under the current trip limit regulations, the lowest monthly average number of non-sandbar LCS per trip retained was 11 non-sandbar LCS during the month of September (Table 4.1). Therefore, depending on the time of year, the trip limit may have to be significantly reduced to change fishing behavior. At this point, NMFS expects that shark fishermen would target other species, and retain and discard sharks incidentally caught as analyzed under Amendment 2.

Neutral to minor beneficial indirect environmental impacts on other species, such as protected resources, are expected with a trip limit of 20 to zero non-sandbar LCS in the short-

term. Fishing effort for sharks would not be expected to change until non-sandbar LCS trip limits become low enough to make directed fishing not economically viable. Therefore, neutral short-term indirect environmental impacts would be anticipated until fishermen began targeting other fish species and only harvesting sharks incidentally while targeting other fish species. A zero retention limit for non-sandbar LCS would most likely cause shark fishermen to stop fishing with BLL gear for sharks; however, the shark gillnet fishery may continue fishing for SCS. Once fishermen could only retain incidental levels of sharks in other fisheries, fishermen would stop using BLL gear to fish for sharks, or use gillnet gear to target only SCS, and minor beneficial indirect environmental impacts would be expected in the short-term for protected resources, including sea turtles, smalltooth sawfish, and marine mammals, due to the reduced directed non-sandbar LCS fishing effort. Long-term impacts are not anticipated because any change in trip limits would be in place only for a fishing season.

The cumulative environmental impacts of this alternative are anticipated to be neutral for trip limits between 32 and 29 and between 28 and 21 non-sandbar LCS in the short-term. As mentioned above, long-term impacts are not expected as any change in the trip limits would be for a given season and not be a permanent change. Because most of the trips in 2008-2009 did not harvest 33 non-sandbar LCS per trip, reducing the trip limit between the current trip limit and what fishermen kept on average is not expected to have a cumulative environmental impact. Trip limits reduced below what was kept on average (*i.e.*, between 20 and zero non-sandbar LCS per trip) could result in cumulative impacts that are more minor and beneficial in nature as fishermen would be expected to stop targeting non-sandbar LCS with such reduced trip limits. With a reduction in the non-sandbar LCS trip limit, shark fishermen may switch to fishing for SCS; however, with recent changes in the SCS fishery under Amendment 3, redirected effort from shark fishermen would be limited by new, reduced blacknose and non-blacknose SCS quotas. These limitations would keep fishermen from being able to redistribute much effort into the SCS fishery. Fishermen may redistribute effort into other BLL fisheries, such as snapper-grouper, reef fish, and tilefish; however, those fisheries are also quota limited and have strict restrictions in place to prevent overfishing, thus limiting the amount of redistributed effort from shark fishermen. Finally, the reduction in fishing effort due to the oil spill in the Gulf of Mexico may result in reduced mortality on shark stocks; the impact of the oil itself on the environment and associated fish stocks is still unknown. Therefore, the overall cumulative impact of this alternative in conjunction with the oil spill cannot be quantified at this time.

Sub-alternative 1C

Sub-alternative 1C would establish a new non-sandbar LCS trip limit at the beginning of the shark fishing season, which would remain static for the remainder of the fishing season, and would extend the fishing season in the Atlantic region. As explained in chapter 2 and for sub-alternative 1B, NMFS would modify the non-sandbar LCS trip limit, as needed, to extend the fishing season in the Atlantic region if the available quota was harvested at a rate that would preclude a year-long season. The current trip limit could be reduced to any trip limit from 33 (or 36 as of 2013) to zero non-sandbar LCS per trip based on the amount of available quota. NMFS' decision to reduce the trip limit, and to what extent, would be based on the criteria under preferred sub-alternative 2B. As with sub-alternative 1B, sub-alternative 1C would also allow for an increase in the reduced trip limit, not to exceed the trip limit established under Amendment 2, according to the criteria established under sub-alternative 2B.

As with sub-alternative 1B, NMFS would also work with individual states to mirror trip limits in federal waters. The environmental impacts would depend on the trip limit chosen. Trip limits reduced anywhere from 32 to 27 non-sandbar LCS in the Atlantic are anticipated to have a neutral direct environmental impact in the short-term as the majority of shark trips retained 27 or fewer non-sandbar LCS per trip from 2008-2009. In addition, there are no long-term impacts associated with this alternative. Such a reduction would be implemented over the short-term in order to slow catch rates down during a given season. Neutral short-term indirect environmental impacts on other species, such as protected resources, are also expected with a trip limit between 32 and 27 non-sandbar LCS as fishing effort, and fishing practices would not be expected to change due to this reduction as the majority of trips landing non-sandbar LCS, actually landed 27 or fewer of these sharks in 2008-2009.

Reducing the trip limit between 26 and 13 non-sandbar LCS per trip could still result in neutral direct environmental impacts in the short-term, as no reduction in overall fishing effort is expected with such a decrease. Data indicate (Table 4.1) that the overall average number of non-sandbar LCS retained in the Atlantic region was 13 non-sandbar LCS per trip. Therefore, fishermen would likely still target sharks with a trip limit between 26 and 13 non-sandbar LCS, resulting in similar direct environmental impacts compared to the status quo. The short-term indirect environmental impacts would also be expected to be neutral, as NMFS would not anticipate fishing practices to change with trip limits of non-sandbar LCS between 26 and 13. NMFS would anticipate no direct and indirect long-term environmental impacts for trip limits between 26 and 13 non-sandbar LCS, as these trip limits would only be in place for a given fishing season and would not be a permanent change.

Reducing the trip limit to below 13 non-sandbar LCS (including a zero trip limit) may still result in neutral short-term, direct environmental impacts as the reduction in the non-sandbar LCS trip limit would be meant to slow down the fishery to extend the fishing season. However, the overall quota would still be anticipated to be harvested, and thus, the associated trip limits would have the same direct environmental impacts on the non-sandbar LCS population as the status quo. As with sub-alternative 1B, NMFS anticipates that at some reduced trip limit it would no longer be economically viable to target sharks, and shark fishermen would stop targeting non-sandbar LCS. Under the current trip limit regulations, the lowest estimated monthly average number of non-sandbar LCS retained was 8 non-sandbar LCS per trip during the month of June followed by 9 non-sandbar LCS per trip in the months of September and October (Table 4.1). Therefore, depending on the time of year, the trip limit may have to be significantly reduced to change fishing behavior. At this point, NMFS expects that shark fishermen would target other species and retain and discard sharks incidentally as anticipated under Amendment 2. As these reductions would not be permanent changes to the trip limits, NMFS does not anticipate long-term direct environmental impacts.

Neutral to minor indirect beneficial environmental impacts on other species, such as protected resources, are expected with a trip limit of 13 to zero non-sandbar LCS. Fishing effort for sharks would not be expected to change until non-sandbar LCS trip limits become low enough to make directed fishing not economically viable. Therefore, neutral, short-term, indirect environmental impacts would be anticipated until fishermen began targeting other fish species

and only harvesting sharks taken while targeting other fish species. A zero retention limit for non-sandbar LCS would most likely cause shark fishermen to stop fishing with BLL gear for sharks; however, the shark gillnet fishery may continue fishing for SCS. Once fishermen could only retain incidental levels of sharks in other fisheries, fishermen would stop using BLL gear to fish for sharks, or use gillnet gear to target only SCS, and minor beneficial indirect environmental impacts would be expected in the short-term for protected resources, including sea turtles, smalltooth sawfish, and marine mammals, due to the reduced non-sandbar LCS fishing effort. Long-term impacts are not anticipated because any change in trip limits would only be in place for a fishing season.

The cumulative environmental impacts of this alternative are anticipated to be neutral for trip limits between 32 and 27 and between 26 and 13 non-sandbar LCS per trip in the short-term. As mentioned above, long-term impacts are not expected as any change in the trip limits would only be an inseason adjustment and would not be a permanent change. Because most of the trips in 2008-2009 did not harvest 33 non-sandbar LCS per trip, reducing the trip limit below the current trip limit to what fishermen kept, on average, is not expected to result in any cumulative environmental impacts. Trip limits reduced below what was kept on average (*i.e.*, between 12 to zero non-sandbar LCS per trip) could result in cumulative impacts that are more minor and beneficial in nature as fishermen would be expected to stop directed fishing for non-sandbar LCS with such reduced trip limits. With a reduction in the non-sandbar LCS trip limit, shark fishermen may switch to fishing for SCS; however, with recent changes in the SCS fishery under Amendment 3, shark fishermen would be limited by the amount of blacknose and non-blacknose SCS they could harvest due to recent reductions in those quotas. These limitations would keep fishermen from being able to redistribute much effort into the SCS fishery. In addition, due to the recent implementation of the ASMFC interstate coastal shark plan, state shark fishermen must also follow new shark regulations that, for the most part, mirror federal regulations, thus providing non-sandbar LCS additional protection in state and federal waters. Fishermen may redistribute effort into other BLL fisheries, such as snapper-grouper, reef fish, and tilefish; however, those fisheries are also quota limited and have strict restrictions in place to prevent overfishing, thus limiting the amount of redistributed effort from shark fishermen.

Alternative 2

The sub-alternatives under alternative 2 would revisit the current shark management structure by re-evaluating how the current shark fisheries are operating. In general, the criteria developed under sub-alternatives 2A and 2B would consider ways to maintain the shark fishery while new future shark management measures are being developed. The approach under alternative 2 would allow flexibility in the opening of the commercial shark fishing seasons through the annual specifications process and allow for inseason actions to adjust shark trip limits in either region to provide fishing opportunities for constituents across the fishery, as intended in Amendment 2. Under sub-alternative 2B, NMFS analyzed the impacts associated with a reduction in the non-sandbar LCS trip limit, as non-sandbar LCS are the only Atlantic shark complex/species that currently has a directed trip limit. However, the criteria for inseason adjustments to shark trip limits would apply to all shark species/complexes, as necessary. These measures are meant to provide furtherance of equitable fishing opportunities to the extent practicable for commercial shark fishermen in all regions and areas. In addition, such flexibility could help NMFS accommodate unanticipated events in the Atlantic and Gulf of Mexico regions.

Sub-alternative 2A

Under sub-alternative 2A, the preferred alternative, NMFS would establish new opening dates for the Atlantic shark fisheries through the annual specifications process based on certain criteria and the process described in Chapter 2. The criteria and process for opening the shark fisheries consider, among other things, the available annual quota, catch rates, seasonal variations of sharks, and the objectives of fishery management plans. This alternative presumes that the quotas for some fisheries, such as the non-sandbar LCS fisheries, would not last the entire fishing year given that the fishing behavior has changed in a way not anticipated since the implementation of Amendment 2. NMFS does not expect needing this flexibility for the pelagic shark and shark research fisheries as those fisheries are currently operating as year-round fisheries. If this changes, NMFS could begin delaying these fisheries as well. Currently, opening the pelagic shark and shark research fisheries on the effective date of the shark season rule would maintain current discard rates of pelagic sharks in other HMS fisheries and allow year-round sampling of sharks in the shark research fishery.

Delaying the start of the fishing season for non-sandbar LCS, blacknose, and non-blacknose SCS could have additional benefits. In 2009, the non-sandbar LCS fishery in the Atlantic region was only open until July 1 (74 FR 30479, June 26, 2009), while the non-sandbar LCS fishery in the Gulf of Mexico was open for six weeks in 2010 (75 FR 12700, March 17, 2010). NMFS has heard from constituents since Amendment 2 that many fishery participants in the both regions have not had a reasonable opportunity to harvest a portion of the non-sandbar LCS quota. The SCS fishery opened in June 2010 under new regulations implemented from Amendment 3 on June 1, 2010 (74 FR 36892) and remained open for 5 months (75 FR 67251, November 2, 2010). As such, NMFS may consider delaying the opening of this species and complex, as necessary, in future fishing seasons. Delaying the opening could also allow for some additional protection for some gravid LCS and SCS females and newborn pups, including overfished sandbar, dusky, and blacknose sharks, if the opening is delayed until after the primary pupping season is complete.

The criteria and process for opening the Atlantic shark fisheries could impact the fishery differently if the season is opened on January 1 or delayed. If the Atlantic shark fisheries opened on January 1, the short and long-term, direct and indirect environmental impacts would be neutral, since the impacts to the fisheries of this opening date were analyzed in Amendment 2. However, given certain shark fisheries have not remained open year-round, delaying the opening of the Atlantic shark fishery would allow for shark fishing opportunities as intended by Amendment 2. In the short-term, the direct and indirect environmental impacts would be neutral, since the majority of the fisheries would probably open on or about January 1. The long-term, direct and indirect environmental impacts would be beneficial and minor because NMFS could delay the opening of the different shark fisheries until after pupping, which could benefit gravid female sharks if the fishery was closed during the months of April, May, and June. For instance, in the final action for this rulemaking, NMFS would delay the opening of the non-sandbar LCS fishery in the Atlantic region until July 15, 2011. This would allow the harvest of sharks after pupping has occurred on the Atlantic coast. In the Gulf of Mexico, NMFS would delay the start of the non-sandbar LCS fishery until March 1, 2011, to provide shark fishing opportunities to all participants in the Gulf of Mexico region and to allow shark product to be available during the religious holiday of Lent (*i.e.*, beginning on March 9, 2011). However,

given how quickly the non-sandbar LCS quota was harvested in 2010, and due to a reduced non-sandbar LCS quota in 2011 due to overharvest in 2010, NMFS does not anticipate the fishery would overlap with the shark pupping season in 2011. The indirect impacts on protected resources would be neutral in the short-and long-term, as there would be no increase or decrease in fishing effort.

Finally, due to the oil spill in the Gulf of Mexico, most of the fishing grounds for SCS in that region are expected to be closed at least part of the commercial fishing season in 2010, and some areas remain closing during the drafting of this document. Having additional flexibility for opening the shark fishing season would provide minor, beneficial cumulative environmental impacts and could help accommodate any needed changes to the fishery as a result of the oil spill or other factors that can be anticipated before the start of any fishing year.

Sub-alternative 2B

Under sub-alternative 2B, NMFS would have the ability to adjust trip limits through inseason actions. This alternative presumes that the quotas for some fisheries, such as the non-sandbar LCS fisheries, would not last the entire fishing year given fishing behavior has changed in a way not anticipated since the implementation of Amendment 2. Under Amendment 2, NMFS outlines that trip limits could be changed, as necessary, via a framework action based on quota monitoring and achieved fishing effort. Adjustments via inseason actions to the trip limit could allow fishermen access to the relevant shark resource throughout the appropriate region, and could be made according to ecological needs of the different shark species. NMFS would have the ability to adjust trip limits through inseason actions, according to criteria outlined in Chapter 2, to retention levels from 0 to the maximum trip limit level. For non-sandbar LCS, the range would be from 0 to 33 (or 36 as of 2013), which is the current limit for shark directed permit holders. This flexibility could provide furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas, if necessary. By reducing trip limits, NMFS could preserve the shark quota until such time when fishing opportunities are available (*i.e.*, such as during summer months when shark migrate to more northern waters). At that time, NMFS could choose to increase the trip limit, not to exceed the maximum trip limit allowed, to maximize opportunities, to the extent practicable, for fishermen to effectively catch the shark quota. NMFS would have the flexibility to adjust the trip limits as many times as necessary throughout the fishing year to achieve the goals of creating fishing opportunities and to account for ecological needs of the sharks, to the extent practicable.

In 2009, based on catch rates estimated from biweekly dealer reports, NMFS closed the commercial non-sandbar LCS fishery in the Atlantic region on July 1, 2009 (74 FR 30479). This led to North Carolina shark fishermen being excluded from the 2009 non-sandbar LCS fishery in the Atlantic region, because the closure occurred before the sharks migrated into waters off North Carolina. Final landing reports for non-sandbar LCS in the Atlantic region for 2009 indicate that 200.7 mt dw, or 106.9 percent, of the Atlantic non-sandbar LCS quota was taken while the fishery was open.

In 2010, based on catch rates determined from biweekly dealer reports, NMFS determined that the non-sandbar LCS quota in the Gulf of Mexico region would not last the entire 2010 fishing year, and on March 17, 2010 (75 FR 12700), NMFS closed the commercial

non-sandbar LCS fishery in the Gulf of Mexico region. This resulted in a 42 day fishing season for non-sandbar LCS in the Gulf of Mexico region in 2010. In this instance, inclement weather over this time period limited access to non-sandbar LCS by vessels fishing out of some areas of Florida, and allowed vessels from Louisiana, which were not constrained by weather conditions, to continue to fish and catch a majority of the non-sandbar LCS quota. Landing estimates for non-sandbar LCS in the Gulf of Mexico through October 31, 2010, indicate that 428.2 mt dw (944,060 lb dw), or 109.7 percent, of the Gulf of Mexico non-sandbar LCS quota was taken during the 42 day fishing season.

Adjusting the non-sandbar LCS trip limits would not impact the quotas established for each region, but would more likely have a spatial and temporal effect on non-sandbar LCS harvest. Therefore, it is expected that the total number of non-sandbar LCS harvested under sub-alternative 2B would be the same as the number harvested under sub-alternative 1A, the no action alternative. Direct environmental impacts associated with adjusting non-sandbar LCS trip limits are expected to be neutral in the short-term, mainly because of the life history parameters of the sharks in the non-sandbar LCS complex. The sharks that make up the non-sandbar LCS complex are all long-lived, exhibit slow growth, have low fecundity, and are k-selected species. Thus, any trip limit adjustments that are made out of ecological concerns to the non-sandbar population would not be seen in population estimates for many years because of reproductive limitations of these species. However, in the long-term, adjustments via inseason actions to the non-sandbar LCS trip limit could have direct minor, beneficial, environmental impacts to non-sandbar LCS populations. Trip limits could be used to minimize fishing pressure during periods when non-sandbar LCS or prohibited shark pupping is known to occur, or during times when dealer reports show extremely high landings in short time periods (*i.e.*, trip limits set to zero sharks/trip would essentially stop fishing in federal waters during this time). In these cases, lowering the non-sandbar LCS trip limit could allow for a higher number of pregnant females to come to term, and avoid episodes of localized depletion of non-sandbar LCS populations, respectively. This, in turn, could be beneficial to non-sandbar LCS recruitment and lead to population increases in the future.

The criteria for initiating an inseason action to adjust the non-sandbar LCS trip limit, as outlined in Chapter 2, does not consider other species besides the relevant shark species for trip limit adjustments. Thus, for non-sandbar LCS, stock status and catches of other sharks (*e.g.*, non-blacknose SCS, pelagics), fish (*e.g.*, snappers, groupers), or protected resources (*e.g.*, sea turtles, marine mammals) would have no bearing in NMFS's decision to adjust the shark trip limits. As analyzed in alternatives 1B and 1C, adjusting the non-sandbar LCS trip limit could change effort in different gear types in the non-sandbar LCS fishery, or shift fishing effort to other fisheries. Shifts in fishing effort could also occur due to inseason changes of the non-sandbar LCS trip limit, but these shifts are anticipated to result in short- and long-term, neutral, indirect environmental impacts as the criteria would continue to allow non-sandbar LCS fishermen access to the full non-sandbar LCS quota as analyzed under the status quo. Instances occurred in the non-sandbar LCS shark fishery in 2009 and 2010 where seasons closed before one area within a region had adequate opportunity to access the non-sandbar LCS quotas. In these cases, once the non-sandbar LCS fishery closed, fishermen would have shifted to other fisheries in order to continue fishing; thus, impacts in other fisheries due to reduced trip limits under sub-alternative 2B are expected to be same as impacts under the status quo alternative. The

fishery has continued to operate in a directed fashion since the implementation of Amendment 2, and as long as trip limits are high enough to accommodate directed fishing, fishermen are expected continue to target non-sandbar LCS.

Since the implementation of Amendment 2, directed federal shark fishing trips land, on average, 21 non-sandbar LCS in the Gulf of Mexico region and 13 non-sandbar LCS in the Atlantic region (Table 4.1). NMFS has not determined what trip limit would result in fishermen no longer targeting non-sandbar LCS. However, once a trip limit is low enough to stop fishermen from targeting non-sandbar LCS, and fishing effort shifts to other fisheries, incidental landings of non-sandbar LCS are expected to be minimal. According to Coastal Fisheries Logbook data, incidental limited access shark permit holders landed, on average, one non-sandbar LCS per trip in the Gulf of Mexico region after the implementation of Amendment 2. Because the incidental trip limit for non-sandbar LCS is three, this indicates that fishermen are either not catching or are not retaining non-sandbar LCS incidentally caught in other fisheries in the Gulf of Mexico region. In the Atlantic region, incidental limited access shark permit holders landed, on average, 2.4 non-sandbar LCS per trip after the implementation of Amendment 2, although over 50 percent of all trips landed one or less non-sandbar LCS. Therefore, because the reduction in trip limits resulting in fishermen no longer targeting non-sandbar LCS, it is expected to have the same impacts as non-sandbar LCS fishery closures in terms of redistributed fishing effort. Thus, short- and long-term neutral, indirect environmental impacts are likely under this alternative.

In the short-term, cumulative impacts from establishing criteria to adjust the non-sandbar LCS quota would be neutral, as overall fishing effort is not expected to change. Modifications to the non-sandbar LCS trip limit could displace effort spatially and temporally, but overall fishing effort is not expected to increase or decrease as fishermen would have ample opportunity to catch the non-sandbar LCS quota, which does not change under any of the proposed alternatives. Effort shifts to other fisheries when the non-sandbar LCS trip limit is reduced is also expected to be similar to effort shifts caused by closures to the non-sandbar LCS fishery following the implementation of Amendment 2. The sharks that make up the non-sandbar LCS complex are all long-lived, exhibit slow growth, have low fecundity, and are k-selected species. Thus, any trip limit adjustments that are made out of ecological concerns to the non-sandbar population would not be seen in population estimates for many years because of reproductive limitations of these species. But trip limit adjustments for ecological concerns to non-sandbar LCS stock could be realized in the long-term. Thus, minor, beneficial environmental impacts could be expected with sub-alternative 2B.

4.1.2 Socioeconomic Impacts

Alternative 1

Alternative 1 would maintain the incidental nature of the non-sandbar LCS shark fishery as intended under Amendment 2 by considering potential reductions in the shark trip limits to extend the Atlantic shark fishing season throughout the year.

Sub-alternative 1A

As of November 5, 2009, there were 221 directed shark permit holders, 282 incidental permit holders, and 105 shark dealers (NMFS, 2010). On average, between 2008 and 2009, approximately 47 vessels with federal directed shark permits and 15 vessels with federal incidental shark permits reported non-sandbar LCS landings in the Coastal Fisheries logbook. NMFS anticipates that these fishermen and dealers, in addition to state vessels and dealers (which are not encapsulated in these estimates as they do not report in federal logbooks) would be most affected by the proposed actions. Due to the lack of federal logbooks from state fishermen, NMFS has not been able to quantify the number of state fishermen that could be impacted by these regulations.

Under sub-alternative 1A, the No Action alternative, there would be neutral direct socioeconomic impacts in the short-term to directed and incidental shark permit holders as the trip limits for non-sandbar LCS would not change compared to the status quo. However, in the long-term, maintaining the current trip limit with no changes in the management regime for shark fisheries could result in minor adverse direct socioeconomic impacts to shark limited access permit holders as the seasons could continue to shorten if more fishermen found ways to make the current trip limit profitable. Thus, gross revenues per fishermen would be expected to decline. This could exacerbate the derby-nature of the fishery and flood the market with shark product at certain times of the year. However, NMFS heard from shark fishermen during the public comment period on the proposed rule for this action that in many cases, short fishing seasons are more economically desirable as shark is not marketable throughout the year. In addition, if the seasons continued to open at the beginning of the year, fishermen in areas such as the North Atlantic would continually lose shark fishing opportunities as the quota would most likely be achieved before sharks migrated to more northern waters.

Similarly, neutral indirect socioeconomic impacts are anticipated for shark dealers and other entities that deal with shark products as NMFS expects these businesses to operate in the same manner as the status quo in the short-term. However, in the long-term, if fishing seasons continue to shorten or the fishery remains open for only a couple of weeks each year, then minor adverse indirect socioeconomic impacts are anticipated as shark dealers and other entities that deal with shark products would have a glut of shark product available for short periods of time followed by times when shark product is not available. In addition, dealers in the North Atlantic region may not have shark product available to them during anytime of the year if the non-sandbar LCS quota is realized before sharks migrate to northern waters in the Atlantic region.

Based on 2009 ex-vessel Gulf of Mexico prices (\$0.35/lb for flesh and \$15/lb for fins; see Chapter 6) and the average non-sandbar LCS weight since implementation of Amendment 2 (*i.e.*, 52.9 lb dw plus an additional 5 percent in weight due to fins, or 2.645 lb), if fishermen are landing 33 non-sandbar LCS in the Gulf of Mexico region, then their average gross revenues on a trip basis would be \$1,920. However, given the majority of the trips landed 29 non-sandbar LCS or fewer per trip, average gross revenues are expected to be \$1,688, or less. An average trip landing 21 non-sandbar LCS would yield \$1,222 per trip.

As most landings of non-sandbar LCS occurred only in the South Atlantic area in 2009 due to the early closure of the season, NMFS used 2009 ex-vessel prices from the South Atlantic

to determine gross revenues on a trip basis in the Atlantic under sub-alternative 1A and 1C. Based on 2009 ex-vessel prices for the South Atlantic (\$0.50/lb for flesh and \$11/lb for fins; see Chapter 6) and the average non-sandbar LCS weight since implementation of Amendment 2 (*i.e.*, 51 lb dw plus an additional 5 percent in weight due to fins, or 2.55 lb), if fishermen are landing 33 non-sandbar LCS in the Atlantic region, then their average gross revenues on a trip basis would be \$1,767. However, given the majority of the trips landed 27 non-sandbar LCS or fewer per trip, average gross revenues would be \$1,446, or less. The average trip landing 13 non-sandbar LCS would yield \$696 per trip.

Neutral cumulative socioeconomic impacts are anticipated in the short-term from sub-alternative 1A as this alternative would not change the non-sandbar LCS fishery or trip limits. Non-sandbar LCS fishermen and shark dealers would be experiencing the same regulations as they have been since the implementation of Amendment 2. However, minor negative adverse cumulative socioeconomic impacts are anticipated in the long-term under sub-alternative 1A due to other federal and state actions. Reduced quotas in the SCS fishery under Amendment 3 would result in reduced opportunities for shark fishermen to redistribute effort into the SCS fishery. Actions in other non-shark fisheries also have the potential to affect shark fishermen as many shark fishermen hold permits in various non-shark fisheries (see Table 9.1). For instance, Amendment 17B in the South Atlantic is proposing new management measures for speckled hind, warsaw grouper, and snowy grouper, which include a prohibition on harvest of several deepwater snapper-grouper species beyond 240 feet (73 m). Thus, many of the shark fishermen are also facing restrictions in other fisheries they participate in, which translates into lost opportunities for fishing and lost gross revenues. Finally, implementation of the ASMFC coastal shark plan has resulted in additional shark measures in state waters, which for the most part, mirror regulations in federal waters. These additional measures, in conjunction with the current federal shark regulations, could result in minor adverse cumulative impacts on shark fishermen and dealers in the long-term under sub-alternative 1A.

Sub-alternative 1B

On average between 2008 and 2009 approximately 20 vessels with federal directed shark permits and 4 vessels with federal incidental shark permits reported non-sandbar LCS landings in the Gulf of Mexico region (Coastal Fisheries Logbooks data). In addition, a number of state vessels also landed non-sandbar LCS from state waters; however, as these vessels do not report in the federal Coastal Fisheries logbook, it is difficult to quantify the number of state vessels that would be affected under sub-alternative 1B. In addition, state fishermen would only be affected if individual states mirrored changes to federal shark trip limits. The direct socioeconomic impacts to shark fishermen in the Gulf of Mexico region would depend on the reduction in the trip limit; however, these reductions would be a trip basis as quotas would stay the same as established under Amendments 2 and 3. As explained above, approximately 81 percent of the Gulf of Mexico federally permitted trips landed 29 or fewer non-sandbar LCS per trip. Therefore, for a majority of vessels, NMFS anticipates that a reduction in the trip limit from 33 non-sandbar LCS to 29 non-sandbar LCS would have a neutral direct and indirect socioeconomic impacts in the short-term on fishermen and dealers as fishing and business practices are not anticipated to change due to such a reduction. No direct or indirect impacts are anticipated in the long-term as such adjustments via inseason actions would not be permanent changes to the fishery. If the trip limit was reduced from 33 non-sandbar LCS to 29 non-sandbar LCS,

fishermen in the Gulf of Mexico region could lose approximately \$233/trip in gross revenues (\$1,920-\$1,688=\$233; see sub-alternative 1A for ex-vessel prices and average non-sandbar LCS weights in the Gulf of Mexico region). Approximately 18 percent of the trips may lose additional gross revenues as they are landing more than 33 non-sandbar LCS according to 2008-2009 Coastal Fisheries data. In addition, on average, federally permitted trips in the Gulf of Mexico region retained 21 non-sandbar LCS per trip; however, as shown in Table 4.1, the average trip limit varied by month. If the trip limit were reduced to 21 non-sandbar LCS per trip, this could reduce gross revenues per trip from \$1,920 to \$1,222 (or by \$698 per trip). While, on average, trips retained 21 non-sandbar LCS, such a reduction would preclude fishermen from being able to keep additional sharks if encountered on a trip (up to 33 non-sandbar LCS per trip), which may change how they fish. It may also result in additional trips within a day to make up for lost individual trip revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home. All of these factors are expected to result in direct minor adverse socioeconomic impacts in the short-term. Long-term impacts are not anticipated as these changes would be made through inseason actions and would not be permanent. For dealers and other entities that deal with shark products, NMFS anticipates minor adverse indirect socioeconomic impacts with a reduced trip limit to 21 non-sandbar LCS, as such a reduction may result in reduced shark product for their shark related businesses. However, no long-term impacts are anticipated as the reduced trip limit would not be permanent.

Reducing the trip limit below 21 non-sandbar LCS per trip would be expected to result in moderate, but not significant, adverse direct socioeconomic impacts in the short-term as it would further reduce gross revenues for shark fishermen. The reduction in gross revenues could result in losses from \$756 to \$1,920 per trip for 20 to 0 non-sandbar LCS per trip. The lowest average number of non-sandbar LCS retained was 11 non-sandbar LCS per trip during the month of September (Table 4.1), which equates to \$640 in gross revenues per trip. Such reductions in the trip limits could translate into fishermen making multiple trips within a day to make up for lost individual trip revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home. However, NMFS anticipates that at some reduced trip limit directed shark fishermen would stop directing on sharks because it would no longer be economically viable to target sharks. At this point, NMFS expects that shark fishermen would target other species and retain sharks incidentally as anticipated under Amendment 2, and therefore, the socioeconomic impacts in terms of changes in fishing practices and diversifying fishing opportunities on other species to make up for lost shark revenues would be the same as described in Amendment 2. Lowered trip limits (*i.e.*, below 21 non-sandbar LCS) could also result in moderate, but not significant, adverse indirect socioeconomic impacts to dealers and other entities that deal with shark products as these businesses would have limited shark product in the short-term. However, such a decrease in the trip limits could extend the availability of shark product throughout the year, and therefore, minimize the moderate, but not significant, adverse impact of having reduced product available. As described above, no long-term impacts are expected as such adjustments would only occur for a given fishing season.

Neutral cumulative socioeconomic impacts are anticipated from sub-alternative 1B if non-sandbar LCS trip limits were reduced to 29 non-sandbar LCS per trip as most trips consisted of 29 non-sandbar LCS or fewer during 2008-2009 according to Coastal Fisheries logbook data. Minor adverse cumulative socioeconomic impacts are anticipated if trip limits are reduced

between 28 and 21 non-sandbar LCS due to other federal and state actions that affect these fishermen. Such a reduction in the trip limits would most likely result in some lost gross revenues for most shark fishermen as the overall average non-sandbar LCS retained was 21 per trip, and in 5 out of the 12 months during 2008-2009, fishermen retained more than 21 non-sandbar LCS per trip (Table 4.1). In addition, reduced quotas in the SCS fishery under Amendment 3 would result in reduced opportunities for shark fishermen to redistribute effort into the SCS fishery to make up for any lost revenues.

A reduction in the trip limit to below 21 non-sandbar LCS may result in moderate, but not significant, adverse cumulative socioeconomic impacts in the short-term, especially if it results in shark fishermen leaving the directed shark fishery for other, non-shark fisheries as these fisheries are also experiencing increased restrictions, such as the recent BLL prohibition for reef fish in the eastern Gulf of Mexico at the 35-fathom depth contour and lost fishing opportunities due to the oil spill in the Gulf of Mexico.

Sub-alternative 1C

On average between 2008 and 2009, approximately 27 federally permitted vessels with directed shark permits and 11 federally permitted vessels with incidental shark permits reported non-sandbar LCS landings in the Atlantic region in Coastal Fisheries logbooks. As with sub-alternative 1B, additional state vessels would be impacted by sub-alternative 1C if individual states mirrored changes in federal shark trip limits; however, it is difficult to quantify the number of vessels since state shark fishermen do not report in federal fisheries logbooks. The direct impacts to shark fishermen in the Atlantic region would depend on the reduction in the trip limit; however, these reductions would be a trip basis as quotas would stay the same as established under Amendments 2 and 3. As explained above, approximately 81 percent of the Atlantic trip retained 27 or fewer non-sandbar LCS per trip during 2008-2009. Therefore, for a majority of the trips, NMFS anticipates that a reduction in the trip limit would have neutral short-term direct and indirect socioeconomic impacts on fishermen and dealers (or other businesses dealing with shark product) if the trip limit were reduced from the 33 non-sandbar LCS to 27 non-sandbar LCS. Fishing and business practices would not be anticipated to change with such a reduction. If the trip limit was reduced from 33 non-sandbar LCS to 27 non-sandbar LCS, fishermen in the Atlantic region could lose approximately \$321/trip in gross revenues ($\$1,767 - \$1,446 = \$321$; see sub-alternative 1A for ex-vessel prices and average non-sandbar LCS weights in the Atlantic region). Approximately 11 percent may lose additional gross revenues on a trip basis as they were landing more than 33 non-sandbar LCS according to 2008-2009 Coastal Fisheries data. In addition, on average, trips in the Atlantic region retained 13 non-sandbar LCS per trip; however, as shown in Table 4.1, the average number of non-sandbar LCS retained per trip varied by month. If the trip limit were reduced to 13 non-sandbar LCS per trip, this could reduce potential gross revenues per trip from \$1,767 to \$696 (or by \$1,071 per trip). However, as shown in Table 4.1, on average, fishermen did not retain 33 non-sandbar LCS during any month of the year with 6 of the 12 months having average retention of non-sandbar LCS below the overall average of 13 non-sandbar LCS. Therefore, such a reduction in the trip limit is only anticipated to have minor adverse direct socioeconomic impacts to fishermen in the short-term. For dealers and other entities that deal with shark products, NMFS anticipates minor adverse indirect socioeconomic impacts in the short-term with a reduced trip limit between 26 and 13 non-sandbar LCS per trip as such a reduction may reduce shark product for their shark related businesses. Long-term

direct and indirect socioeconomic impacts are not anticipated as these reductions would not be permanent.

Reducing the trip limit below 13 non-sandbar LCS per trip would be expected to result in moderate, but not significant, adverse direct socioeconomic impacts in the short-term as it would most likely reduce gross revenues for shark fishermen. The reduction in gross revenues could result in losses from \$1,125 to \$1,767 per trip for 12 to 0 non-sandbar LCS per trip. The lowest average number of non-sandbar LCS retained was 8 non-sandbar LCS per trip during the month of June (Table 4.1), which equates to \$428 in gross revenues per trip. These reductions in the trip limits could translate into fishermen making multiple trips within a day to make up for lost individual trip revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home. However, NMFS anticipates that at some reduced trip limit level directed shark fishermen would stop targeting sharks because it would no longer be economically viable. At this point, NMFS expects that shark fishermen would target other species and retain sharks incidentally as anticipated under Amendment 2, and therefore, the socioeconomic impacts in terms of changes in fishing practices and diversifying fishing opportunities on other species to make up for lost shark revenues would be the same as described in Amendment 2.

Lowered trip limits (*i.e.*, below 13 non-sandbar LCS) could also result in moderate, but not significant, adverse indirect socioeconomic impacts to dealers and other entities that deal with shark products as these businesses would have limited shark product in the short-term. However, such a decrease in the trip limits could extend the availability of shark product throughout the year, and therefore, minimize the moderate, but not significant, adverse impact of having reduced product available. As described above, these direct and indirect impacts are only expected to occur in the short-term; no direct or indirect socioeconomic impacts are anticipated in the long-term as the trip limit adjustments would not be permanent changes.

Neutral cumulative socioeconomic impacts are anticipated in the short-term for sub-alternative 1C if non-sandbar LCS trip limits were reduced to 27 per trip as most trips retained 27 non-sandbar LCS or fewer per trip during 2008-2009 according to Coastal Fisheries logbook data. Minor adverse cumulative socioeconomic impacts are anticipated if trip limits are reduced between 26 and 13 non-sandbar LCS due to other federal and state actions that affect these fishermen. Such a reduction in the trip limit could result in some lost gross revenues for shark fishermen in the Atlantic region; however, as noted above, on average, most trips consisted of fewer than 33 non-sandbar LCS per trip during any month of the year with 6 of the 12 months having the average number of non-sandbar LCS retained below the overall average of 13 non-sandbar LCS per trip (Table 4.1).

A reduction in the trip limit to below 13 non-sandbar LCS may result in moderate, but not significant, adverse cumulative socioeconomic impacts, especially if it resulted in shark fishermen leaving the directed non-sandbar LCS shark fishery and switching to the SCS fishery. Reduced quotas in the SCS fishery under Amendment 3 would result in reduced opportunities for shark fishermen to redistribute effort into the SCS fishery to make up any lost non-sandbar LCS revenues. In addition, redistributing effort into non-shark fisheries would be difficult as those fisheries are experiencing increased restrictions, such as Amendment 17B in the South Atlantic

proposing new management measures for speckled hind, warsaw grouper, and snowy grouper, which include a prohibition on harvest of several deepwater snapper-grouper species beyond 240 feet (73 m).

Alternative 2

Alternative 2 would develop criteria to allow NMFS flexibility in opening the commercial shark fishing seasons through the annual specifications process as well as allow for adjustments via inseason actions to the shark trip limits to extend the fishing season, as necessary. These measures are meant to provide fishing opportunities, to the extent practicable, for participants, across the fishery. In addition, such flexibility could help accommodate unanticipated events in the Atlantic and Gulf of Mexico regions. As mentioned above, the criteria under sub-alternative 2B apply to all shark species although the analysis focuses on non-sandbar LCS as that is the only fishery with directed trip limits currently in place.

Sub-alternative 2A

Sub-alternative 2A could potentially affect the 221 directed and 282 incidental shark permit holders along with the 105 shark dealers. NMFS plans to review the criteria, described in Chapter 2, on an annual basis and would open the fisheries at times that are deemed to provide the most benefits for most of the fishermen while also considering the ecological needs of the different species. The opening of the fishing season through the annual specifications process could vary based on the available annual quota, catch rates, and number of fishing participants during the year. The direct and indirect socioeconomic impacts would be neutral for the non-quota limited fisheries on a short and long-term basis, because NMFS would not change the opening dates of these fisheries from the status quo alternative. For the quota limited fisheries, delaying the opening could result in short- and long-term, direct, minor, adverse socioeconomic impacts as fishermen would have to fish in other fisheries to make up for lost revenues at the beginning of the fishing season. The short and long-term effects for delaying the season would cause indirect, minor, adverse socioeconomic impacts on shark dealers and other entities that deal with shark products as they may have to diversify during the beginning of the season when certain shark products would not be available. This would be most prevalent in areas of the southeast Atlantic where sharks are available early in the fishing season or in the western portion of the Gulf of Mexico where other fisheries are not open at the beginning of the year. For example, delaying the non-sandbar LCS fishing season could cause changes in ex-vessel prices. In 2009, the median ex-vessel price of LCS meat in January was approximately \$0.25 per pound dress weight in the Gulf of Mexico and \$0.45 in the South Atlantic region, while the median ex-vessel price in July of 2008 was \$0.45 in the Gulf of Mexico and \$0.75 in the South Atlantic. The median ex-vessel price for shark fins in January was \$17.00 per pound in the Gulf of Mexico and \$16.00 in the South Atlantic. When the LCS fishery opened in July, the average price for fins was approximately \$14.00 per pound in the Gulf of Mexico and \$12.00 per pound in the South Atlantic based on 2008 prices. Since the North Atlantic had a very limited 2009 non-sandbar LCS fishing season, the ex-vessel prices for 2008 were used for the comparison.

In the North Atlantic, delaying the opening of the Atlantic shark fishery would have direct, minor, beneficial socioeconomic impacts in the short and long-term for fishermen as they would have more access to the shark quota. Fishermen in the North Atlantic did not have or had

a limited access to the non-sandbar LCS quota in 2009. In addition, in the Gulf of Mexico region, shark fishermen commented that they wanted the non-sandbar LCS fishery to open around the religious holiday of Lent when sharks are more marketable. Florida-based fishermen commented that they want the non-sandbar LCS fishery in the Gulf of Mexico region to open in March to have a more fishing opportunities to harvest the non-sandbar LCS quota. Based in part on these public comments, NMFS prefers sub-alternative 2A to allow flexibility in the opening of commercial shark fisheries in future years. There would be indirect, minor, beneficial socioeconomic impacts in the short and long-term for shark dealers and other entities that deal with shark products in this area as they would have more access to shark products in the coming years. Thus, delaying the quota limited fisheries under the preferred alternative would cause neutral cumulative socioeconomic impacts, since it would allow for a more fishing opportunities among participants in this region.

Sub-alternative 2B

Sub-alternative 2B would allow NMFS to adjust the shark trip limits through inseason actions, but would not adjust the overall quotas. Since non-sandbar LCS are currently the only shark species with a directed trip limit, NMFS used non-sandbar LCS as an example to analyze the sub-alternatives; however, these actions could apply to any shark species/complex. NMFS recognizes also the challenges associated with changing trip limits inseason, including delays in dealer reporting and real-time monitoring of shark quotas and complementary trip limits also being established in state waters. NMFS is currently working on an electronic dealer reporting system that would increase the timeliness of dealer reports and allow NMFS to monitor shark quotas in real-time. NMFS would also work with the states to implement the same trip limits in state waters as in federal waters.

According to Amendment 2, this sub-alternative is anticipated to have direct and indirect, short-term, neutral socioeconomic in the Gulf of Mexico and Atlantic regions, because changing the non-sandbar LCS trip limits inseason would not limit the overall harvest of non-sandbar LCS, but would provide the mechanism to modify the harvest spatially and temporally to allow furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas. Directed fishing on non-sandbar LCS or any shark species would continue as long as the trip limit is high enough to make it economically viable. Table 4.1 shows that since the implementation of Amendment 2 directed shark fishing trips by federal fishermen, as reported in Coastal Fisheries logbook, land, on average, 21 non-sandbar LCS in the Gulf of Mexico region, and 13 non-sandbar LCS in the Atlantic region. NMFS has not been able to determine at what trip limit fishermen stop targeting non-sandbar LCS. A range of trip limits have been further analyzed in alternatives 1B and 1C, and the socioeconomic impacts associated with the range of trip limits are described above in the discussions of those sub-alternatives. Trip limits set at levels too low for fishermen to continue targeting sharks would likely lead to shifts in effort to other fisheries, similar to effort shifts experienced during closures of the non-sandbar LCS fishery in 2009 and 2010. The criteria for changing the trip limits during the season, as outlined in Chapter 2, takes into account opportunities for the furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas and ecological considerations of the relevant shark stock, but would not restrict or reduce the current quota. If trip limits are set in a manner that is beneficial to the ecological needs of the relevant shark species, their populations may increase in the long-term, which could allow for

increased quota levels in the future. Therefore, minor, beneficial long-term direct, indirect, and cumulative socioeconomic impacts may occur based on sub-alternative 2B in the long-term.

Summary and Conclusions

Due to the short and disproportionate shark fishing seasons in 2009 and 2010, NMFS is preferring measures in this final EA that would allow extended seasons and ensure participants from all areas have an opportunity to harvest a portion of the available shark quotas in the Atlantic and Gulf of Mexico regions. Under alternative 1, NMFS considered ways to maintain the non-sandbar shark fishery as finalized under Amendment 2. Therefore, under alternative 1 and its sub-alternatives, NMFS explored ways to add flexibility to the trip limit approach to help ensure consistency with the intent of Amendment 2 to maintain a year-round incidental fishery for non-sandbar LCS.

NMFS currently prefers alternative 2, where sub-alternative 2A would allow NMFS to delay the opening of the shark fishing seasons through the annual specifications process, and sub-alternative 2B would provide NMFS with the flexibility to make adjustments via inseason actions to shark trip limits to slow the fishery down during the season, as necessary. The criteria and process for opening the fishing seasons would provide NMFS with the flexibility to open the fisheries at times that are deemed to provide the most benefits for most of the fishermen while also considering the ecological needs of the different species, to the extent practicable. In addition, delaying the opening for the shark fishery would allow NMFS to provide, to the extent practicable, fishing opportunities for all participants within a given region. NMFS expects that there would be positive environmental impacts because NMFS could time the opening of shark fisheries in consideration of the shark pupping season, which would help protect gravid females that are close to giving birth from capture and harvest. However, delaying the non-sandbar LCS season could cause negative socioeconomic impacts to fishermen in parts of the regions when sharks are either available during the beginning of year and/or when other fisheries are closed during the beginning of the year, limiting fishing opportunities overall. Conversely, some fishermen may experience positive socioeconomic impacts with a delay in the opening of the non-sandbar LCS fishery due shark migratory patterns and sharks only being available during summer months. Sub-alternative 2A would allow NMFS to balance these needs and open the fisheries at times that are deemed to provide the most benefits for most of the fishermen while also considering the ecological needs of the different species to the extent practicable. Sub-alternative 2B would allow NMFS to modify the trip limits through inseason actions to allow fishermen equitable access, to the extent practicable, to the resource throughout the relevant regions and according to ecological needs of the different shark species. NMFS would use the established criteria to adjust trip limits within a range of 0 to 33 (and 36 as of 2013) non-sandbar LCS throughout the fishing season. Thus, the preferred sub-alternatives 2A and 2B meet the objectives of this rule by allowing flexibility in the opening of the season for Atlantic shark fisheries through the annual specifications process and adjustments via inseason actions to sharks trip limits in either region to provide expanded opportunities for participants across the fishery, as is the intent of Amendment 2. In addition, having such flexibility would help NMFS respond throughout the management region to any future unanticipated large and small scale events that occur just before or during a fishing season.

4.2 Impacts on Essential Fish Habitat

As described in Amendment 1 to the 2006 Final Consolidated HMS FMP, there is no evidence that physical effects caused by any HMS gear are adversely affecting EFH for targeted or non-targeted species, to the extent that physical effects can be identified on the habitat or the fisheries. Of the approved gears that are used in the HMS fisheries, only BLL gear, principally targeting LCS, makes contact with the bottom. If BLL gear becomes hung or entangled on bottom substrates such as rock, and hard and soft corals, it could have some adverse impacts. However, the nature of these impacts to shark EFH in the Gulf of Mexico and Atlantic regions was determined to be minimal and only temporary in nature (NMFS, 2009). As noted in Section 10.1 of Amendment 1 and Appendix B of the Final 2006 Consolidated HMS FMP, EFH for sharks may encompass a wide range of habitats from coastal waters to deep offshore pelagic waters along the U.S. Atlantic and Gulf of Mexico coasts. Currently, little information exists on the effects of BLL gear on benthic habitats. The principal components of the longline that can produce seabed effects are the anchors or weights, hooks, and mainline. The 1999 NMFS EFH Workshop categorized the impact of BLL gear on mud, sand, and hard-bottom as low.

Additionally, all of the alternatives analyzed, including the preferred alternatives, considered changes to when fishing might occur and are not expected to increase overall fishing effort or change fishing practices. Therefore, the preferred alternatives are not expected to have significant impacts on EFH. As a precautionary measure, NMFS recommends fishermen take appropriate steps to identify and avoid bottom obstructions in order to mitigate any adverse impacts on EFH. The other gear types used to target sharks, such as gillnet or PLL, are unlikely to have any impact on EFH because they are fished in the water column and not in contact with the bottom.

4.3 Impacts on Other Finfish Species

As described above, the current shark fishery has been able to continue to direct fishing effort on sharks despite the recent reduction in non-sandbar LCS trip limits and the prohibition of sandbar sharks outside of a shark research fishery. Amendment 2 assumed shark fishermen would no longer target LCS, but would incidentally catch them while targeting other species. Therefore, under Amendment 2 the majority of landings by fishermen incidentally landing sharks on a given trip would have been anticipated to be non-shark species. However, analysis of the Coastal Fisheries logbook data indicated that shark landings by vessels with directed shark permits accounted for 81 percent of total landings on all 2008-2009 trips reporting non-sandbar LCS from the South Atlantic. In addition to the shark species taken on these trips, mackerel accounted for 11.6 percent of the total landed weight, and amberjack, almaco, banded rudderfish, crevalle, cobia, dolphin, hogfish, wahoo, black sea bass, bluefish, blue runner (combined) accounted for 6.3 percent of total landings. Shark landings on vessels with directed shark permits in the Gulf of Mexico accounted for 77 percent of total landings on all 2008-2009 trips reporting non-sandbar LCS. Grouper accounted for 19.6 percent of the total landed weight, and grunt, snapper, porgy and other species were also taken, but accounted for 1 percent or less, each, of the total landings for all the trips landing non-sandbar LCS. Thus, while there is some finfish bycatch on trips targeting sharks, the vast majority of the catch consists of sharks.

However, many shark fishermen possess several different federal fishing permits (see Table 9.1). Thus, these shark fishermen have the ability to fish in different fisheries if the shark season is delayed within a given fishing season or if non-sandbar LCS trip limits are reduced to the point that these fishermen begin to target non-shark species. NMFS evaluated the ability of shark fishermen to move into these other fisheries (*i.e.*, Gulf of Mexico reef fish, dolphin/wahoo, mackerel, and South Atlantic snapper/grouper fisheries). An overview of each of these other fisheries is discussed in detail, including impacts of any redistributed effort to other fisheries, in Section 4.7 below. Most of these fisheries are limited access in nature, so unless fishermen currently possessed permits in these fisheries, it would be difficult and expensive for them to enter these fisheries. Although these shifts are difficult to quantify, strict retention limits and quotas are either in place or about to be implemented in these fisheries, which would protect these stocks from further overfishing and being further overfished by any redirected shark fishing effort. Thus, the preferred alternatives should not have any significant adverse impacts to other finfish species.

4.4 Impacts on Protected Species

This section contains a discussion of the expected protected resources impacts from each of the analyzed alternatives.

Sub-alternative 1A

Alternative 1A, the No Action alternative, would maintain the current vessel trip limits for non-sandbar LCS as previously analyzed under the 2008 Biological Opinion (BiOp) under Amendment 2. Analysis of Coastal Fisheries logbook data showed that the average annual number of directed shark trips by federal fishermen was estimated at 1,107 trips / year prior to the implementation of Amendment 2 (2003-2005). Since Amendment 2 (2008-2009), the average number of directed shark trips, as reported in the Coastal Fisheries logbook system, that landed non-sandbar LCS was 526 trips / year. Based on this, NMFS can assume that there has been some reduction in shark fishing effort by federally-permitted fishermen, as anticipated under Amendment 2. Given this, indirect impacts in the short and long-term under sub-alternative 1A would be neutral as interaction rates with protected resources are not expected to change compared to what was analyzed under Amendment 2. Sub-alternative 1A is also not anticipated to affect food fishes for protected resources nor disturb any associated critical habitat. Therefore, indirect impacts on protected resources, and the environment, would be neutral in the short-term and the long-term, since there would be no change in how the fishery is prosecuted. Finally, as sub-alternative 1A would not change how the fishery currently operates, and logbook data indicate a decrease in directed shark fishing effort by federally-permitted fishermen, as anticipated under Amendment 2, it is anticipated that the cumulative impacts to protected resources would be the same as the status quo, or neutral, in the short and long-term.

Sub-alternatives 1B and 1C

Sub-alternatives 1B and 1C would modify the non-sandbar LCS trip limit, as needed, to extend the fishing season in the Atlantic and Gulf of Mexico regions if the available quota is being harvested at a rate that would not ensure a reasonable season length. The trip limit could be reduced from the current trip limit established under Amendment 2 down to as low as zero

non-sandbar LCS per trip based on the criteria under sub-alternative 2B. Conversely, these actions would also allow for an increase in any such reduced trip limit, not to exceed the trip limit established in Amendment 2. For moderate reductions in the trip limits (*i.e.*, 32 to 21 non-sandbar LCS per trip in the Gulf of Mexico region or 32 to 13 non-sandbar LCS per trip in the Atlantic region), the direct impacts from these alternatives on protected resources in the short-term would be neutral because there would be minimal change in shark fishing effort. As the trip limits would be inseason actions and not permanent changes, no long-term impacts are anticipated. For larger reductions in the trip limit (*i.e.*, reductions in the trip limit below the overall average number of non-sandbar LCS retained per trip; <21 non-sandbar LCS in the Gulf of Mexico region or <13 non-sandbar LCS in the Atlantic region), neutral direct impacts are anticipated until fishermen no longer direct or target sharks. At that time, NMFS anticipates that shark fishermen would stop fishing with BLL gear for sharks; however, the shark gillnet fishery would most likely continue for SCS, but would no longer target blacktip sharks. Once fishermen stopped directed fishing on sharks and only landed sharks incidentally, stopped using BLL gear to fish for sharks, or used gillnet gear to target only SCS, minor direct beneficial environmental impacts would be expected for protected resources, including sea turtles, smalltooth sawfish, and marine mammals, due to the reduced non-sandbar LCS fishing effort. Indirect impacts are anticipated to be neutral in the short-term for the entire range of trip limits as the fishery is not anticipated to affect prey or critical habitat of protected resources when fishermen are directing on sharks nor when they stop directing on sharks to target other fish species. Finally, cumulative impacts are anticipated to be neutral for moderate reductions in the trip limits. With moderate reductions, the fishery is anticipated to operate as it currently operates under the status quo, and therefore, cumulative impacts would be the same as the status quo. However, as trip limits are reduced to the point where it is no longer economical for fishermen to target sharks, and directed shark fishing effort declines, then NMFS anticipates minor beneficial cumulative impacts on protected resources as interaction rates could decrease with decreased shark fishing effort.

Sub-alternative 2A, Preferred Alternative

Alternative 2A would establish criteria that would allow NMFS to delay opening dates for the shark fisheries. This sub-alternative anticipates that the quota for some fisheries, such as the non-sandbar LCS fisheries, would not last the entire fishing year as fishing behavior has changed in a way not anticipated since the implementation of Amendment 2. Thus, the opening of the different fisheries for the shark species/complexes could be delayed to allow for the furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas. The direct impacts on protected resources would be neutral in the short- and long-term, as there would be no increase or decrease, in fishing effort. The delay in the start of the season for any of the shark species is anticipated to also have neutral indirect impacts on protected resources in the short- and long-term as it is not anticipated to impact any food resources or habitat for protected resources.

Sub-alternative 2B, Preferred Alternative

Sub-alternative 2B would establish new criteria to adjust the non-sandbar LCS trip limit through inseason action in the Gulf of Mexico and Atlantic regions. This alternative anticipates that the quotas for some fisheries, such as the non-sandbar LCS fisheries, would not last the entire fishing year under the current trip limit structure given fishing behavior has changed in a

way not anticipated since the implementation of Amendment 2. This alternative would allow NMFS to modify shark trip limits according to an inseason action with five days advance notice from filing such a change. The trip limit could be adjusted according to the criteria proposed in Chapter 2, and could range from the current trip limit of 33 non-sandbar LCS per trip established under Amendment 2 to zero non-sandbar LCS per trip. The trip limit could be adjusted multiple times, which would allow NMFS to increase or decrease the trip limit appropriately according to the criteria described in Chapter 2. Under this alternative, neutral short- and long-term impacts on protected species are anticipated because there would be minimal change in overall non-sandbar LCS fishing effort, as the non-sandbar LCS quota in this alternative would be the same as the one established by Amendment 2. Changes to the shark trip limits would allow for the furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas and accommodate the ecological needs of different shark species. Therefore, because directed effort on sharks is not anticipated to change, impacts on protected resources are expected to be neutral.

4.5 Coastal Zone Management

The Coastal Zone Management Act (CZMA) requires that Federal agency activities be consistent to the maximum extent practicable with the enforceable policies of federally-approved state coastal management programs (CMPs). NMFS determined that this action is consistent to the maximum extent practicable with the enforceable policies of the approved coastal management program of coastal states on the Atlantic including the Gulf of Mexico and the Caribbean Sea. In September 2010, NMFS provided all coastal states along the eastern seaboard and the Gulf of Mexico (19 states), including Puerto Rico and the U.S. Virgin Islands with a copy of the proposed rule and draft EA to establish quotas for 2011 commercial fishing season and adaptive management for the Atlantic shark fishery and requested their concurrence. Under 15 C.F.R. § 930.41, states and/or U.S. territories have 60 days to respond after the receipt of the consistency determination and supporting materials. States can request an extension of up to 15 days. If a response is not received within those time limits, NMFS can presume concurrence (15 C.F.R. § 930.41(a)).

To date, eleven states replied within the response time period that the proposed regulations were consistent, to the extent practicable, with the enforceable policies of their CMPs (New Hampshire, Rhode Island, Connecticut, New Jersey, Delaware, Virginia, North Carolina, Florida, Alabama, Mississippi, and Louisiana). Another eight states (Maine, Massachusetts, New York, Maryland, South Carolina, Georgia, Puerto Rico and the U.S. Virgin Islands) did not respond within the response time period, nor did they request an extension in the comment period; therefore, NMFS presumes their concurrence.

4.6 Environmental Justice

Executive Order 12898 requires agencies to identify and address disproportionately high and adverse environmental effects of its regulations on minority and low-income populations. To determine whether environmental justice concerns exist, the demographics of the affected area should be examined to ascertain whether minority populations and low-income populations are present. If so, a determination must be made as to whether implementation of the alternatives

may cause disproportionately high and adverse human health or environmental effects on these populations.

In addition to the community profile information found in the 2006 Consolidated HMS FMP (Chapter 9), a recent report was completed by MRAG Americas, and Jepson (2008) titled “Updated Profiles for HMS Dependent Fishing Communities” (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. The communities of Dulac, Louisiana and Fort Pierce, Florida have significant populations of Native Americans and African-Americans, respectively. The 2000 Census data indicates that Native Americans made up 39 percent of the Dulac population, specifically the Houma Indians, which is not a federally recognized tribe. About 30 percent of the Dulac population was living below poverty level in 2000. In 2000, African-Americans were about 41 percent of the Fort Pierce, Florida population with about 30 percent of the entire Fort Pierce population living below the poverty line. These two communities also have significant populations of low-income residents. In addition to Dulac and Fort Pierce, there is a low-income, minority Vietnamese-American population in Louisiana, actively participating in the longline fishery, and commuting to fishing ports, but not living in “fishing communities” as defined by the Magnuson-Stevens Act and identified in Section 9.4 and Appendix E of Amendment 2. Each of the management alternatives in Chapter 4 includes an assessment of the potential socioeconomic impacts associated with the final alternatives. The preferred alternatives were selected to minimize economic impacts and provide for the sustained participation of fishing communities, while taking the necessary actions to rebuild overfished fisheries as required by the Magnuson-Stevens Act. More in-depth information about potential social impacts of each preferred alternatives is briefly described below with detailed information provided earlier in this chapter.

Sub-alternative 1A would maintain the status quo for existing vessel trip regulations for non-sandbar LCS as established under Amendment 2. Sub-alternatives 1B and 1C would establish new non-sandbar LCS trip limits that would extend the fishing season in the Atlantic and Gulf of Mexico regions at the beginning of the shark fishing season, which would remain static for the remainder of the fishing season, and could have negative social or economic impacts throughout the fishery, but not a disproportionate negative social or economic impact on minority or low-income populations in the communities discussed above. The preferred sub-alternatives under alternative 2, to establish criteria for determining when to open the commercial shark fisheries and new inseason shark trip limit adjustment criteria for the Gulf of Mexico and Atlantic regions, could have some negative economic and social impacts throughout the fishery. Sub-alternatives 2A and 2B are designed to open the fisheries at times that are deemed to provide the most benefits for most of the fishermen and, also, to lengthen the fishing season and provide, to the extent practicable, fishing opportunities across all the regions while also considering the conservation goals of several shark species. NMFS does not anticipate that these effects would fall disproportionately on minority or low-income populations in the affected communities discussed below. NMFS believes this alternative would provide an appropriate balance between positive environmental impacts that must be achieved in order to rebuild and end overfishing on overfished stocks, while minimizing the severity of negative impacts that would occur as a result of these measures.

4.7 Cumulative Impacts

4.7.1 Past, Present and Reasonably Foreseeable Future Actions

As discussed in Section 3.1 of the FEIS for Amendment 3, NMFS has taken a number of actions in the past in order to, among other things, rebuild overfished and prevent overfishing of Atlantic sharks. These actions have included FMPs, FMP amendments, and framework actions. The goals and objectives of these past rules are summarized in Section 3.1 in the FEIS for Amendment 3. The need and objectives of this document are described in earlier sections, particularly Chapter 1, and are not repeated here.

Other recent actions within HMS fisheries that may affect shark fishermen both directly and indirectly include: a rule modifying permitting and reporting requirements for the HMS International Trade Permit (ITP) program (73 FR 31380; June 2, 2008); a rule that amends the regulations governing the Atlantic tunas longline limited access permits (LAPs) and amends the workshop attendance requirements for businesses issued Atlantic shark dealer permits (73 FR 38144; July 3, 2008); Amendment 2, which changed quotas, retention limits, and authorized species for the commercial shark fishery (corrected rule: 73 FR 40658; July 15, 2008); a rule authorizing green-stick gear for the harvest of Atlantic tunas and a requirement for PLL and BLL HMS fishermen to possess and use an authorized sea turtle control device (73 FR 54721; September 23, 2008); implementation of the Atlantic Pelagic Longline Take Reduction Plan (74 FR 23349; May 19, 2009) to reduce protected species interactions in HMS fisheries; an inseason action that closed the commercial non-sandbar LCS fishery in the Gulf of Mexico region (74 FR 26803; June 4, 2009); Amendment 1 that amended essential fish habitat designations for HMS (Notice of Availability of final EIS: 74 FR 28018; June 12, 2009); an inseason action that closed the commercial non-sandbar LCS fishery within the shark research fishery and in the Atlantic region (74 FR 30479; June 26, 2009); an inseason action that closed the sandbar shark research fishery (74 FR 51241; October 6, 2009); a rule establishing the 2010 shark fishing season specifications (75 FR 250; January 5, 2010); Amendment 3, which changed quotas and established non-blacknose SCS and blacknose shark complexes, addressed overfishing of shortfin mako sharks, and brought smooth dogfish (*Mustelus canis*) and Florida smoothhound (*Mustelus norrisi*) under HMS management (75 FR 30484, June 1, 2010); an inseason action (or temporary rule) that closed the Gulf of Mexico commercial non-sandbar LCS fishery in 2010 (75 FR 12700; March 17, 2010); an inseason action that closed the commercial porbeagle shark fishery (75 FR 53871; September 2, 2010); an inseason action that closed the commercial non-LCS research fishery in 2010 (75 FR 62690; October 13, 2010); and an inseason action that closed the commercial blacknose and non-blacknose SCS fisheries (75 FR 67251; November 2, 2010).

The following past and ongoing actions would have varying degrees of synergistic impacts on the human environment when considered in conjunction with this action:

- The rule modifying permitting and reporting requirements for the HMS ITP program slightly modifies requirements that were already in place. Therefore, this is not expected to have any additional impacts with the implementation of this action.

- The rule that amends the regulations governing the Atlantic tunas longline LAPs and amends the workshop attendance requirements for businesses issued Atlantic shark dealer permits slightly modifies requirements that were already in place. Therefore, this is not expected to have any additional impacts with the implementation of this action.
- Amendment 2 changed quotas, retention limits, and authorized species for the commercial shark fishery. This is not expected to have any additional impacts with the implementation of this action.
- The rule authorizing green-stick gear for the harvest of Atlantic tunas should not have impacts on tuna populations, and a requirement for PLL and BLL HMS fishermen to possess and use an authorized sea turtle control device should help in the safe release of sea turtles caught in PLL and BLL gear. The authorization of greenstick gear creates more economic opportunities to harvest Atlantic tunas. This is not expected to have any additional impacts with the implementation of this action.
- The final rule for the Pelagic Longline Take Reduction Plan (PLTRP) may have beneficial, cumulative environmental and adverse, cumulative socioeconomic impacts in conjunction with this action, if restrictions on maximum pelagic longline mainline length in the mid-Atlantic Bight reduce commercial access to sharks. The cumulative environmental impacts may be beneficial for pelagic sharks and some LCS if the PLTRP results in decreasing fishing mortality, but cumulative socioeconomic impacts may be adverse if pelagic shark landings are reduced.
- The 2009 temporary closure of the commercial non-sandbar LCS fishery in the Gulf of Mexico region due to estimated landings fulfilling the quota is not expected to have any environmental or socioeconomic impacts in conjunction with this action as the non-sandbar LCS fishery reopened on February 4, 2010 (75 FR 250).
- Amendment 1 amended essential fish habitat designations for HMS. This is not expected to have any additional impacts with the implementation of this action.
- The 2009 temporary closure of the commercial non-sandbar LCS fishery within the shark research fishery and in the Atlantic region due to estimated landings fulfilling the quotas is not expected to have any environmental or socioeconomic impacts in conjunction with this action as the non-sandbar LCS research fishery reopened on January 5, 2010, and the non-sandbar LCS fishery in the Atlantic region reopened on July 15, 2010, with quotas adjusted for any 2009 overharvest of non-sandbar LCS (75 FR 250).
- The 2009 temporary closure of the sandbar shark research fishery due to estimated landings fulfilling the quota is not expected to have any environmental or socioeconomic impacts in conjunction with this action as the fishery reopened on January 5, 2010 (75 FR 250).
- The rule that establishes the 2010 shark fishing season specifications adjusts quotas and opening dates for the 2010 fishing season for sandbar sharks, non-sandbar LCS, SCS, and pelagic sharks based on any over- and/or underharvests experienced during the 2008 and 2009 Atlantic commercial shark fishing seasons. This rule may have, cumulative, adverse, socioeconomic impacts for

some SCS fishermen by delaying the opening of the SCS fishing season until June 1, 2010. The rule also delayed the opening of the LCS fishery in the Atlantic region until July 15, 2010, which may have resulted in varied cumulative socioeconomic impacts (ranging from beneficial to adverse) depending on LCS availability within the region.

- Amendment 3 changed quotas and authorized species for the commercial shark fishery. This is not expected to have any additional impacts with the implementation of this action.
- The temporary closure of the commercial non-sandbar LCS fishery in the Gulf of Mexico region due to estimated landings fulfilling the quota in 2010 is not expected to have any environmental or socioeconomic impacts in conjunction with this action as the fishery will reopen in 2011 with quotas adjusted for any 2010 overharvest of non-sandbar LCS.
- The temporary closure of the commercial porbeagle shark fishery due to estimated landings fulfilling the quota is not expected to have any environmental or socioeconomic impacts in conjunction with this action as the fishery will reopen in 2011 with quotas adjusted for any 2010 overharvest of porbeagle shark.
- The temporary closure of the commercial non-sandbar LCS research fishery due to estimated landings fulfilling the quota in 2010 is not expected to have any environmental or socioeconomic impacts in conjunction with this action as the fishery will reopen in 2011 with quotas adjusted for any 2010 overharvest of non-sandbar LCS in the research fishery.
- The temporary closure of the commercial blacknose and non-blacknose SCS fisheries due to estimated landings fulfilling the quota is not expected to have any environmental or socioeconomic impacts in conjunction with this action as the fishery will reopen in 2011 with quotas adjusted for any 2010 underharvest of the non-blacknose SCS fishery.

In addition, reasonably foreseeable future actions that may result in additional incremental cumulative impacts include: modifications to swordfish and Atlantic bluefin tuna management measures; establishing reporting requirements for recreational and commercial U.S. Caribbean HMS fisheries, and changes to HMS permitting requirements announced in an Advanced Notice of Proposed Rulemaking (74 FR 26174; June 1, 2009). These are measures that, while not all directly related to sharks, could be implemented in other rulemakings and affect participants in shark fisheries in conjunction with the preferred alternatives selected in this proposed amendment. Such actions would have varied effects on shark fishermen. Additional actions that reduce fishing opportunities could have cumulative, adverse, socioeconomic impacts on shark fishermen in conjunction with this action. However, other actions that address regional issues in the Caribbean region could increase fishing opportunities and have cumulative, beneficial, socioeconomic impacts on fishermen.

In general, the preferred alternatives would allow for flexibility in the opening of the season through the annual specifications process for Atlantic shark fisheries and adjustments via inseason actions to shark trip limits in either region to provide expanded opportunities for constituents across the fishery, as is the intent of Amendment 2. The preferred sub-alternatives would establish criteria for selecting opening dates and adjusting shark trip limits in the Gulf of

Mexico and Atlantic regions. Cumulative environmental and socioeconomic impacts of these alternatives could range from neutral to minor beneficial (see Section 4.7.2 below and Table 4.3). While NMFS has evaluated the cumulative environmental and socioeconomic impacts of these preferred alternatives, NMFS also evaluated how other non-HMS fisheries may be impacted by the preferred alternative suite. In particular, NMFS evaluated other fisheries that fishermen currently have permits for, shark fishermen's ability to enter other fisheries, and the subsequent impacts those fisheries might experience as a result of redirected shark fishing effort.

As part of this analysis, NMFS investigated the different types of commercial permits that directed and incidental shark permit holders currently have in addition to their HMS permits (see Table 9.1). NMFS found that many directed and incidental shark permit holders also have Gulf of Mexico reef fish, dolphin/wahoo, mackerel (including king and Spanish mackerel), South Atlantic snapper/grouper commercial permits, and non-HMS Charter/Headboat permits. A few fishermen also have lobster permits. NMFS also evaluated the ability of shark fishermen to move into these other fisheries (*i.e.*, Gulf of Mexico reef fish, dolphin/wahoo, mackerel, and South Atlantic snapper/grouper fisheries) as a result of delayed fishing seasons and retention limit reductions in the Atlantic shark fishery under the preferred alternatives. Shark fishermen may also participate in shark fisheries in state waters or may participate in other HMS fisheries for which they may already possess permits (*i.e.*, swordfish). Table 9.1 includes vessels that possess swordfish permits in addition to commercial shark permits. An overview of each fishery is listed below, and the cumulative environmental and socioeconomic impacts of the preferred alternative, including impacts of any redistributed effort to other fisheries, are discussed below.

Gulf of Mexico Reef Fish Fishery

The Gulf of Mexico Fishery Management Council (GMFMC) originally established the Gulf of Mexico Reef Fish FMP in 1984. Thirty-one amendments have been made to this plan.

A Gulf of Mexico commercial reef fish vessel permit allows the harvest and sale of all reef fish listed in the Reef Fish FMP under quota (where applicable) and in excess of the bag limits (where applicable), except goliath grouper (all harvest prohibited), Nassau grouper (all harvest prohibited), and red snapper. Fishermen wanting to harvest and sell red snapper must also possess individual fishing quota (IFQ) shares. Issuance of new reef fish permits is under a moratorium. Access to this fishery is limited to existing permits holders. However, existing permits are transferable. As of November 5, 2009, shark directed and incidental permit holders possessed 112 Gulf of Mexico reef fish permits (Table 9.1). There are 93 Gulf of Mexico reef fish permits held by shark permitted vessels that are concentrated in Florida, which represent approximately 83 percent of the total number of Gulf of Mexico reef fish permits held by commercial shark permit holders.

A portion of the reef fish permit holders also possess IFQ shares, which allow them to land red snapper in addition to other reef fish. Anyone commercially fishing for red snapper must possess an IFQ allocation and follow the established reporting protocol. Quota shares are freely transferable to any other reef fish permit holders during the first five years following implementation of the IFQ program and then to anyone thereafter. Shark permit holders that also possess a reef fish permit but did not receive an IFQ allocation will likely find that it would be costly to attain such an allocation.

The Gulf of Mexico Reef Fish FMP authorizes the use of longline, hook and line, handline, bandit gear, rod and reel, buoy gear, spear, powerhead, cast net, and trawl. There is a 6,000 lb gutted weight trip limit for all groupers, deep-water and shallow-water, combined. In January 2008, NMFS published a final rule implementing the Joint Reef Fish Amendment 27/Shrimp Amendment 14. This amendment reduced the commercial red snapper quota to 2.55 million pounds (mp) and a recreational quota of 2.45 mp between 2008 and 2010. The amendment also reduced the commercial minimum size limit to 13 inches total length, requires the use of non-stainless steel circle hooks, venting tools, and dehooking devices when fishing for reef fish, established a red snapper bycatch mortality reduction goal for the shrimp trawl fishery, and, if necessary, would implement shrimp fishery seasonal closures if the reduction target for red snapper is not met.

Gulf of Mexico commercial grouper and tilefish fishermen in December 2008 approved a referendum that allowed the Council to approve Amendment 29 to the Reef Fish FMP in January 2009. The final rule was published on August 31, 2009 (74 FR 44732), and established a commercial IFQ management program for grouper and tilefish, which became effective on January 1, 2010. Initial allocation of quota is based on a permit's landings history from 1999 and 2004. On March 1, 2010 a supplemental rule was published (75 FR 9116), which removed measures inadvertently retained in the final rule for Amendment 29 that restricted the harvest of shallow-water grouper species.

The GMFMC submitted Amendment 30B to the Reef Fish FMP to NMFS in August 2008 for approval. An interim rule became effective on January 1, 2009, and set seasonal closures, size limits, and catch quotas for the commercial and recreational grouper fisheries. The final rule for Amendment 30B was published on April 16, 2009, and includes reducing the recreational aggregate grouper and gag grouper bag limit, increasing the recreational red grouper bag limit, decreasing the commercial red grouper minimum size, increasing the commercial red grouper closure, eliminating the commercial fishing season closure, and eliminates the end date for the Madison-Swanson and Steamboat Lumps marine reserves. A seasonal closure area for recreational and commercial fishing from January 1 to April 30, "The Edges", was removed from the Amendment 30B final rule because of a error contained in the proposed rule and was proposed in separate rule on April 17, 2009 (74 FR 17812). NMFS implemented an emergency rule (74 FR 20229) that bans BLL fishing shoreward of 50 fathoms east of Cape San Blas, FL from May 18, 2009, to October 28, 2009, to reduce sea turtle bycatch in the Gulf of Mexico BLL reef fish fishery. An interim action was taken in a rule on October 21, 2009 (74 FR 53891), that prohibits the use of bottom longline gear for the harvest of reef fish shoreward of a line approximating the 35-fathom depth contour in the eastern Gulf of Mexico and limits bottom longline vessels operating in the reef fish fishery east of longitude 85°30'W to 1,000 hooks on board, of which only 750 may be actively fished or rigged for fishing. This action was taken to reduce the incidental take of sea turtles until the implementation of Amendment 31, which was then implemented by NMFS on April 26, 2010 (75 FR 21512) and became effective on May 26, 2010.

NMFS published a proposed rule on March 30, 2010, that would provide an estimated closure date for the recreational component of the Gulf of Mexico reef fish fishery, and to

increase the commercial and recreational Gulf red snapper quota based on an updated stock assessment that determined that overfishing on the stock ended in 2009 (75 FR 15665). The final rule published on May 3, 2010 (75 FR 23186), and increased the Gulf of Mexico red snapper quota from 5 million lb to 6.945 million lbs and closed the recreational reef fish fishery on July 24, 2010.

Approximately 23 percent of all shark permit holders (directed and incidental combined) already possess the LAPs necessary to participate in the Gulf of Mexico reef fish fishery. Of these, the Agency did not estimate the number of vessels that were selected to participate in the red snapper fishery since the inception of an IFQ program for that fishery because permits to participate in this fishery are no longer being issued. Although the overall commercial quota has been increased, it is not likely that shark fishermen would be able to compensate for potential losses solely by transferring effort to the Gulf of Mexico reef fish fishery because the fishery is limited access and has extensive measures in place to control effort and harvest levels.

Dolphin/Wahoo Fishery

In the Gulf of Mexico, dolphin is included in the management unit under the Coastal Migratory Pelagic Resources FMP, and a charter/headboat vessel permit is required to fish for or possess dolphin in the Gulf of Mexico. Otherwise, there are no regulations controlling the harvest of these species in the Gulf of Mexico.

In the South Atlantic, historically, the dolphin/wahoo fishery has been a recreational fishery (NMFS, 2003). However, during the 1990s, commercial landings in the Atlantic Ocean increased, due in part to an increasing number of pelagic longliners targeting dolphin (NMFS, 2003). As a result, the SAFMC, in cooperation with the MAFMC and NEFMC, developed a comprehensive FMP for both dolphin and wahoo in the Atlantic Ocean (NMFS, 2003). This FMP was approved in December of 2003. The final rule implementing the regulations in this FMP was published on May 27, 2004 (69 FR 30235). Owing to the significant importance of the dolphin/wahoo fishery to the recreational fishing community in the Atlantic, the overall goal of the FMP was to adopt a precautionary and risk-averse approach to management that set harvest limits based on the status quo at that time, which was average catch and effort levels from 1993 to 1997 (NMFS, 2003). These limits were implemented to deter shifts in the historical PLL fisheries for sharks, tunas, and swordfish or expansions into nearshore coastal waters to target dolphin, which could create user conflicts and possible localized depletion in abundance (NMFS, 2003).

As such, the dolphin/wahoo fishery is an open access fishery where people can purchase a vessel, dealer, or operator permit in the South Atlantic. Operators of commercial vessels, charter vessels, and headboats in the South Atlantic that fish south of 39° N. Latitude are required to have a federal vessel permit for dolphin/wahoo and must have and display operator permits. There is no trip limit for dolphin for a vessel with a commercial federal vessel permit. However, there is a 500 pound commercial trip limit for wahoo for vessels with such a permit. For commercially permitted vessels fishing north of 39° N. Latitude that do not have a federal commercial vessel permit for dolphin/wahoo, there is a trip limit of 200 pounds combined of dolphin and wahoo. In addition, there is a 20 inch fork length minimum size limit for dolphin off the coasts of Georgia and Florida with no size restrictions elsewhere, and PLL fishing for

dolphin and wahoo is prohibited in areas closed to the use of such gear for HMS. Dolphin/wahoo longline vessels must also comply with sea turtle protection measures. Finally, there is also a non-binding 1.5 million pound (or 13 percent of the total harvest) cap on commercial landings for dolphin. Should the catch exceed this level, the SAFMC would review the data and evaluate the need for additional regulations, which may be established through a framework action.

The recreational dolphin fishery has the same minimum size restrictions as the commercial fishery. In addition, there is a recreational bag limit of 2 wahoo per person per day and 10 dolphin per person per day or 60 dolphin per vessel per day, whichever is less (headboats are excluded from the vessel limit). There is a prohibition on recreational sale of dolphin and wahoo caught under the bag limit unless the seller holds the necessary commercial permits.

The authorized gears for dolphin and wahoo fishery are hook-and-line gear including manual, electric, and hydraulic rods and reels; bandit gear; handlines; longlines; and spearfishing (including powerheads) gear. PLL vessels permitted in the shark and swordfish fisheries are subject to the hook size regulations regarding the HMS fishery, which has impacted their ability to simultaneously fish for dolphin by attaching smaller-hooked gangions directly to their PLL gear. The total 1999 recreational harvest accounted for 91 percent (10,127,970 pounds total recreational harvest and 1,050,090 pounds commercial harvest) of the total U.S. harvest (NMFS, 2003).

The commercial fishery for wahoo appears to be incidental to fishing for dolphin or other pelagic species. Like dolphin, the recreational landings of wahoo account for a larger proportion of the total harvest in the Gulf of Mexico and Atlantic Ocean. In 1999, the total commercial harvest amounted to 99,159 pounds, compared to 1.41 million pounds harvested by recreational anglers (NMFS, 2003).

The dolphin/wahoo fishery is extremely seasonal in nature. This seasonality would influence the number of displaced shark fishermen's ability to direct effort towards dolphin and wahoo. In addition, there have been no formal stock assessments for dolphin or wahoo. The status of wahoo is considered unknown, and time-series data seems to indicate neither a decline in stock abundance nor a decrease in mean size of individual dolphin fish (SAFMC, 1998). However, a precautionary approach to management was taken in 2003 since the dolphin and wahoo tend to aggregate, they are economically valuable before the age of maturity, and there is high interannual variability in these stocks due to environmental factors. Therefore, the 2003 FMP set harvest limits based on the status quo at that time.

As of November 5, 2009, 309 dolphin/wahoo permit holders also have directed or incidental shark permits (Table 9.1). One hundred seventy nine of these dolphin/wahoo permit holders are from the state of Florida (Table 9.1). Because the dolphin/wahoo fishery is an open access fishery, shark permit holders who do not currently have a dolphin/wahoo permit would be able to enter the fishery in the South Atlantic. Fishermen in the Gulf of Mexico could switch to the dolphin/wahoo fishery without trip limits or any permit requirements. However, gear modification may be difficult since dolphin and wahoo are pelagic in nature, and PLL gear requires the use of 18/0 (with an offset not to exceed 10°) or 16/0 non-offset circle hooks. These

larger hooks would make it difficult to catch small dolphin and wahoo, thus limiting catch to larger individuals. In addition, because of the seasonal nature of this fishery, directed fishing year-round would be difficult.

Spanish mackerel

In the South Atlantic, fisheries for Spanish mackerel (*Scomberomorus maculatus*) are important for commercial participants who also engage in shark fisheries. Fisheries are managed by the SAFMC and the GMFMC under the FMP for Coastal Migratory Pelagic Resources and its amendments. A stock assessment for South Atlantic Spanish mackerel was completed in 2008 and concluded that the population is not overfished or experiencing overfishing (SEDAR, 2008).

Authorized gear for Spanish mackerel in the South Atlantic include automatic reel, bandit gear, rod and reel, cast net, run-around gill nets, and stab nets; in the Gulf of Mexico, all gears are legal except drift and long gillnets and purse seines. However, there is an incidental catch allowance for vessels with purse seines onboard. A minimum size of 3.5 inches (8.9 cm) stretched mesh is required for all run-around gill nets, and soak time is limited to one hour. The fishing year in the South Atlantic is from March 1 through the end of February. The fishing year in the Gulf of Mexico is April 1 through March 31. A federal vessel permit is required for commercial fisheries; however, the fishery is open to new participants who can demonstrate they meet an income requirement.

In the South Atlantic, the fishery is managed in two zones with differing regulations: a northern zone (Georgia to New York) and a southern zone (east coast of Florida to Dade-Monroe County). Catch restrictions vary by month and are dependent on the percentage of each zones allocation that is actually harvested. The majority of landings occur off Florida, where the commercial trip limit from April – November is 3,500 lb/trip. Trip limits are unlimited on weekdays beginning December 1 with a 1,500 lb trip limit on weekends until 75 percent of the quota is reached, and 1,500 lb daily trip limits are established. When 100 percent of the adjusted quota is met, trip limits are reduced to 500 pounds through the end of fishing year (SAFMC 2009a).

Gillnets were the predominant gear type for Spanish mackerel prior to the net ban in Florida (NMFS, 2004). As of 2003, approximately 60 percent of the overall catch came from cast nets and approximately 25 percent are caught with gillnets, the remainder being caught with other authorized gears (NMFS, 2004). In Florida, the majority of the effort is still in state waters, where gillnets are not allowed (NMFS, 2004). Some netting occurs in federal waters; however, the cast net is used more often (NMFS, 2004). Fishing effort follows the fish migrating north to waters off North Carolina in the summer and then following the fish back to Florida during the winter months (NMFS, 2004). Sinknets are the primary gear type off North Carolina (NMFS, 2004).

Shark fishermen could transfer fishing effort to Spanish mackerel fisheries as a result of this proposed action. Many vessels that deploy gillnets for sharks also possess Spanish mackerel permits. Of vessels that possess directed and incidental shark permits, 222 also possess Spanish mackerel permits (Table 9.1). Because the commercial fishery for Spanish mackerel is not limited access, with only an income qualifier restriction and the stocks are healthy, this could be

an attractive fishery for participants to engage in, especially those who possess vessels that are already set up for fishing with gillnet or castnet gear.

NMFS published a final rule (June 25, 2007, 72 FR 34632) revising regulations implementing the ALWTRP by expanding the Southeast U.S. Restricted Area and modifying regulations pertaining to gillnetting within the Southeast U.S. Restricted Area. NMFS prohibits gillnet fishing or gillnet possession during annual restricted periods associated with the right whale calving season. Limited exemptions to the fishing prohibitions are provided for gillnet fishing for sharks and for Spanish mackerel south of 29°00' N. Latitude. An exemption to the possession prohibition is provided for transiting through the area if gear is stowed in accordance with this final rule. This action is required to meet the goals of the MMPA and the ESA. This action is necessary to protect northern right whales from serious injury or mortality from entanglement in gillnet gear in their calving area in Atlantic Ocean waters off the Southeast U.S.

King Mackerel

Commercial fisheries for king mackerel (*Scomberomorus cavalla*) are an important source of revenue for participants in the Atlantic and Gulf of Mexico regions. Similar to Spanish mackerel, king mackerel is managed by both the SAFMC and GMFMC under the Coastal Migratory Pelagic Resources FMP.

A stock assessment was conducted for king mackerel in 2009. The assessment determined that the Atlantic and Gulf of Mexico migratory groups of king mackerel are not overfished and that it was uncertain if the two stocks are experiencing overfishing (SEDAR, 2009). Permits in the commercial fishery are limited access and there is currently a permit moratorium in place. The minimum size for king mackerel is 24 inches (61 cm); however, vessels may possess up to five percent of the fish on board as undersized fish. In the South Atlantic, the fishing season is March 1 through the end of February, or until the quota of 3.71 million pounds is met. In the Gulf of Mexico, the fishing year is July 1 through June 30, or until the quota of 1.01 million pounds is met.

In the South Atlantic, trip limits vary by region and time of year, including:

- From New York to Flagler/Volusia County, Florida from April 1 to March 31, the trip limit is 3,500 pounds;
- From Flagler/Volusia to Volusia/Brevard County lines from April to October 31, the trip limit is 75 fish; and,
- In Monroe County, Florida, from April 1 to October 31, the trip limit is 1,250 pounds.

Authorized gear for king mackerel varies by region, including: rod and reel, bandit gear, handline, automatic reel, gillnets, and long gillnets (except north of Cape Lookout, North Carolina); PLL, run-around gillnets (> 4.75 inches (12.1 cm) stretched mesh); and purse seine (no more than 400,000 lb may be harvested by purse seine) (SAFMC, 2009b).

In the Gulf of Mexico, trip limits are established according to regional sub-divisions, each with their own quota.

- From the Florida/Alabama state boundary through Texas, the trip limit is 3,000 pounds.
- From the Florida/Alabama state boundary to the Lee/Collier County, Florida, boundary, the trip limit is 1,250 pounds.
- From the Lee/Collier County boundary to the Monroe/Miami-Dade County boundaries, from November 1 through March 31, the trip limit is 1,250 pounds.
- From the Monroe/Miami-Dade County boundary to the Broward/Volusia County boundary, from November 1 through March 31, the trip limit is 50 fish until February 1, when it increases to 75 fish if 75 percent of the quota is not taken.

There are 188 king mackerel permits held by shark permit holders (directed and incidental combined) as of November 5, 2009 (Table 9.1). The king mackerel fishery is limited access so entry by those who do not currently possess a permit would be more difficult. Because approximately one-third of shark permit holders also have king mackerel permits, NMFS anticipates that shark fishermen may increase fishing effort in king mackerel fisheries. Vessels that are already set up to deploy run-around gillnets, PLL, bandit gear, or other gillnets are most likely to increase fishing effort in the king mackerel fishery as they would have the least difficulty reconfiguring their vessel.

South Atlantic Snapper-Grouper Fishery

The SAFMC manages the 73 species that comprise the South Atlantic snapper-grouper fishery management unit (FMU). In 1998, Amendment 8 to the snapper-grouper FMP was implemented initiating a limited access program. Recent stock assessments were conducted for two deepwater snapper-grouper species, snowy grouper and golden tilefish as well as some shallower snapper-grouper species (red porgy, vermilion snapper, and black sea bass). Snowy grouper, black seabass, and red porgy were found to be overfished. Red porgy and golden tilefish were determined to not be overfished, and the overfished status of vermilion snapper was unknown. Snowy grouper, golden tilefish, black seabass, and vermilion snapper were determined to be experiencing overfishing. An assessment of South Atlantic red snapper conducted in 2008 determined that the stock is overfished and experiencing overfishing. Stock assessments for South Atlantic and Gulf of Mexico black grouper, and South Atlantic red grouper were completed in February 2010. The assessment found that there is a single black grouper stock in the southeast U.S. waters, and that it is neither overfished nor undergoing overfishing, but that South Atlantic red grouper is overfished with overfishing occurring.

NMFS implemented the final rule for Amendment 13C to the FMP for the South Atlantic snapper-grouper Fishery on October 23, 2006 (71 FR 55096). The intent of the amendment was to reduce harvests, end overfishing, and achieve optimum yield. The management measures included in the final rule included reductions in annual commercial quotas for snowy grouper and golden tilefish. Quotas were specified for black sea bass, red porgy, and vermilion snapper, and commercial trip limits were increased for red porgy. Amendment 14 was approved in January 2009 (74 FR 1621) and established eight MPAs off South Atlantic states to protect a portion of the population and habitat of deepwater snapper-grouper species from directed fishing pressure and prohibits harvest for all species in the snapper-grouper complex in these eight MPAs. Amendment 2 prohibited the use of shark BLL gear in the MPAs.

In March 2008, Amendment 15A (73 FR 14942) updated management reference points for snowy grouper, black sea bass, and red porgy, modified rebuilding schedules for snowy grouper and black sea bass; defined rebuilding strategies for snowy grouper, black sea bass, and red porgy, and redefined the minimum stock size threshold for the snowy grouper stock. Amendment 16 published in June 2009 (74 FR 30964) and became effective at on July 29, 2009. Measures included seasonal restrictions on shallow water groupers, a recreational closure for vermilion snapper, new quotas for gag grouper and vermilion snapper, and recreational bag limits. Amendment 15B published in November 2009 (74 FR 58902) and contained a number of actions that may affect the fishery, including adjusting snowy grouper allocations and quotas, requiring sea turtle release gear, and implementation of bycatch monitoring protocols.

In response to the 2006 Magnuson-Stevens Reauthorization Act and the 2008 red snapper stock assessment, the SAFMC proposed Amendment 17 to address overfishing requirements by 2010. This includes increasing catch limitations and establishing new closed areas for snapper-grouper fishing. The amendment would also establish Annual Catch Limits (ACLs) and Accountability Measures (AMs) for 10 species (red snapper, golden tilefish, snowy grouper, speckled hind, warsaw grouper, black grouper, black sea bass, gag, red grouper, and vermilion snapper) within the snapper-grouper fishery. The Amendment has been split into two, with Amendment 17A addressing the overfishing of red snapper (SAFMC, 2009b), and Amendment 17B addressing ACLs and AMs for black grouper, black sea bass, gag, golden tilefish, red grouper, snowy grouper, vermilion snapper, speckled hind, and warsaw grouper (SAFMC 2009c). In June 2010, the SAFMC approved Amendment 17A, and NMFS published a notice of availability on July 29, 2010 (75 FR 44753) to request public comments on the amendment, and the proposed rule on August 13, 2010 (75 FR 49447). At the December 2009 meeting, the SAFMC approved Amendment 17B for submission to the Secretary of Commerce for approval (SAFMC, 2010a), and NMFS published a notice of availability on September 22, 2010 (75 FR 57734) to request public comments on the amendment, and the proposed rule on October 12, 2010 (75 FR 62488). This includes a proposal for an annual recreational and commercial closure of waters 240 feet seaward to deepwater species harvest, mainly to reduce fishing effort on warsaw grouper and speckled hind. A limited access privilege program for golden tilefish, among other management measures, is being considered to be included in Amendment 18.

In December 2006, the SAFMC voted to explore the use of a LAPP for the snapper-grouper fishery, which could include the use of IFQs. Shark directed and incidental permit holders that already possess limited access permits in the snapper-grouper fishery may benefit from a future IFQ program as it may mitigate the more restrictive management measures that are in place for some of the snapper-grouper species. However, entrance into the snapper-grouper fishery is difficult due to the need to find two transferable limited access permits available for purchase.

As of November, 2009, 108 shark directed and incidental permit holders also held permits in the South Atlantic snapper-grouper fishery (Table 9.1). New entrants into the snapper-grouper fishery must obtain two existing snapper-grouper transferable permits and exchange them for one new permit. Allowable commercial gear for the snapper-grouper fishery includes vertical hook and line including bandit gear, black seabass pots, sink nets (North Carolina only), and BLL. Vessels with BLL gear onboard may only possess snowy grouper, one

warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish. No other snapper-grouper species may be possessed or harvested.

4.7.2 Cumulative Environmental and Socioeconomic Impacts

The preferred alternatives would add flexibility to shark management by establishing criteria that would allow for delays in the start of the different shark species/complex fishing seasons each year through the annual specifications process as well as adjustments via inseason actions to shark trip limits to extend the fishing season, as necessary. These measures are meant to allow furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas, which was the intent under Amendment 2. In addition, having flexibility would help accommodate any needed changes to the fishery, such as a result of the oil spill in the Gulf of Mexico region or inclement weather.

Environmental Impacts

NMFS anticipates that the criteria established under the preferred alternatives sub-alternatives 2A and 2B could result in the following cumulative environmental impacts in the short-term. For sub-alternatives 2A, the criteria would allow NMFS to adjust the opening of a given shark fishing season to allow furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas, which was the intent under Amendment 2. In the short-term, sub-alternative 2A would have neutral cumulative environmental impacts because majority of the fisheries would open on or about January 1 as was analyzed in Amendment 2. In the long-term, sub-alternative 2A could have minor beneficial cumulative environmental impacts because NMFS could delay the opening of the shark fisheries for ecological needs, such as delaying the season to protect sharks during pupping season.

The criteria developed under preferred sub-alternative 2B, to allow adjustments via inseason actions to shark trip limits, are anticipated to have neutral cumulative environmental impacts for slightly reduced trip limits in the short-term as it would likely not preclude fishermen from harvesting the entire non-sandbar LCS quota within a given season. However, if trip limits are reduced to the level where fishermen would stop targeting sharks, in addition to reductions in the blacknose and non-blacknose SCS quotas under Amendment 3 and restrictions in other fisheries, such as the closures for bottom longline gear in the reef fish fishery in the Gulf of Mexico and new proposed measures for the speckled hind, warsaw grouper, and snowy grouper in the South Atlantic, NMFS anticipates minor beneficial cumulative environmental impacts as overall fishing effort, including for non-sandbar LCS, would be expected to decrease. In the long-term, NMFS anticipates minor beneficial cumulative environmental impacts under sub-alternative 2B as effort through lowered trip limits may be reduced during sensitive biological times, such as pupping periods, which could have minor beneficial cumulative environmental impacts in the long-term for certain shark species.

In terms of redistributed effort from the shark fisheries to other fisheries due to delayed shark fishing seasons or reduced trip limits, Table 9.1 shows that many shark fishermen hold permits in other BLL and gillnet fisheries. However, limited access and quotas and/or restricted fishing seasons are currently in place that would limit redistribution of shark fishing effort into these fisheries (and shark fishermen are already fishing in these fisheries as they currently

possess these permits). Therefore, cumulative environmental impacts due to redistributed effort from sub-alternatives 2A or 2B would be minimal.

Other fisheries that are open access that shark fishermen could pursue, such as the mackerel fishery and the dolphin/wahoo fishery, generally have few interactions with protected resources and little bycatch compared to directed shark fishing trips (see NMFS, 2003 and Carlson and Bethea, 2007). Therefore, redistributed effort into these fisheries would not be anticipated to increase interactions with protected resources or result in significant increases in bycatch. In addition, retention limits, quotas and other effort controls are in place for these fisheries to protect the stocks from overfishing and from being overfished.

In addition to these impacts, cumulative ecological impacts on HMS stocks and fisheries due to actions under consideration by Regional Fishery Management Councils, Interstate Marine Fisheries Commissions, or other management bodies may be slightly beneficial. NMFS implemented an HMS area closure that was consistent with the measures implemented by the Caribbean Fishery Management Council's area closures, which could have minor positive benefits for Atlantic HMS (72 FR 5633, February 7, 2007). NMFS also published a rule that requires sea turtle handling and release equipment in the shark BLL fishery (72 FR 5633, February 7, 2007). Additionally, NMFS implemented the eight marine protected areas implemented by the South Atlantic Fishery Management Council for HMS BLL gear in Amendment 2 (corrected rule: July 15, 2008, 73 FR 40658). The GMFMC implemented regulations that would implement similar dehooking requirements to those required in the HMS PLL fishery and to those for the HMS BLL fishery (71 FR 45428, August 9, 2006). New requirements for non-stainless steel circle hooks in the reef fish fishery under Amendment 27 were implemented on January 29, 2008 (73 FR 5117) by the GMFMC. NMFS has also implemented workshops for the safe handling and release and identification of protected resources for all HMS gillnet and longline fishery participants and identification workshops for shark dealers (71 FR 58058, October 2, 2006). NMFS implemented an emergency rule that closed the Gulf of Mexico BLL reef fish fishery shoreward of 50 fathoms east of Cape San Blas, FL from May 18, 2009 to October 28, 2009, to reduce sea turtle bycatch in the Gulf of Mexico BLL reef fish fishery. This action was permanently implemented by NMFS on May 26, 2010 (April 26, 2010, 75 FR 21512). Amendment 31, which was implemented by NMFS on April 26, 2010 (75 FR 21512) and became effective on May 26, 2010, includes measures in the Gulf of Mexico BLL reef fish fishery to protect sea turtles (74 FR 69322). NMFS would closely monitor any resulting redistribution of effort from the reef fish fishery to the shark BLL fishery in the Gulf of Mexico.

Socioeconomic Impacts

In terms of socioeconomic impacts, the criteria under preferred sub-alternative 2A would have neutral socioeconomic impacts in the short-term because most of the shark fisheries would open on or around January 1 of each year. NMFS would only delay a season if it thought it would help mitigate adverse socioeconomic impacts in one area or region. For instance, in 2011 NMFS would open the shark research, blacknose shark, non-blacknose SCS, and pelagic shark fisheries upon the effective date of the final rule for this action. However, NMFS would delay the opening of the non-sandbar LCS in the Gulf of Mexico until March 1, 2011, and delay the opening of the non-sandbar LCS in the Atlantic region until July 15, 2011, which is the same as

in the 2010 fishing season, to allow more fishing opportunities for shark fishermen. In the long-term, sub-alternative 2A could result in neutral cumulative socioeconomic impacts because while delays in the fishing season would not allow fishermen to fish for sharks year round, the underlying quotas would not be changed, and therefore, fishermen and dealers would still have the same amount of shark available to them as analyzed under Amendment 2 and Amendment 3.

Under sub-alternative 2B, the short-term cumulative socioeconomic impacts are anticipated to be neutral for slight reductions in the trip limits as fishermen would still be able to harvest the entire quota. However, NMFS anticipates minor and adverse cumulative socioeconomic impacts if trip limits are significantly reduced and fishermen stop targeting sharks, especially if it results in fishermen leaving the fishery without their usual harvest of sharks. In addition, if it is no longer economically viable to target sharks, it is unlikely that shark fishermen would be able to recuperate any potential economic losses by switching to other fisheries due to quota reductions and/or limited access programs in these other fisheries. The Agency presumes that since some shark fishermen also possess several permits in other fisheries (Table 9.1), they do not receive all of their revenues from shark products. At the present time, NMFS estimates that fishermen make decisions about which fisheries to participate in based on the ex-vessel prices they can expect from a given species of fish, seasonality, quotas, trip limits, and other factors. In the past, due to higher quotas, revenues received from sharks likely comprised a larger share of fishermen's overall revenues from fishing activities than is expected in the future. However, it could be difficult for lost shark revenues to be replaced by transferring more effort to other fisheries in which they have historically participated due to restrictions in those fisheries as well.

There are limited-access permit programs in place for the South Atlantic snapper-grouper fishery as well as the Gulf of Mexico reef fish fishery, where no new permits are being issued. Therefore, if shark fishermen do not currently possess a South Atlantic snapper-grouper permit or a Gulf of Mexico reef fish permit, it would be difficult and costly to enter these fisheries in the future. There are also quota reductions and closures for many reef fish species, which would affect current Gulf of Mexico reef fish permit holders. Thus, shark fishermen who have shark and reef fish permits could experience economic hardships in both fisheries.

In addition, there is an IFQ program in place for the Gulf of Mexico red snapper fishery, with limitations on transfers during the first five years, and a new IFQ program would be implemented in the near future for the South Atlantic snapper-grouper fishery. These IFQ programs could benefit current South Atlantic snapper-grouper or Gulf of Mexico red snapper permit holders; however, it would make it difficult and expensive for shark fishermen who do not currently possess these permits to enter these fisheries in the future.

The dolphin/wahoo fishery is an open access fishery. However, redistribution of commercial shark fishing effort into this fishery may result in user conflicts between recreational and commercial fishermen. Additionally, commercial PLL fishermen that currently fish for dolphin and wahoo could suffer economically if a large proportion of the shark fishermen redirect their effort to the dolphin/wahoo fishery, given the 1.5 million pounds commercial landings cap (or 13 percent of total landings, whichever is greater) for the dolphin fishery. If this cap is exceeded, the SAFMC may decide to take more stringent measures in this fishery to

reduce overall catch. More importantly, due to the seasonality of the dolphin/wahoo fishery, it would be difficult for commercial fishermen to target dolphin/wahoo (S. Branstetter, NOAA, personal communication). Finally, it would be difficult for shark fishermen using PLL gear to catch smaller dolphin and wahoo due to hook requirements in the PLL fishery. Shark fishermen would have to either target larger fish with larger circle hooks or relinquish their HMS permit(s) so that they could use smaller hook sizes to target smaller dolphin/wahoo. The latter would preclude them from retaining any HMS catch.

It is likely that shark fishermen using gillnet gear for sharks would transfer some fishing effort to the Spanish mackerel fishery. Participants currently using other gears for sharks may consider purchasing the necessary gear (*e.g.*, gillnets, *etc.*) to become involved in this fishery. Since this fishery is not limited access, transferring effort into this fishery would not require paying high costs to acquire permits from other vessels. Furthermore, since the stock status of Spanish mackerel is healthy, there does not appear to be any significant restrictions on quotas or other effort controls necessary at this time or in the foreseeable future. However, this fishery is seasonal, so year-round revenues from Spanish mackerel may not be realized. Rather, participants in North Carolina would be expected to fish for Spanish mackerel in the summer while participants in Florida could target these fish in the winter. However, the commercial fishery for king mackerel is managed via a limited access permit system, and shark fishermen who do not currently possess a king mackerel permit may have a difficult time entering this fishery.

The additional management measures taken by other Regional Fishery Management Councils and Commissions, such as the eight MPAs implemented by the SAFMC's Amendment 14, dehooking requirements by the GMFMC and closures in the Gulf of Mexico to BLL fishing for reef fish to protect sea turtles, the interstate shark plan being implemented by the ASMFC, the requirement to use non-stainless steel, circle hooks in the reef fish fishery as well as other rules that NMFS has recently implemented for protected species and to protect EFH, would all have minor adverse short-term cumulative socioeconomic impacts on fishery participants. However, because these measures were implemented to help reduce interactions with protected species or increase post-release survival of non-target species and protected species, to help rebuild overfished fish stocks and end overfishing or to protect EFH for deep-water species, such measures would help conserve fishery resources in the long-term, which could ultimately have minor beneficial cumulative socioeconomic impacts for fishermen in the long-term.

4.8 Comparison of the Alternatives

The environmental, socioeconomic and impacts to protected resources for the different alternatives and their sub-alternatives compared in Table 4.3.

- Symbol Key:**
- Neutral Impacts
 - ⊙ Minor Adverse Impacts
 - ⊙+ Minor Beneficial Impacts
 - ⊙- Moderate Adverse Impacts
 - ⊙+ Moderate Beneficial Impacts
 - ⊙- Moderate Adverse Impacts

Table 4.3 Comparison of alternatives considered. Range of numbers under 1B and 1C indicate the range of trip limits considered.

Alternative	Quality	Timeframe	Environmental	Protected Resources	Socioeconomic
Alternative 1: Revisit static trip limits (Approach 1)					
1A: No Action. Maintain the current vessel trip regulations for non-sandbar LCS.	Direct	Short-term	○	○	○
		Long-term	⊙-	○	⊙-
	Indirect	Short-term	○	○	○
		Long-term	○	○	⊙-
	Cumulative	Short-term	○	○	○
		Long-term	⊙+	○	⊙-
1B: Establish a new non-sandbar LCS trip limit that would extend the fishing season in the Gulf of Mexico region.	Direct		32-29: ○	32-29: ○	32-29: ○
			28-21: ○	28-21: ○	28-21: ⊙-
		Short-term	<21: ○	<21: ○/⊙+	<21: ⊙-
		Long-term	○	○	○
	Indirect		32-29: ○	32-29: ○	32-29: ○
			28-21: ○	28-21: ○	28-21: ⊙-
		Short-term	<21: ○/⊙+	<21: ○	<21: ⊙-
		Long-term	○	○	○
	Cumulative		32-29: ○	32-29: ○	32-29: ○
			28-21: ○	28-21: ○	28-21: ⊙-
		Short-term	<21: ⊙+	<21: ○/⊙+	<21: ⊙-
		Long-term	○	○	○
1C: Establish a new non-sandbar LCS trip limit that would extend the fishing season in the Atlantic region.	Direct		32-27: ○	32-27: ○	32-27: ○
			26-13: ○	26-13: ○	26-13: ⊙-
		Short-term	<13: ○	<13: ○/⊙+	<13: ⊙-
		Long-term	○	○	○
	Indirect		32-27: ○	32-27: ○	32-27: ○
			26-13: ○	26-13: ○	26-13: ⊙-
		Short-term	<13: ○/⊙+	<13: ○	<13: ⊙-
		Long-term	○	○	○

Alternative	Quality	Timeframe	Environmental	Protected Resources	Socioeconomic
	Cumulative		32-27: ○	32-27: ○	32-27: ○
			26-13: ○	26-13: ○	26-13: ● ₋
		Short-term	<13: ● ₊	<13: ○ / ● ₊	<13: ⊘ ₋
		Long-term	○	○	○
Alternative 2 Revisit season opening and closing dates and flexible trip limits (<i>Preferred Alternative</i> ; Approach 2)					
2A: Establish new opening dates for the shark fisheries based on certain criteria and process - <i>Preferred Alternative</i>	Direct	Short-term	○	○	○
		Long-term	● ₊	○	● ₋
	Indirect	Short-term	○	○	○
		Long-term	● ₊	○	● ₋
	Cumulative	Short-term	○	○	○
		Long-term	● ₊	○	○
2B: Establish inseason trip limit adjustment criteria for the Atlantic shark fishery — <i>Preferred Alternative</i> .	Direct	Short-term	○	○	○
		Long-term	● ₊	○	● ₊
	Indirect	Short-term	○	○	○
		Long-term	○	○	○
	Cumulative	Short-term	○ / ● ₊	○	○ / ● ₋
		Long-term	● ₊	○	● ₊

5.0 MITIGATION AND UNAVOIDABLE IMPACTS

5.1 Mitigating Measures

The preferred alternatives were specifically selected to mitigate potential adverse impacts on the environment. As a result, mitigation was explicitly addressed in the analyses conducted for selecting the management measures in the preferred alternatives. The preferred alternatives would allow for flexibility in opening of the commercial shark fishing seasons as well as allow for inseason actions that could reduce the trip limits in either the Atlantic or Gulf of Mexico regions if the shark quotas are being taken at a rate that results in a short fishing season. In addition, the preferred alternative would provide additional flexibility to accommodate unanticipated events in the Atlantic and Gulf of Mexico regions. Such unanticipated events could include large scale issues, such as the Deepwater Horizon/BP oil spill, or small scale issues, such as migration shifts of sharks due to warmer or colder water. The preferred alternatives would mitigate potential negative socioeconomic impacts in all regions by allowing the furtherance of equitable fishing opportunities to the extent practicable for commercial shark fishermen in all regions and areas. In addition, directed and incidental permit holders would still be authorized to land the non-sandbar LCS, sandbar shark (in the shark research fishery), non-blacknose SCS, blacknose shark, and pelagic shark fishing quotas as established in Amendments 2 and 3. As such, the preferred alternatives would mitigate adverse environmental and economic impacts to the shark fisheries by balancing the need to end overfishing on overfished stocks while providing fishing opportunities for constituents across the fishery to target sharks and harvest the available quota.

In summary, while the preferred alternatives in this final EA may impose additional restrictions on the shark fishery, such as delaying the fishing season or reducing shark trip limits, NMFS specifically developed and identified preferred alternatives that minimize economic impacts while accomplishing the mandate to end overfishing on overfished stocks.

5.2 Unavoidable Adverse Impacts

As described above, the preferred alternatives are expected to have environmental and socioeconomic impacts. Delaying the fishing season for shark fisheries and reducing trip limits for sharks in both the Atlantic and Gulf of Mexico regions would have positive environmental impacts to shark species that are currently prohibited or that are overfished and have overfishing occurring. These fishing season delays and reduced trip limits would also result in positive environmental impacts for incidentally caught species and protected resources as fishing effort would be reduced. There could be negative socioeconomic impacts associated with the preferred alternatives; however, lengthening the fishing season and allowing fishing opportunities, to the extent practicable, for fishermen to catch the available quota would help offset the potential negative economic impacts from the delayed fishing season and reduced trip limits. The reasons for selecting the preferred alternatives are outlined in the previous sections of this document. In the consideration of the alternatives, NMFS determined that the preferred alternatives would balance the environmental and socioeconomic impacts while accomplishing the mandate to end overfishing and implement a rebuilding plan for overfished shark stocks.

5.3 Irreversible and Irretrievable Commitment of Resources

The preferred alternatives would not result in any irreversible or irretrievable commitments of resources. The preferred alternatives are not expected to have significant negative impacts on sea turtles or other protected resources.

6.0 ECONOMIC EVALUATION

This section assesses the economic impacts of the alternatives presented in this document. The primary purpose of this chapter is to provide the baseline economic data for the Regulatory Impact Review (RIR) in Chapter 7 and the Final Regulatory Flexibility Analysis (FRFA) in Chapter 8. It also provides relevant data for Community Profiles described in Chapter 9. While this chapter provides an economic analysis, more specific data necessary to completely analyze socio-economic impacts related to the preferred management measures and amendments is disclosed in Chapters 3, 4 and 9.

6.1 Number of Vessel and Dealer 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 in conjunction with Atlantic HMS shark fishing activities.

As of November 2009, there were a total of 503 commercial permit holders in the Atlantic shark fishery (221 directed and 282 incidental permits). Table 6.1 provides a summary of these permit holders since 2004. Further detail regarding commercial permit holders is provided in Chapter 3 of the FEIS for Amendment 3.

Table 6.1 Number of Shark Limited Access Permits holder between 2004 and 2009.

Year	# Directed Shark	# Incidental Shark
2009	221	282
2008	214	285
2007	231	296
2006	240	312
2005	235	320
2004	241	348

As of November 2009, there were a total of 105 Atlantic shark dealer permit holders. Table 6.2 provides a summary of shark dealer permit holders by year. Further detail regarding shark dealer permit holders is provided in the 2006 Consolidated HMS FMP. All dealer permit holders are required to submit reports detailing the nature of their business. For shark permit holders, dealers must submit bi-weekly dealer reports on all HMS they purchase. To facilitate quota monitoring “negative reports” for shark are also required from dealers when no purchases are made (*i.e.*, NMFS can determine who has not purchased fish versus who has neglected to report).

Table 6.2 Number of shark dealer permits issued from 2004-2009. The actual number of permits per region may change as permit holders move or sell their businesses.

Year	Atlantic shark dealers
2009	105
2008	128
2007	206
2006	336
2005	228
2004	230

6.2 Gross Revenue of the Commercial Shark Fishermen

NMFS calculated annual gross revenues by combining current federal permit holders with their reported landings from logbooks and shark dealer reports averaged from 2000 to 2009. These landings were multiplied by ex-vessel prices for LCS meat, pelagic shark meat, SCS meat, and shark fins obtained from dealer reporting to determine annual gross revenues.

Of all Atlantic HMS, sharks bring in the lowest total gross revenues (~\$2.6 million in 2009). Table 6.3 provides data on the prices shark fishermen received at the dock. The average values for ex-vessel prices from the Southeast Fisheries Science Center's Accumulative Landings System (ALS) and dealer reports from the Northeast were used to construct the table.

Table 6.3 Estimates of the total ex-vessel annual revenues of Atlantic Shark HMS fisheries.

Sources: NMFS, 2008; Cortés, 2003; Cortés and Neer, 2002, 2005; Cortés, pers. comm.

Species		2004	2005	2006	2007	2008	2009
Large coastal sharks	Ex-vessel \$/lb dw	\$0.86	\$0.86	\$0.89	\$0.58	\$0.61	\$0.41
	Weight lb dw	3,213,896	3,147,196	3,808,662	2,329,272	1,362,904	1,412,626
	Fishery Revenue	\$2,763,951	\$2,706,589	\$3,389,709	\$1,350,978	\$831,371	\$573,899
Pelagic sharks	Ex-vessel \$/lb dw	\$1.12	\$1.16	\$1.14	\$1.10	\$1.07	\$1.25
	Weight lb dw	679,469	252,815	192,843	262,179	234,546	217,465
	Fishery Revenue	\$761,005	\$293,265	\$219,841	\$288,397	\$250,964	\$271,831
Small coastal sharks	Ex-vessel \$/lb dw	\$0.50	\$0.52	\$0.51	\$0.63	\$0.55	\$0.60
	Weight lb dw	451,651	634,885	763,327	618,191	623,848	628,339
	Fishery Revenue	\$225,826	\$330,140	\$389,297	\$389,460	\$343,116	\$377,003
Shark fins (weight = 5% of all sharks landed)	Ex-vessel \$/lb dw	\$16.25	\$18.18	\$18.53	\$13.84	\$13.76	\$11.86
	Weight lb dw	217,251	201,745	238,242	160,482	111,065	112,922
	Fishery Revenue	\$3,530,326	\$3,667,720	\$4,414,617	\$2,221,072	\$1,528,253	\$1,338,780
Total sharks	Fishery Revenue	\$7,281,107	\$6,997,715	\$8,413,464	\$4,249,907	\$2,953,705	\$2,561,514

Note: Average ex-vessel prices may have some weighting errors.

Table 6.4 reports ex-vessel prices by shark complex and year. The ex-vessel price data indicate somewhat stable ex-vessel prices since 2004.

Table 6.4 Median Ex-vessel prices per pound dress weight for shark complexes from 2004-2009.

Source: HMS Dealer Reports

Species Complex	2004	2005	2006	2007	2008	2009
Large coastal sharks	\$0.40	\$0.50	\$0.40	\$0.40	\$0.52	\$0.50
Small coastal sharks	\$0.59	\$0.60	\$0.55	\$0.75	\$0.60	\$0.55
Pelagic sharks	\$1.01	\$1.27	\$1.35	\$1.20	\$1.10	\$1.25
Shark fins	\$10.00	\$12.00	\$12.85	\$6.00	\$4.00	\$5.00

Table 6.5 Regional Median Ex-vessel prices per pound dress weight for shark complexes from 2008-2009.

Source: HMS Dealer Reports

Species Complex	Region	2008	2009
Large coastal sharks	Gulf of Mexico	\$0.40	\$0.35
	South Atlantic	\$0.51	\$0.50
	Mid-Atlantic	\$0.60	\$0.59
	North Atlantic	NA	NA
Small coastal sharks	Gulf of Mexico	\$0.57	\$0.85
	South Atlantic	\$0.75	\$0.70
	Mid-Atlantic	\$0.41	\$0.50
	North Atlantic	NA	NA
Pelagic sharks	Gulf of Mexico	\$1.00	\$1.25
	South Atlantic	\$1.50	\$1.50
	Mid-Atlantic	\$1.10	\$1.20
	North Atlantic	\$0.78	\$0.75
Shark fins	Gulf of Mexico	\$15.00	\$15.00
	South Atlantic	\$12.00	\$11.00
	Mid-Atlantic	\$3.79	\$3.00
	North Atlantic	NA	NA

NA – Not available due to limited data.

In addition to examining ex-vessel prices by year, NMFS also examined ex-vessel prices by region in and monthly changes in ex-vessel prices for shark fin (Table 6.7) and non-sandbar large coast sharks (Table 6.7) from 2008 to 2009. One should note that the fishery was not open before July in 2008 or after June in 2009.

Table 6.6 Monthly Median Ex-vessel prices per pound for shark fin 2008-2009.

Source: HMS Dealer Reports

Year	Month	Gulf of Mexico	South Atlantic
2008	January	NA	\$4.00
	February	NA	\$9.00
	March	NA	\$4.75
	April	NA	\$6.50
	May	\$4.00	\$4.00
	June	\$7.00	\$4.50
	July	\$14.00	\$12.00
	August	\$14.25	\$12.00
	September	\$15.00	\$12.00
	October	\$15.00	\$15.91
	November	\$15.75	\$16.00
	December	\$18.00	\$15.00

2009	January	\$17.00	\$16.00
	February	\$14.50	\$14.00
	March	\$15.00	\$18.50
	April	\$17.50	\$16.25
	May	\$19.00	\$12.00
	June	\$15.50	\$12.00

NA – Not available due to limited data.

Table 6.7 Monthly Median Ex-vessel prices per pound dress weight for non-sandbar large coastal shark 2008-2009.

Source: HMS Dealer Reports

Year	Month	Gulf of Mexico	South Atlantic
2008	July	\$0.45	\$0.75
	August	\$0.40	\$0.60
	September	\$0.40	\$0.50
	October	\$0.45	\$0.60
	November	\$0.49	\$0.50
	December	\$0.40	\$0.45
2009	January	\$0.25	\$0.45
	February	\$0.30	\$0.45
	March	\$0.35	\$0.50
	April	\$0.35	\$0.60
	May	\$0.45	\$0.50
	June	\$0.35	\$0.60

NA – Not available due to limited data.

6.3 Variable Costs and Net Revenues of Commercial Shark Fishermen

In 2003, NMFS initiated mandatory cost-earnings reporting for selected vessels to improve the economic data available for all HMS fisheries. In the past, most of the studies regarding PLL variable costs and net revenues available to NMFS analyzed data from 1996 and 1997. The 2006 Consolidated HMS FMP provides a summary of several past studies on the variable costs and net revenues of longline fleets.

An analysis of the 2004 HMS logbook cost-earnings data provides updated information regarding the costs and revenue of a cross section of vessels operating in the HMS fisheries. The data contains a total of 579 trips taken by 51 different vessels. As described in Larkin *et al.* (2000), median values are reported. Median gross revenues per trip for 2004 were approximately \$12,112. Median total costs per trip were \$4,345 (compared to \$3,320 in the Larkin *et al.* (2000) study), with fuel costs making up \$567 (13 percent) of those costs. Median net revenue in this sample was \$6,728 per trip (compared to \$8,624 in the Larkin *et al.* (2000) study). The typical trip was nine days long and involved six sets. The median number of crew was three, and the average share paid to crew was 11 percent of net revenue (\$740 per trip). The captain share of net revenue was 20 percent (\$1,346) and the owner share was reported to be 50 percent (\$3,364). The 2004 cost earnings information is similar to the findings of the 1996 study, but gross revenues appear to be lower than the Porter *et al.* (2001) study of 1997 operations.

6.4 Expected Economic Impacts of the Alternatives

In this rulemaking, NMFS considered two approaches in the EA for the shark fishery in the short-term. One approach to the proposed adaptive management measures would be to

maintain the status quo with regard to trip limits (33 non-sandbar LCS/trip) as well as consider alternatives to allow flexibility regarding trip limits in order to extend fishing opportunities year-round. This approach would either maintain the current 33 non-sandbar LCS trip limits (sub-alternative 1A) or consider reductions in the trip limits to ensure the fishing season extends throughout the year (sub-alternatives 1B and 1C). A second approach would be to allow flexibility in the opening of the season for Atlantic shark fisheries through the annual specifications process and adjustments via inseason actions to shark trip limits in either region to provide expanded opportunities for constituents across the fishery. Having such flexibility would help NMFS respond throughout the management region to any future unanticipated large and small scale events. The expected economic impacts of the different alternatives considered and analyzed are discussed below.

Sub-alternative 1A

As of November 5, 2009, there were 221 directed shark permit holders, 282 incidental permit holders, and 105 shark dealers (NMFS, 2010). On average, between 2008 and 2009, approximately 47 vessels with federal directed shark permits and 15 vessels with federal incidental shark permits reported non-sandbar LCS landings in the Coastal Fisheries logbook. NMFS anticipates that these fishermen and dealers, in addition to state vessels and dealers (which are not encapsulated in these estimates as they do not report in federal logbooks) would be most affected by the preferred actions in this final rule and EA. Due to the lack of federal logbooks from state fishermen, NMFS has not been able to quantify potential impacts to state fishermen.

Under sub-alternative 1A, the No Action alternative, there would be neutral direct socioeconomic impacts to directed and incidental shark permit holders as the trip limits for non-sandbar LCS would not change compared to the status quo in the short-term. However, in the long-term, maintaining the current trip limit with no changes in the management regime for shark fisheries could result in minor adverse direct socioeconomic impacts to shark limited access permit holders as the seasons could continue to shorten if more fishermen decide to take trips targeting sharks. This could exacerbate the derby-nature of the fishery and flood the market with shark product at certain times of the year. However, NMFS heard from shark fishermen during the public comment period on the proposed rule for this action that in many cases, short fishing seasons are more economically desirable as shark is not marketable throughout the year. In addition, if the seasons continued to open at the beginning of the year, fishermen in areas such as the North Atlantic would continually lose shark fishing opportunities as the quota would most likely be achieved before sharks migrated to more northern waters.

Similarly, neutral indirect socioeconomic impacts are anticipated for shark dealers and other entities that deal with shark products as NMFS expects these businesses to operate in the same manner as the status quo in the short-term. However, in the long-term, if fishing seasons continue to shorten or the fishery remains open for only a few of weeks each year, then minor negative indirect socioeconomic impacts are anticipated as shark dealers and other entities that deal with shark products would have a glut of shark product available for short periods of time followed by times when shark product would not be available. In addition, dealers in the North Atlantic region may not have shark product available to them during anytime of the year if the

non-sandbar LCS quota is realized before sharks migrate to northern waters in the Atlantic region.

In 2009, shark fishermen landed an estimated \$2.5 million worth of shark products. Of that amount, \$1.2 million was from non-sandbar LCS (\$471,481 for meat and \$776,564 for fins). If 100 percent of the 2010 non-sandbar LCS quota is landed, it is estimated that the value of those landings will be approximately \$1.34 million (\$488,374 for meat and \$851,439 for fins). Similarly, if 100 percent of the proposed 2011 non-sandbar LCS quota is landed, it is estimated that the value of those landings will be approximately \$1.36 million (\$502,539 for meat and \$857,998 for fins).

Neutral cumulative impacts are anticipated in the short-term from sub-alternative 1A as this alternative would not change the non-sandbar LCS fishery or trip limits. Non-sandbar LCS fishermen and shark dealers would be experiencing the same regulations as they have been since the implementation of Amendment 2. However, minor adverse cumulative socioeconomic impacts are anticipated in the long-term under sub-alternative 1A due to other federal and state actions. Reduced quotas in the SCS fishery under Amendment 3 will result in reduced opportunities for shark fishermen to redistribute effort into the SCS fishery. Actions in other non-shark fisheries also have the potential to affect shark fishermen as many shark fishermen hold permits in various non-shark fisheries (see Table 9.1). For instance, Amendment 17B in the South Atlantic is proposing new management measures for speckled hind, warsaw grouper, and snowy grouper, which include a prohibition on harvest of several deepwater snapper-grouper species beyond 240 feet (73 m). Thus, many of the shark fishermen are also facing additional restriction in other fisheries they participate in, which translates into lost opportunities for fishing and lost gross revenues. Finally, implementation of the ASMFC coastal shark plan has resulted in additional shark measures in state waters, which for the most part, mirror regulations in federal waters. These additional measures, in conjunction with the current federal shark regulations, could result in minor negative cumulative impacts on shark fishermen and dealers in the long-term under sub-alternative 1A.

Sub-alternative 1B

On average between 2008 and 2009 approximately 20 vessels with federal directed shark permits and 4 vessels with federal incidental shark permits had non-sandbar LCS landings in the Gulf of Mexico region. In addition, a number of state vessels also landed non-sandbar LCS from state waters; however, as these vessels do not report in the federal Coastal Fisheries logbook, it is difficult to quantify the number of state vessels that would be affected under sub-alternative 1B. In addition, state fishermen would only be affected if individual states mirrored changes to federal shark trip limits. The direct socioeconomic impacts to shark fishermen in the Gulf of Mexico region would depend on the reduction in the trip limit. As explained in Chapter 4, approximately 81 percent of the Gulf of Mexico trips retained 29 or fewer non-sandbar LCS per trip. Therefore, for a majority of trips, NMFS anticipates that a reduction in the trip limit from 33 to 29 non-sandbar LCS would have a neutral direct and indirect socioeconomic impacts on fishermen and dealers as fishing and business practices are not anticipated to change due to such a reduction. Reducing the trip limit from 33 non-sandbar LCS to 29 non-sandbar LCS would potentially reduce the maximum revenue per trip from non-sandbar LCS by on average \$233 per trip in the Gulf of Mexico (See Table 6.8). This estimate is based on the average non-sandbar

shark weight and 2009 median ex-vessel prices for non-sandbar LCS and shark fin in the Gulf of Mexico region. Approximately 18 percent may lose additional gross revenues on a trip basis as they were landing more than 33 non-sandbar LCS according to estimated numbers landed based on Coastal Fisheries logbook data. In addition, on average, trips in the Gulf of Mexico region retained 21 non-sandbar LCS per trip; however, as shown in Table 4.1, the average number of non-sandbar LCS retained varied by month. If the trip limit was reduced to 21 non-sandbar LCS per trip, this could reduce gross revenues per trip from \$1,920 to \$1,222. While, on average, fishermen may only retain 21 non-sandbar LCS, such a reduction would preclude fishermen from being able to keep additional sharks (up to 33 non-sandbar LCS per trip), which may change how they fish. It also may result in additional trips within a day to make up for lost individual trip revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home. All of these factors are expected to result in direct minor adverse socioeconomic impacts in the short-term. Long-term impacts are not anticipated as these changes would be made through inseason actions and would not be permanent. For dealers and other entities that deal with shark products, NMFS anticipate minor adverse indirect socioeconomic with a reduced trip limit to 21 non-sandbar LCS, as such a reduction may result in reduced shark product for their shark related businesses. However, this impact is only anticipated to be in the short-term as the reduced trip limit would not be permanent.

Table 6.8 Estimated non-sandbar LCS trips revenue in the Gulf of Mexico.

Trip Limit	Weight (trip limit *52.9 lb)	Meat revenue (Weight * \$0.35/lb)	Fin revenue (Weight * 5%* \$15.00/lb)	Total Trip Revenue (Meat revenue + fin revenue)
33	1,746	\$611	\$1,309	\$1,920
32	1,693	\$592	\$1,270	\$1,862
31	1,640	\$574	\$1,230	\$1,804
30	1,587	\$555	\$1,190	\$1,746
29	1,534	\$537	\$1,151	\$1,688
28	1,481	\$518	\$1,111	\$1,629
27	1,428	\$500	\$1,071	\$1,571
26	1,375	\$481	\$1,032	\$1,513
25	1,323	\$463	\$992	\$1,455
24	1,270	\$444	\$952	\$1,397
23	1,217	\$426	\$913	\$1,338
22	1,164	\$407	\$873	\$1,280
21	1,111	\$389	\$833	\$1,222
20	1,058	\$370	\$794	\$1,164
19	1,005	\$352	\$754	\$1,106
18	952	\$333	\$714	\$1,047
17	899	\$315	\$674	\$989
16	846	\$296	\$635	\$931
15	794	\$278	\$595	\$873
14	741	\$259	\$555	\$815

Trip Limit	Weight (trip limit *52.9 lb)	Meat revenue (Weight * \$0.35/lb)	Fin revenue (Weight * 5%* \$15.00/lb)	Total Trip Revenue (Meat revenue + fin revenue)
13	688	\$241	\$516	\$756
12	635	\$222	\$476	\$698
11	582	\$204	\$436	\$640
10	529	\$185	\$397	\$582
9	476	\$167	\$357	\$524
8	423	\$148	\$317	\$466
7	370	\$130	\$278	\$407
6	317	\$111	\$238	\$349
5	265	\$93	\$198	\$291
4	212	\$74	\$159	\$233
3	159	\$56	\$119	\$175
2	106	\$37	\$79	\$116
1	53	\$19	\$40	\$58
0	0	\$0	\$0	\$0

Reducing the trip limit below 21 non-sandbar LCS per trip would be expected to result in moderate adverse direct socioeconomic impacts as it would further reduce gross revenues for shark fishermen on a trip basis. The reduction in gross revenues would range from \$756 to \$1,920 for 20 to 0 non-sandbar LCS per trip. The lowest average number of non-sandbar LCS retained was 11 non-sandbar LCS per trip during the month of September (Table 4.1), which equates to \$640 in gross revenues per trip. Such reductions in the trip limits could translate into fishermen making multiple trips within a day to make up for lost individual trip revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home. However, NMFS anticipates that at some reduced trip limit, directed shark fishermen would stop targeting sharks because it would no longer be economically viable. At this point, NMFS expects that shark fishermen would target other species and retain sharks incidentally as anticipated under Amendment 2, and therefore, the socioeconomic impacts in terms of changes in fishing practices and diversifying fishing opportunities on other species to make up for lost shark revenues would be the same as described in Amendment 2. Lowered trip limits (*i.e.*, below 21 non-sandbar LCS) could also result in moderate adverse indirect socioeconomic impacts to dealers and other entities that deal with shark products as these businesses would have limited shark product in the short-term. However, such a decrease in the trip limits could extend the availability of shark product throughout the year, and therefore, minimize the moderate adverse impact of having reduced product available. As described above, these impacts are only expected to occur in the short-term.

Neutral cumulative socioeconomic impacts are anticipated from sub-alternative 1B if non-sandbar LCS trip limits were reduced to 29 non-sandbar LCS per trip as most fishermen kept 29 non-sandbar LCS or less per trip during 2008-2009 according to Coastal Fisheries logbook data. Minor adverse cumulative socioeconomic impacts are anticipated if trip limits are reduced between 28 and 21 non-sandbar LCS due to other federal and state actions that affect

these fishermen. Such a reduction in the trip limits would most likely result in some lost gross revenues for most shark fishermen as the overall average number of non-sandbar LCS retained was 21 per trip, and in 5 out of the 12 months during 2008-2009, fishermen retained more than 21 non-sandbar LCS per trip (Table 4.1). In addition, reduced quotas in the SCS fishery under Amendment 3 would result in reduced opportunities for shark fishermen to redistribute effort into the SCS fishery to make up for any lost revenues.

A reduction in the trip limit to below 21 non-sandbar LCS may result in moderate adverse cumulative socioeconomic impacts in the short-term. Such is the case if it resulted in shark fishermen leaving the directed shark fishery for other, non-shark fisheries as these fisheries are also experiencing increased restrictions, such as the recent BLL prohibition for reef fish in the eastern Gulf of Mexico at the 35-fathom depth contour and lost fishing opportunities due to the oil spill in the Gulf of Mexico. As described above, no long-term impacts are expected as such adjustments would only occur with a given fishing season.

Sub-alternative 1C

On average between 2008 and 2009, approximately 27 federally permitted vessels with directed shark permits and 11 federally permitted vessels with incidental shark permits had non-sandbar LCS landings in the Atlantic region. As with sub-alternative 1B, additional state vessels would be impacted by sub-alternative 1C; however, it is difficult to quantify the number of vessels since state shark fishermen do not report in federal fisheries logbooks. State fishermen would only be affected if individual states mirrored changes to federal shark trip limits. The direct impacts to shark fishermen in the Atlantic region would depend on the reduction in the trip limit. As explained in Chapter 4, approximately 81 percent of the Atlantic vessels took trips landing 27 or fewer non-sandbar LCS per trip. Therefore, for a majority of the vessels, NMFS anticipates that a reduction in the trip limit would have a neutral direct and indirect socioeconomic impacts on fishermen and dealers (or other businesses dealing with shark product) if the trip limit was reduced from the 33 to 27 non-sandbar LCS as fishing and business practices would not be anticipated to change with such a reduction. Approximately 11 percent may lose additional gross revenues on a trip basis as they were landing more than 33 non-sandbar LCS according to Coastal Fisheries data. In addition, on average, trips in the Atlantic region retained 13 non-sandbar LCS per trip; however, as shown in Table 4.1, the average number of non-sandbar LCS retained varied by month. If the trip limit were reduced to 13 non-sandbar LCS per trip, this could reduce potential gross revenues per trip from \$1,767 to \$696 (see Table 6.9). However, as shown in Table 4.1, on average, fishermen did not retain 33 non-sandbar LCS during any month of the year with 6 of the 12 months having average retention below the overall average of 13 non-sandbar LCS per trip. Therefore, such a reduction in the trip limit is only anticipated to have minor adverse direct socioeconomic impacts to fishermen in the short-term; long-term impacts are not anticipated as these reductions would not be permanent. For dealers and other entities that deal with shark products, NMFS anticipates minor adverse indirect socioeconomic impacts with a reduced trip limit between 26 and 13 non-sandbar LCS per trip as such a reduction may result in reduced shark product for their shark related businesses.

Table 6.9 Estimated non-sandbar LCS trips revenue in the Atlantic.

Trip Limit	Weight (trip limit *51.0 lb)	Meat revenue (Weight * \$0.50/lb)	Fin revenue (Weight * 5%* \$11.00/lb)	Total Trip Revenue (Meat revenue + fin revenue)
33	1,683	\$842	\$926	\$1,767
32	1,632	\$816	\$898	\$1,714
31	1,581	\$791	\$870	\$1,660
30	1,530	\$765	\$842	\$1,607
29	1,479	\$740	\$813	\$1,553
28	1,428	\$714	\$785	\$1,499
27	1,377	\$689	\$757	\$1,446
26	1,326	\$663	\$729	\$1,392
25	1,275	\$638	\$701	\$1,339
24	1,224	\$612	\$673	\$1,285
23	1,173	\$587	\$645	\$1,232
22	1,122	\$561	\$617	\$1,178
21	1,071	\$536	\$589	\$1,125
20	1,020	\$510	\$561	\$1,071
19	969	\$485	\$533	\$1,017
18	918	\$459	\$505	\$964
17	867	\$434	\$477	\$910
16	816	\$408	\$449	\$857
15	765	\$383	\$421	\$803
14	714	\$357	\$393	\$750
13	663	\$332	\$365	\$696
12	612	\$306	\$337	\$643
11	561	\$281	\$309	\$589
10	510	\$255	\$281	\$536
9	459	\$230	\$252	\$482
8	408	\$204	\$224	\$428
7	357	\$179	\$196	\$375
6	306	\$153	\$168	\$321
5	255	\$128	\$140	\$268
4	204	\$102	\$112	\$214
3	153	\$77	\$84	\$161
2	102	\$51	\$56	\$107
1	51	\$26	\$28	\$54
0	0	\$0	\$0	\$0

Reducing the trip limit below 13 non-sandbar LCS per trip would be expected to result in moderate adverse direct socioeconomic impacts in the short-term as it would most likely reduce gross revenues for shark fishermen. The reduction in gross revenues would range from \$1,125 to \$1,767 for 12 to 0 non-sandbar LCS per trip. The lowest average number of non-sandbar LCS retained was 8 non-sandbar LCS per trip during the month of June (Table 4.1), which equates to \$428 in gross revenues per trip. These reductions in the trip limits could translate into fishermen making multiple trips within a day to make up for lost individual trip revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home. However, NMFS anticipates that at some reduced trip limit level, directed shark fishermen would stop targeting sharks because it would no longer be economically viable. At this point, NMFS expects that shark fishermen would target other species and retain sharks incidentally as anticipated under Amendment 2, and therefore, the socioeconomic impacts in terms of changes in fishing practices and diversifying fishing opportunities on other species to make up for lost shark revenues would be the same as described in Amendment 2. Lowered trip limits (*i.e.*, below 13 non-sandbar LCS) could also result in moderate adverse indirect socioeconomic impacts to dealers and other entities that deal with shark products as these businesses would have limited shark product in the short-term. However, such a decrease in the trip limits could extend the availability of shark product throughout the year, and therefore, minimize the moderate adverse impact of having reduced product available. As described above, these direct and indirect impacts are only expected to occur in the short-term; no direct or indirect socioeconomic impacts are anticipated in the long-term as the trip limit adjustments would not be permanent changes.

Neutral cumulative socioeconomic impacts are anticipated from sub-alternative 1C if non-sandbar LCS trip limits were reduced to 27 per trip as most trips retained 27 non-sandbar LCS or less per trip during 2008-2009 according to Coastal Fisheries logbook data. Minor adverse cumulative socioeconomic impacts are anticipated if trip limits are reduced between 26 and 13 non-sandbar LCS due to other federal and state actions that affect these fishermen. Such a reduction in the trip limit could result in some lost gross revenues for shark fishermen in the Atlantic region; however, as pointed out above, on average, trips did not retain 33 non-sandbar LCS during any month of the year with 6 of the 12 months having average retention below the overall average of 13 non-sandbar LCS per trip (Table 4.1).

A reduction in the trip limit to below 13 non-sandbar LCS may result in moderate adverse cumulative socioeconomic impacts, especially if it resulted in shark fishermen leaving the directed non-sandbar LCS shark fishery and switching to the SCS fishery. Reduced quotas in the SCS fishery under Amendment 3 would result in reduced opportunities for shark fishermen to redistribute effort into the SCS fishery to make up any lost non-sandbar LCS revenues. In addition, redistributing effort into non-shark fisheries would be difficult as those fisheries are experiencing increased restrictions, such as Amendment 17B in the South Atlantic proposing new management measures for speckled hind, warsaw grouper, and snowy grouper, which include a prohibition on harvest of several deepwater snapper-grouper species beyond 240 feet (73 m).

Sub-alternative 2A

Sub-alternative 2A could potentially affect the 221 directed and 282 incidental shark permit holders along with the 105 shark dealers. NMFS plans to review the criteria, described in Chapter 2, on an annual basis and would open the fisheries at times that are deemed to provide the most benefits for most of the fishermen while also considering the ecological needs of the different species. The opening of the fishing season through the annual specifications process could vary based on the available annual quota, catch rates, and number of fishing participants during the year. For the 2011 fishing season, NMFS would open the sandbar shark research, blacknose shark, non-blacknose SCS, and pelagic shark fisheries upon the effective date of the final rule for this action. The direct and indirect socioeconomic impacts would be neutral on a short and long-term basis, because NMFS is proposing not to change the opening dates of these fisheries from the status quo alternative. NMFS would delay the opening of the non-sandbar LCS in the Atlantic region until July 15, 2011, which would be the same opening date as 2010 fishing season. The delay in the Atlantic non-sandbar LCS fishing season would result in short- and long-term, direct, minor, adverse socioeconomic impacts as fishermen would have to fish in other fisheries to make up for lost non-sandbar LCS revenues at the beginning of the 2011 fishing season. The short and long-term effects for delaying the season would cause indirect, minor, adverse socioeconomic impacts on shark dealers and other entities that deal with shark products as they may have to diversify during the beginning of the season when non-sandbar LCS shark products would not be available. This would be most prevalent in areas of the southeast Atlantic where non-sandbar LCS are available early in the fishing season. The delay in the non-sandbar LCS fishing season could cause changes in ex-vessel prices. In 2009, the median ex-vessel price of LCS meat in January was approximately \$0.25 per pound dress weight in the Gulf of Mexico and \$0.45 in the South Atlantic region, while the median ex-vessel price in July of 2008 was \$0.45 in the Gulf of Mexico and \$0.75 in the South Atlantic. The median ex-vessel price for shark fins in January was \$17.00 per pound in the Gulf of Mexico and \$16.00 in the South Atlantic. When the LCS fishery opened in July, the average price for fins was approximately \$14.00 per pound in the Gulf of Mexico and \$12.00 per pound in the South Atlantic based on 2008 prices. Since the North Atlantic had a very limited 2009 non-sandbar LCS fishing season, the prices for 2008 were used for the comparison.

In the North Atlantic, a delayed opening for the non-sandbar LCS would have direct, minor, beneficial socioeconomic impacts in the short and long-term for fishermen as they would have access to the non-sandbar LCS quota. Fishermen in the North Atlantic did not have or had a limited access to the non-sandbar LCS quota in 2009. There would be indirect, minor, beneficial socioeconomic impacts in the short and long-term for shark dealers and other entities that deal with shark products in this area as they would also have access to non-sandbar LCS products. Thus, delaying the non-sandbar LCS seasons under the preferred alternative would cause neutral cumulative socioeconomic impacts, since it would allow for the furtherance of equitable fishing opportunities to the extent practicable for commercial shark fishermen in all regions and areas, which was the original intent of Amendment 2.

Based on public comment, NMFS would change the opening date of the non-sandbar LCS fishery in the Gulf of Mexico region in the final rule for this action according to the criteria and process proposed in sub-alternative 2A. In the proposed rule, NMFS proposed to open the non-sandbar LCS in the Gulf of Mexico region upon the effective date of the final rule for this

action. NMFS received public comments from fishermen and dealers regarding a change in the opening date for the Gulf of Mexico non-sandbar LCS fishery. The comments received supported the non-sandbar LCS fishery opening around the religious holiday of Lent (*i.e.*, beginning on March 9, 2011) when shark products are more marketable. Florida-based fishermen wanted the non-sandbar LCS fishery in the Gulf of Mexico region to open in the beginning to middle of March in 2011 to have a more fishing opportunities to harvest the non-sandbar LCS quota. However, Louisiana-based fishermen requested that the non-sandbar LCS fishery open around the same time as it did in 2010 (*i.e.*, February) as many other fisheries are closed during this time period. Based on these public comments, NMFS would delay the opening of the non-sandbar LCS fishery in the Gulf of Mexico region until March 1, 2011. NMFS believes delaying the opening of the non-sandbar LCS fishery would balance comments received from all fishermen and dealers throughout that region with regard to the opening of the non-sandbar LCS fishery and provide shark fishing opportunities as intended by Amendment 2 to all participants in the Gulf of Mexico region. The delay in the Gulf of Mexico non-sandbar LCS fishing season could result in short-term direct, minor, adverse socioeconomic impacts as fishermen would have to fish in other fisheries to make up for lost non-sandbar LCS revenues during January and February of the 2011 fishing season. The short-term effects for delaying the season would cause indirect, minor, adverse socioeconomic impacts on shark dealers and other entities that deal with shark products as they may have to diversify during the beginning of the season when non-sandbar LCS shark products would not be available. However, long-term direct and indirect impacts are not anticipated as the delay would only be two months for the 2011 fishing season. In addition, NMFS does not anticipate that the delay would result in changes in ex-vessel prices as 2009 median ex-vessel prices for non-sandbar LCS meat and fins in the Gulf of Mexico region ranged from \$0.25-\$0.35/lb dw and \$17.00 to \$15.00/lb dw, respectively, from January through March.

Sub-alternative 2B

Sub-alternative 2B would allow NMFS to adjust the trip limit through inseason actions, but would not adjust the overall shark quotas for the Gulf of Mexico and Atlantic regions. According to Amendment 2, this sub-alternative is anticipated to have direct and indirect, short-term, neutral socioeconomic in the Gulf of Mexico and Atlantic regions, because changing the non-sandbar LCS trip limits inseason would not limit the overall harvest of non-sandbar LCS, but would provide the mechanism to modify the harvest spatially and temporally to allow furtherance of equitable fishing opportunities for commercial shark fishermen in all regions and areas. Directed fishing on non-sandbar LCS or any shark species would continue as long as the trip limit is high enough to make it economically viable. Table 4.1 shows that since the implementation of Amendment 2 directed shark fishing trips land, on average, 21 non-sandbar LCS in the Gulf of Mexico region, and 13 non-sandbar LCS in the Atlantic region. NMFS has not been able to determine at what trip limit fishermen stop targeting non-sandbar LCS. A range of trip limits have been further analyzed in alternatives 1B and 1C, and the socioeconomic impacts associated with the range of trip limits are described above under sub-alternatives 1B and 1C. Trip limits set at levels too low for fishermen to continue targeting sharks would likely lead to shifts in effort to other fisheries, similar to effort shifts experienced during closures of the non-sandbar LCS fishery in 2009 and 2010. The criteria for changing the trip limits during the season, as outlined in Chapter 2, takes into account opportunities for the furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and

areas and ecological considerations of the relevant shark stock, but would not restrict or reduce the current quota. If trip limits are set in a manner that is beneficial to the ecological needs of the relevant shark species, their populations may increase in the long-term, which could allow for increased quota levels in the future. Therefore, minor, beneficial long-term direct, indirect, and cumulative socioeconomic impacts may occur based on sub-alternative 2B in the long-term.

7.0 REGULATORY IMPACT REVIEW

The Regulatory Impact Review (RIR) is conducted to comply with Executive Order 12866 (E.O. 12866) and provides analyses of the economic benefits and costs of each alternative to the fishery and nation as a whole. Certain elements required in an RIR are also required as part of this final environmental assessment (EA). This RIR builds upon the data and analysis presented in the following sections of the final EA: Chapter 1 (purpose and need for action), Chapter 2 (alternative regulatory options to meet the purpose and need), Chapter 3 (description of the affected regulated community), Chapters 4 (economic consequences of amendment and implementing regulations), 6 (extensive discussion of economic impacts of alternative approaches) and Chapter 8 (the initial regulatory impact analysis). The information contained in Section 7.0, taken together with the foregoing data and analysis incorporated by reference, comprise the complete RIR.

The requirements for all regulatory actions specified in EO 12866 are summarized in the following statement from the order:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits should be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

E.O. 12866 further requires Office of Management and Budget review of proposed regulations that are considered to be “significant.” A significant regulatory action is one that is likely to:

- Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments of communities;
- Create serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the president’s priorities, or the principles set forth in this Executive Order.

7.1 Description of the Management Objectives

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

7.2 Description of the Fishery

Please see Chapter 3 of the FEIS for Amendment 3 for a description of the fisheries that could be affected by these management actions.

7.3 Statement of the Problem

Please see Chapter 1 for a description of a full discussion of the purpose and need for these management actions which is in essence a statement of the problem to be addressed by the amendment and implementing regulations.

7.4 Description of Each Alternative

Please see Chapter 2 for a summary of each alternative, Chapter 3 of the FEIS for Amendment 3 for a complete description of the affected fisheries, and Chapter 4 for a complete description of each alternative and its expected environmental and socioeconomic impacts on the regulated community. Chapters 6 and 8 provide additional information related to the economic impacts of the alternatives.

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

Table 7.1 Net Economic Benefits and Costs of Alternatives

Alternatives	Net Economic Benefits	Net Economic Costs
<p>Sub-alternative 1A No Action. Maintain the current vessel trip regulations for non-sandbar LCS</p>	<p>This alternative would maintain current economic activity associated with non-sandbar LCS landing levels in the short-term, since it will not change the non-sandbar LCS trip limits or quotas.</p>	<p>In the long-term, this could result in result in minor adverse economic impacts to shark limited access permit holders as the seasons could continue to shorten if more fishermen decide to take trips targeting sharks.</p> <p>There could also be regional economic impacts if seasons continue to open at the beginning of the year and fishermen in areas such as the North Atlantic continually lose shark fishing opportunities as the quota would most likely be realized before sharks migrated to more northern waters.</p> <p>In addition, dealers in the North Atlantic region may not have shark product available to them during the year if the non-sandbar LCS quota is achieved before sharks migrate to northern waters in the Atlantic region.</p>

Alternatives	Net Economic Benefits	Net Economic Costs
<p>Sub-alternative 1B Establish a new non-sandbar LCS trip limit that would extend the fishing season in the Gulf of Mexico</p>	<p>Reduced trip limits could help to extend the fishing season for non-sandbar LCS in the Gulf of Mexico.</p>	<p>The direct economic impact of a new non-sandbar LCS trip limit to shark fishermen in the Gulf of Mexico region would depend on the reduction in the trip limit. Approximately 20 vessels with directed shark permits and 4 vessels with incidental shark permits had non-sandbar LCS landings in the Gulf of Mexico region between 2008 and 2009. In addition, a number of state vessels also landed non-sandbar LCS from state waters; however, as these vessels do not report in the federal Coastal Fisheries logbook, it is difficult to quantify the number of state vessels that would be affected under sub-alternative 1B.</p> <p>A reduction of the trip limit for 29 non-sandbar LCS would have neutral impacts. Reducing the trip limit to 21 would potentially reduce maximum trip revenues by an estimated \$698, and reducing the trip limit down to zero would result in reduced revenues per trip of \$1,920. These impacts are only anticipated to be in the short-term as the reduced trip limit would not be permanent.</p> <p>Reductions in trip limits could result in fishermen making more frequent trips to offset the lower revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home.</p> <p>Lower trip limits could also result in neutral to moderate adverse impacts in the short-term to dealers and other entities that deal with shark products depending on the reduction in the trip limit.</p>

Alternatives	Net Economic Benefits	Net Economic Costs
<p>Sub-alternative 1C Establish a new non-sandbar LCS trip limit that would extend the fishing season in the Atlantic region</p>	<p>Reduced trip limits could help to extend the fishing season for non-sandbar LCS in the Atlantic region.</p>	<p>The direct economic impact of a new non-sandbar LCS trip limit to shark fishermen in the Atlantic region would depend on the reduction in the trip limit. Approximately 27 federally permitted vessels with directed shark permits and 11 federally permitted vessels with incidental shark permits had non-sandbar LCS landings in the Atlantic region between 2008-2009. As with sub-alternative 1B, additional state vessels would be impacted by sub-alternative 1C; however, it is difficult to quantify the number of vessels since state shark fishermen do not report in federal fisheries logbooks.</p> <p>A reduction of the trip limit to 27 non-sandbar LCS would have neutral impacts. Reducing the trip limit to 13 would potentially reduce maximum trip revenues by an estimated \$1,071, and reducing the trip limit down to zero would result in reduced revenues per trip of \$1,767. These impacts are only anticipated to be in the short-term as the reduced trip limit would not be permanent.</p> <p>Reductions in trip limits could result in fishermen making more frequent trips to offset the lower revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home.</p> <p>Lower trip limits could also result in neutral to moderate adverse impacts in the short-term to dealers and other entities that deal with shark products depending on the reduction in the trip limit.</p>
<p>Sub-alternative 2A <i>Establish new opening dates for the shark fisheries based on certain criteria and process (Preferred Alternative)</i></p>	<p>Delaying the start of the fishing season through the annual specifications process could result in some positive regional economic impacts by allowing for more equitable distribution of the quota based on the migration patterns of the sharks. This would especially be the case in the North Atlantic, since sharks are more available later in the fishing season in that region, and could allow shark product to be available when most marketable (<i>i.e.</i>, around the religious holiday of Lent).</p>	<p>A delay in the opening of the season in the Atlantic region until July 15, 2011, would potentially result in minor economic impacts to shark fishermen who would have fished earlier in the season, such as in the southeast Atlantic where sharks are available early in the fishing season.</p> <p>A delay in the opening of the season in the Gulf of Mexico region until March 1, 2011, could potentially result in minor economic impacts to fishermen who would have to fish in other fisheries to make up for lost non-sandbar LCS revenues during January and February of the 2011 fishing season; however, other fisheries may not be open during this time period. Delaying the season could also cause minor economic impacts to shark dealers and other entities that deal with shark products as they may have to diversify during the beginning of the season when non-sandbar LCS shark products would not be available.</p>

Alternatives	Net Economic Benefits	Net Economic Costs
<p>Sub-alternative 2B <i>Establish inseason trip limit adjustment criteria for the Atlantic shark fishery (Preferred Alternative)</i></p>	<p>Reduced trip limits could help to extend the fishing season. The criteria for changing the trip limit via inseason actions would take into account opportunities for the furtherance of equitable fishing opportunities for commercial shark fishermen in all regions and areas and ecological considerations of the species, but would not restrict or reduce the current quotas.</p>	<p>As outlined in Alternatives 1B and 1C, adjustments via inseason actions to shark trip limits could reduce the maximum potential trip revenues for trips involving non-sandbar LCS; however, overall quotas would not change. In addition, if fishermen make more frequent trips to offset these lower revenues, operating costs will likely increase. Both the decreased revenues and increased operating costs could reduce profits for some commercial shark permit holders.</p> <p>Lower trip limits could also result in moderate impacts to dealers and other entities that deal with shark products.</p>

7.6 Conclusions

As noted above under E.O. 12866, a regulation is a “significant regulatory action” if it is likely to: (1) have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; and (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the legal mandates, the President’s priorities, or the principles set forth in the Executive Order; or, (4) raise novel legal or policy issues arising out of legal mandates, the president’s priorities, or the principles set forth in this Executive Order. The preferred alternatives described in this document do not meet the above criteria. The preferred alternatives would have an annual effect on the economy of less than \$100 million and would not adversely affect the aforementioned parameters (see Table 7.1). The preferred alternatives would also not create an inconsistency or interfere with an action taken by another agency. Furthermore, the preferred alternatives would not materially alter the budgetary impact of entitlements, grants, user fees, the President’s priorities, or the principles set forth in E.O. 12866. Nor would the proposed regulations raise any unique legal or policy issues. The Secretary, through NMFS, has been managing shark species through FMPs since 1993 and from time-to-time amending plans and implementing regulations to modify management measures and add additional species for management. In addition, NMFS has participated in international efforts to develop management measures for stocks affected by multiple nations. The preferred alternative and other alternatives do not materially depart from this management approach. Therefore, under E.O. 12866, the preferred alternatives described in this document have been determined to be not significant for the purposes of E.O. 12866. The Office of Management and Budget (OMB) concurred with this determination provided in the listing memo for this proposed rule. A summary of the expected net economic benefits and costs of each alternative, which are based on supporting text in Chapters 4 and 6, can be found in Table 7.1.

In addition, based on the foregoing analysis in this Chapter and those incorporated by reference, NMFS has made the following determinations. The stated problem cannot be resolved through application of existing regulations. For example, under Amendment 2, the Atlantic shark commercial fishing seasons for each species or species complex is anticipated to open on or about January 1 of each year and continue year-round. In addition, the directed trip limit for non-sandbar LCS was established as 33 non-sandbar LCS per trip through 2012. However, a framework action was developed under Amendment 2 that would allow adjustments to the non-sandbar LCS trip limit, as necessary. Changes to these regulations can only be made through a regulatory framework action with corresponding enforceable regulation. Existing regulations and laws do not contribute to the problem such that their amendment could more efficiently address the stated problem. NMFS considered taking no action as an alternative to regulation but determined that the problem could not be addressed in the absence of regulation given the Magnuson-Stevens Act’s multiple requirements bearing on the issue. Based on internal agency review and consideration of public comment, NMFS has developed preferred alternatives, based on the best scientific information available, to develop regulations that meet the objectives in the most cost-effective manner tailored to impose the least burden on the regulated community possible. The regulations are based on performance measures as they set objective standards

rather than prescribing changes in the practices of fishermen in the shark fishery. The proposed amendment as implemented by regulation does not duplicate existing requirements and is not inconsistent with existing regulations of NMFS or other federal agencies. NMFS has provide all stakeholders, including public agencies, private individuals, non-governmental organizations and others multiple opportunities to comment on the proposed regulations including a thirty day review period for the amendment, proposed regulations, and EA.

8.0 FINAL REGULATORY FLEXIBILITY ANALYSIS

The Final Regulatory Flexibility Analysis (FRFA) is conducted to comply with the Regulatory Flexibility Act (5 USC 601 et. seq.) (RFA). The goal of the RFA is to minimize the economic burden of federal regulations on small entities. To that end, the RFA directs federal agencies to assess whether the proposed regulation is likely to result in significant economic impacts to a substantial number of small entities, and identify and analyze any significant alternatives to the proposed rule that accomplish the objectives of applicable statutes and minimize any significant effects on small entities. Certain data and analysis required in a FRFA are also included in other chapters of this EA. Therefore, the FRFA incorporates the economic impacts identified in the EA by reference as supporting data for this analysis.

8.1 Statement of the Need for and Objectives of this Final Rule

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

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

NMFS received several comments on the proposed rule and draft EA during the public comment period. A summary of these comments and the Agency's responses will be included in the final rule. The specific economic concerns raised in the comments are also summarized here.

Comment: The flexibility measures under sub-alternatives 2A and 2B, which allow flexibility in the opening of the season for Atlantic shark fisheries and adjusting of shark trip limits, look good in theory, but the fishery needs certainties to make good business and personal decisions.

Response: Under the preferred sub-alternatives 2A and 2B, NMFS would still conduct annual proposed and final rulemaking to establish the quotas and season opening dates. As part of this rulemaking, interested parties could provide comments and have notice of the season opening dates, as is currently the process. In addition, NMFS would provide five days notice of changes in shark trip limits, as is currently done with the closing of a particular shark fishery when 80 percent of a given quota is harvested. Such a process would provide the same amount of notice to fishermen and associated shark industries of changes in the fishery as is provided currently. NMFS believes that five days notice of changes provides enough time for business decisions while also providing NMFS with the ability and flexibility to manage the fishery, as appropriate.

Comment: NMFS does not need to extend the shark fishing season year-round since fishermen can catch other fish species the rest of the year. The economics should be considered in this rule since it is more economically beneficial to have a short season.

Response: NMFS acknowledges that shorter seasons may result in some reduced trip-related expenses. A shorter season may result in less fuel expenditures for travel, lower costs associated with changing over gear types, and reduced crew turnover. A shorter season may reduce the at-sea time associated with harvesting the shark quota, and therefore, provide fishermen with more time to pursue other fisheries. However, there are both social and private costs potentially associated with shorter seasons. Shorter fishing seasons often result in derby-style fishing conditions, which can result in fishing under unsafe conditions, such as poor weather and long hours. Derby fishing can also result in a market glut of fish during the early part of a fishing season when there is heavy fishing if there is insufficient demand for the product during that short period. Furthermore, when fishing in other fisheries, such as snapper/grouper or mackerel fisheries, fishermen are likely to encounter sharks. If the season for sharks is closed, those sharks caught as bycatch need to be discarded, resulting in fishing inefficiencies and increased mortality of sharks. Therefore, NMFS prefers sub-alternatives 2A and 2B, which will provide the Agency with the necessary flexibility to extend the fishing season either by delaying the opening of a shark fishery and/or adjusting shark trip limits through inseason actions to help reduce bycatch and mortality of sharks.

In addition, NMFS compared ex-vessel prices for non-sandbar LCS for 2008 when the fishing season was opened for almost six months compared to 2009 and 2010 where the non-sandbar LCS fishery was opened between 22 weeks to 6 weeks. Ex-vessel prices for non-sandbar LCS in 2008 and 2009 were \$0.45 per pound each year. However, these prices were slightly higher for 2010 at \$0.60 per pound. In addition, the sandbar shark research fishery, which has been opened for longer periods of time in 2008-2010, had similar prices in 2008 and 2009 (\$0.35 and \$0.40 per pound, respectively) but had higher prices in 2010 at \$0.70 per pound. Therefore, NMFS could not identify patterns in ex-vessel shark prices based on season length, but rather, found slighter higher prices for 2010 overall compared to 2008 and 2009.

Comment: Some fishermen for the Florida area and related industries do not support the proposed July 15 opening for the non-sandbar LCS fishery in the Atlantic region. The delay in 2010 did not provide an equal opportunity for Florida fishermen to harvest the quota because sharks are not available in Florida waters in July and prices for sharks are higher in the winter than the summer. Because there are more shark fishermen in Florida than in other regions, NMFS should not give preference to fishermen who fish further north. However, other fishermen from North Carolina and north support the proposed July 15 opening because it offers mid- and north Atlantic fishermen an opportunity to harvest the quota.

Response: In 2008, 257,286 pounds (lb) dressed weight (dw) of non-sandbar sharks were reported from July through December on HMS dealer reports by federally permitted dealers from the east coast of Florida. During the same time period, 10,390 lb dw of non-sandbar LCS were reported by dealers from North Carolina. In 2009, when the fishery was opened during January through July, 317,050 lb dw of non-sandbar LCS were reported by federal dealers from the east coast of Florida whereas 4,534 lb dw of non-sandbar LCS were reported from dealers from North Carolina. Thus, 2008 dealer reports indicate that non-sandbar LCS are present in waters off the east coast of Florida during the July to December timeframe. In addition, fishermen from North Carolina landed less than half the amount of non-sandbar LCS from January through July in 2009 compared to 2008 when the fishery was open later in the year, and sharks migrated to more

northern Atlantic waters. Preliminary data for 2010 from July through September indicate a similar pattern to that in 2008. Consistent with National Standard 4, NMFS must not discriminate between residents of different states. NMFS must consider fishing opportunities that are fair and equitable to all fishermen. Opening the non-sandbar LCS fishery later in the year (*i.e.*, July 15) would allow the furtherance of equitable fishing opportunities to all fishermen in the Atlantic region; fishermen in the south Atlantic and north Atlantic would all have the ability to harvest a portion of the non-sandbar LCS quota in the Atlantic region with such an opening date.

Finally, NMFS compared monthly ex-vessel prices based on data provided on HMS dealer reports for non-sandbar LCS from 2008 through 2010 for dealers reporting from the east coast of Florida. Median ex-vessel prices per pound ranged from \$0.45-\$0.75 in July through September in 2008 and 2010. From January through March, median ex-vessel prices per pound ranged from \$0.45 to \$0.50 and were similar, if not slightly lower, than summer ex-vessel prices for non-sandbar LCS. Thus, NMFS did not find higher ex-vessel prices for non-sandbar LCS during the winter months, suggesting that a summer/fall fishery for non-sandbar LCS off the east coast of Florida could generate as much revenue as a winter/spring fishery.

Comment: Shark meat is easier to sell in the Gulf of Mexico around the religious holiday of Lent. Shark dealers and fishermen in the Gulf of Mexico supported sub-alternative 2A to allow for flexibility in the opening of the commercial fishing season so that the opening dates could be around Lent each year.

Response: Consistent with National Standard 4, NMFS must not discriminate between residents of different states. NMFS must consider fishing opportunities that are fair and equitable to all fishermen. Therefore, NMFS considered a season opening date that would allow the furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all parts of the Gulf of Mexico region. As such, based on comments received from fishermen and dealers in different areas of the Gulf of Mexico requesting NMFS to open the season at the beginning of the year, to open the season around Lent, or to open the season around the middle of March, NMFS is opening the non-sandbar LCS on March 1, 2011. This opening should also allow for shark product to be available during Lent in 2011 as Lent begins on March 9, 2011. This is a change from the proposed opening date of the effective date of the final rule for this action; however, NMFS believes such an opening date would provide fishermen in both the eastern and western Gulf of Mexico the ability to catch a portion of the non-sandbar LCS shark quota during 2011.

Comment: Louisiana shark fishermen and dealers are in favor of opening the non-sandbar LCS fishery in the Gulf of Mexico in January or February of 2011. This would allow a winter fishery when few other fisheries are open at that time. Opening the season during the cooler months would be beneficial since ice is not used on vessels in that area. NMFS should also be consistent with Louisiana state regulations and should not open the season during the pupping season (April through June of each year). Louisiana state shark fishermen supported opening the non-sandbar LCS fishery the same time as it was opened in 2010 (*i.e.*, early February) so that catch and catch rates before and after the oil spill can be compared to determine the impact on the oil spill on shark populations. There was also some support from Louisiana state fishermen

to open the non-sandbar LCS fishery in the Gulf of Mexico later in the year (*i.e.*, July) when the flow of the Mississippi river is lower and sharks are easier to catch.

Response: Consistent with National Standard 4, NMFS must not discriminate between residents of different states. NMFS must consider fishing opportunities that are fair and equitable to all fishermen. NMFS is balancing comments received from all fishermen and dealers in the Gulf of Mexico region with regard to the opening of the non-sandbar LCS fishery in that region. Based on comments received from fishermen and dealers throughout the Gulf of Mexico, NMFS is opening the non-sandbar LCS on March 1, 2011. This is a change from the proposed opening date of the effective date of the final rule for this action; however, NMFS believes such an opening date would provide fishermen in both the eastern and western Gulf of Mexico the ability to catch a portion of the non-sandbar LCS shark quota during 2011. This would open the fishery at the beginning of the year when it is cooler (*i.e.*, before the summer months) and when other fisheries may be closed. In addition, based on how quickly the quota was harvested in 2010 in the Gulf of Mexico region, NMFS does not anticipate the non-sandbar LCS quota lasting until the end of the year, and that overlap with the shark pupping season from April-June during 2011 should not be substantial. However, an opening date of March 1, 2011, would most likely not allow for a non-sandbar LCS fishery later in the season in the Gulf of Mexico region. NMFS could slow down the fishery down by reducing the trip limit; however, while this action implements the criteria and authority for NMFS to make inseason changes to shark trip limits, no changes to the actual trip limits are being made at this time. Additionally, until NMFS has real-time reporting from shark dealers, NMFS is concerned that due to the delay in dealer reports, sufficient amounts of the quota may not be available for a fishery later in the season. Currently, dealers are required to have landings reports from the first through the 15th of each month received by NMFS no later than the 25th of the month. Landings reports from the 16th through the end of the month must be received by NMFS no later than the 10th of the following month. Therefore, dealer reports are delayed by two weeks, making landings data at least ten days old by the time the Agency receives HMS dealer reports. If the quota is being harvested at a fast rate, then the Agency may not be able reduce trip limits fast enough to ensure an adequate fishery later in the season.

Comment: Louisiana Department of Wildlife and Fisheries indicated that there were currently 600 state water shark permits with approximately half of those permits actively participating in the shark fishery. These fishermen derive a substantial amount of income from shark fishing; however, the state agency claimed that the proposed rule did not consider the impacts to Louisiana state fishermen, and stated that NMFS should consider the impacts to LA state fishermen when establishing shark fishing regulations.

Response: NMFS disagrees that the proposed rule did not consider impacts to Louisiana state fishermen. In both the proposed rule and this final rule, NMFS analyzed alternatives to provide equitable fishing opportunities to the extent practicable for commercial shark fishermen in all regions and areas. NMFS has not been able to quantify potential impacts to state fishermen with regard to impacts of changing trip limits as it has for federal shark fishermen due to the lack of federal logbooks from state fishermen and the lack of a requirement for dealers to have a federal dealer permit and report landings of state fishermen to NMFS. However, NMFS held a public hearing in Louisiana and has taken comments from Louisiana shark fishermen into

consideration on the proposed rule and draft Environmental Assessment (EA) on the opening of the commercial shark fishing seasons. In this rule, NMFS balanced comments received from all participants in the Gulf of Mexico region with regard to the opening of the non-sandbar LCS fishery in that region. NMFS believes an opening date of March 1, 2011, would provide fishermen in both the eastern and western Gulf of Mexico the ability to catch a portion of the non-sandbar LCS shark quota during 2011. This change also takes into consideration comments from some Louisiana fishermen who suggested the fishery open near the religious holiday of Lent.

Comment: NMFS should not lower the trip limit to extend the season. Anything less than 33 non-sandbar LCS per trip would shut the fishery down since it would not be profitable for federal fishermen.

Response: With the implementation of Amendment 2, NMFS anticipated that setting the trip limit at 33 non-sandbar LCS would lead to non-sandbar LCS being caught in an incidental manner in other fisheries, as the reduced trip limit would no longer provide an economically viable targeted fishery for non-sandbar LCS. However, an analysis of logbook data indicates that the non-sandbar LCS fishery has harvested, on average, less than the 33 non-sandbar LCS per trip limit. Specifically, the Coastal Fisheries Logbook data indicate that since the implementation of Amendment 2 (*i.e.*, 2008-2009), the overall average number of non-sandbar LCS landed per trip in the Gulf of Mexico and Atlantic regions was 21 and 13, respectively. Additionally, NMFS is aware that many shark fishermen continue to direct large coastal sharks, particularly during times when other fisheries are closed. Therefore, it seems that targeted non-sandbar LCS trips have been conducted at lower harvest levels than the current trip limit. In this final rule, NMFS is not changing the trip limits. However, NMFS is implementing criteria for trip limit adjustments through inseason actions to provide fishermen more equitable access to the relevant shark resource throughout their appropriate region.

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

NMFS considers all HMS permit holders to be small entities because they either had gross receipts less than \$3.5 million for fish-harvesting, gross receipts less than \$6.0 million for charter/party boats, or 100 or fewer employees for wholesale dealers. These are the SBA size standards for defining a small versus large business entity in this industry.

As of November 2009, there were a total of 503 commercial permit holders in the Atlantic shark fishery (221 directed and 282 incidental permits). On average, between 2008 and 2009, approximately 47 federally-permitted vessels with directed shark permits and 15 federally-permitted vessels with incidental shark permits had non-sandbar LCS landings according to Coastal Fisheries Logbook data. There were also a total of 105 federally-permitted Atlantic shark dealer permit holders as of November 2009. These active fishing vessels and shark dealers would be the universe of small entities to which the final rule would apply; however, state fishermen would also be affected by these management actions, but these impacts have not been quantified as state fishermen do not report in federal fisheries logbooks. A more detailed

description of the fisheries affected the categories and number of permit holders can be found in Chapter 6 and Chapter 3 in the FEIS for Amendment 3.

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

None of the alternatives considered for this final rule would result in additional reporting, record-keeping, and compliance requirements that would require new Paperwork Reduction Act filings.

8.5 Description of the Steps the Agency Has Taken to Minimize the Significant Economic Impact on Small Entities Consistent with the Stated Objectives of Applicable Statutes, Including a Statement of the Factual, Policy, and Legal Reasons for Selecting the Alternative Adopted in the Final Rule and the Reason That Each one of the Other Significant Alternatives to the Rule Considered by the Agency Which Affect Small Entities Was Rejected

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

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

In order to meet the objectives of this proposed rule, consistent with Magnuson-Stevens Act and the ESA, NMFS cannot exempt small entities or change the reporting requirements only for small entities. Thus, there are no alternatives discussed that fall under the first and fourth categories described above. In addition, none of the alternatives considered would result in additional reporting or compliance requirements (category two above). 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 two different main alternatives in this proposed rulemaking with 5 sub-alternatives and provides justification for selection of the preferred alternative to achieve the desired objective.

NMFS considered two main alternatives for the shark fishery in the short-term. One approach would be to maintain the status quo approach to trip limits (33 non-sandbar LCS/trip) as well as consider alternatives to allow flexibility regarding trip limits in order to extend fishing opportunities year-round. This approach would either maintain the current 33 non-sandbar LCS

trip limits (sub-alternative 1A) or consider reductions in the trip limits to ensure the fishing season extends throughout the year (sub-alternative 1B and 1C). A second approach would allow flexibility in the opening of the season for Atlantic shark fisheries through the annual specifications process (sub-alternative 2A) and adjustments via inseason actions to shark trip limits in either region (sub-alternative 2B) to provide expanded opportunities for constituents across the fishery. In addition, having such flexibility would help NMFS respond throughout the management region to any future unanticipated large and small scale events.

Under alternative 1, NMFS considered three sub-alternatives. Sub-alternative 1A, the No Action alternative, would maintain the current vessel trip regulations for non-sandbar LCS. This would result in no additional impacts to small entities. Limited access directed shark permit holders would continue to be able to land up to 33 non-sandbar LCS per trip. On average, between 2008 and 2009, approximately 47 federally-permitted vessels with directed shark permits and 15 federally-permitted vessels with incidental shark permits had non-sandbar LCS landings according to Coastal Fisheries logbook data. The estimated total per-trip revenue for a maximum trip of 33 sharks is estimated to be \$1,920 in the Gulf of Mexico and \$1,767 in the Atlantic. However, this trip limit has resulted in shortened fishing seasons in 2009 and 2010 due to regional non-sandbar LCS quotas being filled before the end of the fishing year. Fishermen in some areas, such as the North Atlantic, were not able to harvest a portion of the 2009 non-sandbar LCS quota as the quota was harvested before shark migrated to northern waters in the Atlantic in 2009. As such, sub-alternative 1A is not likely to meet the objective of this final rule to provide fair and equitable fishing opportunities to harvest the shark quotas to all fishery participants within a given region.

Sub-alternative 1B would establish a new non-sandbar LCS trip limit at the beginning of the shark fishing season, which would remain static for the remainder of the fishing season, and would extend the fishing season in the Gulf of Mexico region. On average between 2008 and 2009, approximately 20 federally-permitted vessels with directed shark permits and 4 federally-permitted vessels with incidental shark permits had non-sandbar LCS landings in the Gulf of Mexico region. The direct economic impacts to shark fishermen in the Gulf of Mexico region would depend on the reduction in the trip limit. Approximately 81 percent of the Gulf of Mexico trips retained 29 or fewer non-sandbar LCS per trip. Therefore, for a majority of trips, NMFS anticipates that a reduction in the trip limit from 33 non-sandbar LCS to 29 non-sandbar LCS would have a neutral impacts on fishermen as fishing and business practices are not anticipated to change due to such a reduction. Reducing the trip limit from 33 non-sandbar LCS to 29 non-sandbar LCS would potentially reduce the maximum revenue per trip from non-sandbar LCS by on average \$233 per trip in the Gulf of Mexico. This estimate is based on the average non-sandbar shark weight and 2009 median ex-vessel prices for non-sandbar LCS and shark fins in the Gulf of Mexico region. Approximately 18 percent may lose additional gross revenues on a trip basis as they were landing more than 33 non-sandbar LCS according to Coastal Fisheries logbook data. In addition, on average, vessels in the Gulf of Mexico region retained 21 non-sandbar LCS per trip; however, the average trip landings of non-sandbar LCS varied by month. If the trip limit were reduced to 21 non-sandbar LCS per trip, this could reduce gross revenues per trip from \$1,920 to \$1,222. While, on average, fishermen may only retain 21 non-sandbar LCS, such a reduction would preclude fishermen from being able to keep additional sharks (up to 33 non-sandbar LCS per trip). Therefore, such a reduction may change how they fish. It may

also result in additional trips within a day to make up for lost individual trip revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home. All of these factors are expected to result in negative economic impacts in the short-term.

Reducing the trip limit below 21 non-sandbar LCS per trip would be expected to result in economic impacts as it would further reduce gross revenues for shark fishermen on a trip basis. The reduction in gross revenues would range from \$756 to \$1,920 for a trip limit of 20 to 0 non-sandbar LCS. The lowest average number of non-sandbar LCS retained was 11 non-sandbar LCS per trip during the month of September, which equates to \$640 in gross revenues per trip. Such reductions in the trip limits could translate into fishermen making multiple trips within a day to make up for lost individual trip revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home. However, NMFS anticipates that at some reduced trip limit, directed shark fishermen would stop targeting sharks because it would no longer be economically viable. At this point, NMFS expects that shark fishermen would target other species and retain sharks incidentally as anticipated under Amendment 2, and therefore, the economic impacts in terms of changes in fishing practices and diversifying fishing opportunities on other species to make up for lost shark revenues would be the same as described in Amendment 2.

Sub-alternative 1C would establish a new non-sandbar LCS trip limit at the beginning of the shark fishing season, which would remain static for the remainder of the fishing season, and would extend the fishing season in the Atlantic region. On average between 2008 and 2009, approximately 27 federally-permitted vessels with directed shark permits and 11 federally-permitted vessels with incidental shark permits had non-sandbar LCS landings in the Atlantic region. The direct impacts to shark fishermen in the Atlantic region would depend on the reduction in the trip limit. As explained above, approximately 81 percent of the Atlantic trips retained 27 or fewer non-sandbar LCS per trip. Therefore, for a majority of the trips, NMFS anticipates that a reduction in the trip limit would have minimal economic impacts on fishermen if the trip limit were reduced from the 33 non-sandbar LCS to 27 non-sandbar LCS as fishing and business practices would not be anticipated to change with such a reduction. Approximately 11 percent may lose additional gross revenues on a trip basis as they were landing more than 33 non-sandbar LCS according to Coastal Fisheries data. In addition, on average, vessels in the Atlantic region retained 13 non-sandbar LCS per trip; however, the average trip landing numbers of non-sandbar LCS varied by month. If the trip limit was reduced to 13 non-sandbar LCS per trip, this could reduce potential gross revenues per trip from \$1,767 to \$696. However, on average, fishermen did not retain 33 non-sandbar LCS per trip during any month of the year. In addition, 6 of the 12 months fishermen retained fewer than the overall monthly average retention of 13 non-sandbar LCS per trip. Therefore, such a reduction in the trip limit is only anticipated to have minor adverse direct economic impacts to fishermen in the short-term; long-term impacts are not anticipated as these reductions would not be permanent.

Reducing the trip limit below 13 non-sandbar LCS per trip would be expected to result in moderate adverse direct economic impacts as it would most likely reduce gross revenues for shark fishermen in the short-term. Fishermen would be expected to stop fishing for sharks as it would no longer be profitable. The reduction in gross revenues would range from \$1,125 to \$1,767 for 12 to 0 non-sandbar LCS per trip. The lowest average number of non-sandbar LCS

retained was 8 non-sandbar LCS per trip during the month of June, which equates to \$428 in gross revenues per trip. These reductions in the trip limits could translate into fishermen making multiple trips within a day to make up for lost individual trip revenues, which could result in higher fuel costs, longer fishing days, and increased time away from home. However, NMFS anticipates that at some reduced trip limit level, directed shark fishermen would stop targeting sharks because it would no longer be economically viable. At this point, NMFS expects that shark fishermen would target other species and retain sharks incidentally as anticipated under Amendment 2, and therefore, the socioeconomic impacts in terms of changes in fishing practices and diversifying fishing on other species to make up for lost shark revenues would be the same as described in Amendment 2.

Under alternative 2, the preferred approach, NMFS considered two sub-alternatives. Sub-alternative 2A would establish new opening dates for the shark fisheries through the annual specifications process in the Atlantic and Gulf of Mexico regions based on certain criteria and process. Sub-alternative 2A could potentially affect the 221 directed and 282 incidental shark permit holders along with the 105 shark dealers. NMFS plans to review the criteria, described in Chapter 2, on an annual basis and would open the fisheries at times that are deemed to provide the most benefits for most of the fishermen while also considering the ecological needs of the different species. The opening of the fishing season through the annual specifications process could vary based on the available annual quota, catch rates, and number of fishing participants during the year. For the 2011 fishing season, NMFS would open the shark research, blacknose shark, non-blacknose SCS, and pelagic shark fisheries upon the effective date of the final rule for this action. The direct and indirect socioeconomic impacts would be neutral on a short and long-term basis because NMFS would not change the opening dates of these fisheries from the status quo alternative. NMFS would delay the opening of the non-sandbar LCS in the Atlantic region until July 15, 2011, which would be the same opening date as 2010 fishing season. The delay in the Atlantic non-sandbar LCS fishing season would result in short- and long-term, direct, minor, adverse socioeconomic impacts as fishermen would have to fish in other fisheries to make up for lost non-sandbar LCS revenues at the beginning of the 2011 fishing season. The short and long-term effects for delaying the season would cause indirect, minor, adverse socioeconomic impacts on shark dealers and other entities that deal with shark products as they may have to diversify during the beginning of the season when non-sandbar LCS shark products would not be available. This would be most prevalent in areas of the southeast Atlantic where non-sandbar LCS are available early in the fishing season. The delay in the non-sandbar LCS fishing season could cause changes in ex-vessel prices. In 2009, the median ex-vessel price of LCS meat in January was approximately \$0.25 per pound dress weight in the Gulf of Mexico and \$0.45 in the South Atlantic region, while the median ex-vessel price in July of 2008 was \$0.45 in the Gulf of Mexico and \$0.75 in the South Atlantic. The median ex-vessel price for shark fins in January was \$17.00 per pound in the Gulf of Mexico and \$16.00 in the South Atlantic. When the LCS fishery opened in July, the average price for fins was approximately \$14.00 per pound in the Gulf of Mexico and \$12.00 per pound in the South Atlantic passed on 2008 prices. Since the North Atlantic had a very limited 2009 non-sandbar LCS fishing season, the ex-vessel prices for 2008 were used for the comparison.

In the North Atlantic, the delayed opening for the non-sandbar LCS would have direct, minor, beneficial socioeconomic impacts in the short and long-term for fishermen as they would

have access to the non-sandbar LCS quota in 2011. Fishermen in the North Atlantic did not have or had a limited access to the non-sandbar LCS quota in 2009. There would be indirect, minor, beneficial socioeconomic impacts in the short and long-term for shark dealers and other entities that deal with shark products in this area as they would also have access to non-sandbar LCS products in 2011. Thus, delaying the non-sandbar LCS seasons under the preferred alternative would cause neutral cumulative socioeconomic impacts, since it would allow the furtherance of equitable fishing opportunities to the extent practicable for commercial shark fishermen in all regions and areas, which was the original intent of Amendment 2.

Based on public comment, NMFS would change the opening date of the non-sandbar LCS fishery in the Gulf of Mexico region in the final rule for this action according to the criteria and process proposed in sub-alternative 2A. In the proposed rule, NMFS proposed to open the non-sandbar LCS in the Gulf of Mexico region upon the effective date of the final rule for this action. NMFS received public comments from fishermen and dealers regarding a change in the opening date for the Gulf of Mexico non-sandbar LCS fishery. Commenters supported the non-sandbar LCS fishery opening around the religious holiday of Lent (*i.e.*, beginning on March 9, 2011) when shark products are more marketable. Florida-based fishermen wanted the non-sandbar LCS fishery in the Gulf of Mexico region to open in the beginning to middle of March in 2011 to have more fishing opportunities to harvest the non-sandbar LCS quota. However, Louisiana-based fishermen requested that the non-sandbar LCS fishery open around the same time as it did in 2010 (*i.e.*, February) as many other fisheries are closed during this time period. Based on these public comments and a review of the criteria in sub-alternative 2A, NMFS would delay the opening of the non-sandbar LCS fishery in the Gulf of Mexico region until March 1, 2011. NMFS believes delaying the opening of the non-sandbar LCS fishery would balance comments received from all fishermen and dealers throughout that region with regard to the opening of the non-sandbar LCS fishery and provide shark fishing opportunities to all participants in the Gulf of Mexico region. The delay in the Gulf of Mexico non-sandbar LCS fishing season could result in short-term direct, minor, adverse socioeconomic impacts as fishermen would have to fish in other fisheries to make up for lost non-sandbar LCS revenues during January and February of the 2011 fishing season. The short-term effects for delaying the season would cause indirect, minor, adverse socioeconomic impacts on shark dealers and other entities that deal with shark products as they may have to diversify during the beginning of the season when non-sandbar LCS shark products would not be available. However, long-term direct and indirect impacts are not anticipated as the delay would only be two months for the 2011 fishing season. In addition, NMFS does not anticipate that the delay would result in changes in ex-vessel prices as 2009 median ex-vessel prices for non-sandbar LCS meat and fins in the Gulf of Mexico region ranged from \$0.25-\$0.35/lb dw and \$17.00 to \$15.00/lb dw, respectively, from January through March.

Sub-alternative 2B would establish new inseason trip limit adjustment criteria for the Gulf of Mexico and Atlantic regions. Sub-alternative 2B would allow NMFS to adjust the shark trip limit through inseason actions, but would not adjust the overall shark quotas for the Gulf of Mexico and Atlantic regions. This sub-alternative is anticipated to have direct and indirect, short-term, neutral socioeconomic in the Gulf of Mexico and Atlantic regions, because changing the non-sandbar LCS trip limits inseason would not limit the overall harvest of non-sandbar LCS, but would provide the mechanism to modify the harvest spatially and temporally to allow

furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas. Directed fishing on non-sandbar LCS or any shark species would continue as long as the trip limit is high enough to make it economically viable. Table 4.1 shows that since the implementation of Amendment 2 directed shark fishing trips land, on average, 21 non-sandbar LCS in the Gulf of Mexico region, and 13 non-sandbar LCS in the Atlantic region. NMFS has not been able to determine at what trip limit fishermen stop targeting non-sandbar LCS. A range of trip limits have been further analyzed in alternatives 1B and 1C, and the socioeconomic impacts associated with the range of trip limits are described above under sub-alternatives 1B and 1C. Trip limits set at levels too low for fishermen to continue targeting sharks would likely lead to shifts in effort to other fisheries, similar to effort shifts experienced during closures of the non-sandbar LCS fishery in 2009 and 2010. The criteria for changing the trip limits during the season, as outlined in Chapter 2, takes into account opportunities for the furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas and ecological considerations of the relevant shark stock, but would not restrict or reduce the current quota. If trip limits are set in a manner that is beneficial to the ecological needs of the relevant shark species, their populations may increase in the long-term, which could allow for increased quota levels in the future. Therefore, minor, beneficial long-term direct, indirect, and cumulative socioeconomic impacts may occur based on sub-alternative 2B in the long-term.

9.0 COMMUNITY PROFILES

This chapter serves as a brief overview and determination of the social impacts associated with the establishment of trip limits and fishing seasons for the Atlantic commercial LCS, pelagic, shark research, and SCS fisheries. A more comprehensive review of community profiles for all HMS fisheries can be found in Section 9 of Amendment 2 and Amendment 3.

9.1 Introduction

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

Social impacts are generally the consequences to human populations that follow from some type of public or private action. They may include alterations to the ways people live, work or play, relate to one another, and organize to meet their needs. In addition, cultural impacts, which may involve changes in values and beliefs that affect people’s way of identifying themselves within their occupation, communities, and society in general, are included under this interpretation. Social impacts analyses help determine the consequences of policy action in advance by comparing the no action alternative with the projected impacts. Although public hearings and scoping meetings provide input from those concerned with a particular action, they do not constitute a full overview of the affected constituents.

NMFS anticipates that the preferred alternative would result in some social impacts. Due to the shortened shark fishing seasons in the Atlantic and Gulf of Mexico regions in 2009 and 2010, NMFS would implement measures that would allow extended seasons and ensure participants from all areas to have an opportunity to harvest a portion of the available shark quotas in both regions. The measures include ways to possibly delay the opening of the fishing season through the annual specifications process as well as allow adjustments via inseason actions in the trip limits to slow the fishery down during the season, as necessary. NMFS would implement measures to open the shark research, blacknose shark, non-blacknose SCS, and pelagic shark fisheries upon the effective date of the final rule for the 2011 fishing season. There would be no new socioeconomic impacts for these fishermen, since the opening dates of these fisheries would not change. NMFS would open the non-sandbar LCS in the Gulf of Mexico region on March 1, 2011. NMFS would delay the opening of the non-sandbar LCS fishery in the Gulf of Mexico region until March 1, 2011, to provide shark fishing opportunities as intended by Amendment 2 to all participants in the Gulf of Mexico region and allow shark product to be available during the religious holiday of Lent (*i.e.*, beginning on March 9, 2011). NMFS would delay the opening of the non-sandbar LCS in the Atlantic region until July 15, 2011, as originally

proposed in the proposed rule. The delay in the Atlantic non-sandbar LCS fishing season would result in socioeconomic impacts for fishermen in the southeast Atlantic where non-sandbar LCS are available early in the fishing season. In the North Atlantic, the delayed opening for the non-sandbar LCS fishery would benefit fishermen who did not have or had a limited access to the non-sandbar LCS quota in 2009. Sub-alternative 2B would allow NMFS to adjust shark trip limits through inseason actions, but would not adjust the overall non-sandbar LCS quotas for the Gulf of Mexico and Atlantic regions. This sub-alternative would not have socioeconomic impacts in the non-sandbar LCS fisheries in the Gulf of Mexico and Atlantic regions because making inseason adjustments to the trip limits would not change the overall harvest of non-sandbar LCS, but would provide the mechanism to modify the harvest spatially and temporally to allow for the furtherance of equitable fishing opportunities for commercial shark fishermen in all regions and areas, as was the intent of Amendment 2. These measures provide NMFS with flexibility in opening the commercial shark fishing seasons as well as allowing for inseason adjustments to the non-sandbar LCS directed trip limits in either region to provide opportunities for constituents across the fishery.

9.2 Overview of the Shark Fishery

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. The geographic extent of the shark directed and incidental commercial permit holders is large, but is currently concentrated in the waters off four states: Florida (55 percent of shark permits), New Jersey (11 percent of shark permits), Louisiana (8 percent of shark permits) and North Carolina (6 percent of shark permits). It should be noted that shark fishing from state-permitted vessels in some states could be substantial. For instance, in 2008-2009, Louisiana accounted for approximately 60 percent of the Gulf of Mexico HMS dealer reported landings; however, very few federally-permitted directed shark fishermen are from Louisiana. However, other states, such as Florida and Texas, do not have directed commercial shark fisheries in state waters. In 2009-2009, the shark fishery is notable for the degree of flexibility of the commercial fishing fleet. Of the 503 vessels in the 2009 fleet, 221 vessels (44 percent) held directed shark fishery permits. The remaining 56 percent (282 vessels) hold incidental catch permits that target species other than sharks. Vessels that engage in the directed shark fishery do so on a seasonal basis, depending on area and the length of the fishing season, and fish for other species at other times of the year.

Shark directed and incidental permit holders also possess permits in other HMS and non-HMS fisheries (Table 9.1). Of the 503 directed and incidental shark permit holders, 82 percent also hold king or Spanish mackerel permits, 61 percent hold dolphin/wahoo permits, 36 percent hold directed swordfish permits, 21 percent hold snapper/grouper permits and 30 percent hold charter/head boat permits. Currently, there are 105 federally permitted shark dealers, the majority of which are located in Florida (37 percent). Table 9.2 shows the number of shark dealers permitted in each state in 2009. Dealers that possess shark permits also hold dealer permits for other species such as swordfish, dolphin/wahoo, reef fish and snapper/grouper. The additional permits that the commercial shark fishermen and dealers possess may help mitigate economic and social impacts of the preferred management measures.

Table 9.1 Distribution by state of shark directed and incidental permit and non-HMS fisheries permits that are possessed by commercial shark permits as of November 5, 2009.

State	Shark Directed	Shark Incidental	Swordfish Directed	Swordfish Incidental/ Handgear	GOM Reef Fish	Dolphin/ Wahoo	*Mackerel: King and Spanish	Spiny Lobster	Snapper/ Grouper	**Charter Head Boat General
ME	1	1	1	0	0	1	0	0	0	0
NH	1	1	1	0	0	0	0	0	0	0
MA	5	14	13	3	0	11	3	1	0	0
RI	0	5	1	3	0	1	0	0	0	0
CT	1	2	1	0	1	1	0	0	0	0
NY	9	13	14	5	1	17	4	0	1	4
NJ	26	31	33	15	0	38	31	1	1	3
DE	0	1	1	0	0	1	0	0	0	0
MD	4	1	4	0	1	4	0	0	0	3
VA	2	2	1	2	0	3	2	0	1	0
NC	17	13	10	7	0	28	38	2	15	13
SC	4	12	3	1	0	14	12	0	12	3
GA	2	1	0	0	0	3	6	2	3	0
FL	139	138	68	37	93	179	289	15	75	124
AL	6	1	0	0	2	1	4	0	0	0
MS	0	4	0	0	1	0	5	0	0	0
LA	2	36	32	3	5	4	10	0	0	0
TX	2	6	0	3	8	3	6	0	0	2

State	Shark Directed	Shark Incidental	Swordfish Directed	Swordfish Incidental/ Handgear	GOM Reef Fish	Dolphin/ Wahoo	*Mackerel: King and Spanish	Spiny Lobster	Snapper/ Grouper	**Charter Head Boat General
Total 2009	221	282	183	79	112	309	410	21	108	152
Total 2008	214	285	181	76	****	****	****	****	****	****
Total 2007	231	296	180	160	134	316	444	54	119	193
Total 2006	240	312	191	86	*****	*****	*****	*****	*****	*****
Total 2005	235	320	190	91	*****	*****	*****	*****	*****	*****

* of shark directed permit holders, 107 have Spanish mackerel permits, and 87 have king mackerel permits and of shark incidental permit holders, 121 have Spanish mackerel permits, and 117 have king mackerel permits

** Charter/head boat permits include Gulf of Mexico reef fish, migratory pelagics, Atlantic dolphin/wahoo, and Atlantic snapper/grouper

*** Other includes shrimp permits and swordfish handgear permits

**** 2008 numbers taken from 2008 SAFE Report, not all permit totals were available.

***** Numbers for 2005 and 2006 were taken from the Consolidated HMS FMP, non-HMS permits were not calculated at that time.

Table 9.2 Number of HMS and non-HMS Dealer Permits by State as of November 6, 2009.

State	Sharks	Domestic Swordfish	Dolphin/Wahoo	Reef Fish	Rock Shrimp	Snapper/Grouper	Golden Crab	Wreckfish	Total # of Permits
AL	3	1	2	3	1	1	0	0	7
FL	39	27	21	26	10	25	9	8	126
GA	1	1	1	0	1	1	0	1	5
LA	7	6	4	6	0	5	0	0	21
MA	7	7	7	1	1	2	1	1	20
MD	3	3	3	0	0	1	0	1	8
ME	2	2	2	0	0	1	0	0	5
NC	5	4	5	1	2	5	1	2	20
NJ	10	9	9	1	1	2	0	1	23
NY	4	4	2	1	1	2	1	2	23
RI	4	4	4	0	0	1	0	1	10
SC	14	4	6	0	0	6	0	1	17
TX	2	1	1	2	0	1	0	0	5
VA	4	4	4	0	0	3	0	2	13
Totals 2009	105	77	71	41	16	56	12	20	293

9.3 State and Community Profiles

Section 9.4 of Amendment 2 provides a comprehensive summary of the states and communities that participate in HMS fisheries and are affected by HMS regulations.

10.0 OTHER CONSIDERATIONS

10.1 National Standards

The analyses in this document are consistent with the National Standards (NS) set forth in the 50 C.F.R. part 600 regulations.

The actions described in this EA and associated final rule are consistent with NS 1 in that they would not implement measures that exacerbate overfishing or prevent overfished species of sharks in the Atlantic Ocean from rebuilding (NS1). The alternatives are based on the best scientific information available (NS 2), including self-reported, observer, and stock assessment data, which provide for the management of the affected species throughout its range (NS 3). The preferred alternatives do not discriminate against fishermen in any state (NS 4) nor do they negatively impact the efficiency in utilizing the resource (NS 5). With regard to (NS 6), the preferred alternatives take into account any variations that may occur in the fishery and the fishery resources. Additionally, NMFS considered the costs and benefits of these management measures economically and socially (NS 7 and 8) in Chapters 6, 7, 8, and 9 of this document. The preferred measures are consistent with regional quotas and may not increase fishing effort for Atlantic sharks, therefore, impacts to bycatch species and protected species are similar to those previously analyzed in Amendment 2 and Amendment 3. Finally, this final rule would not require fishermen to fish in an unsafe manner due to the premature closure of the LCS and SCS fisheries, which would help to prevent derby fishing conditions and possibly improve safety at sea (NS 10).

10.2 Paperwork Reduction Act

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

10.3 Federalism

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

11.0 LIST OF PREPARERS AND PERSONS/AGENCIES CONSULTED

The development of this rulemaking involved input from many people within the Highly Migratory Species Management Division (HMS), Office of Sustainable Fisheries (F/SF1), NMFS, and NMFS contractors. Staff who worked on this document include:

Karyl Brewster-Geisz, MS, Fishery Management Specialist
Peter Cooper, MEM, Fishery Management Specialist
Joe Desfosse, PhD, Fishery Management Specialist
Guy DuBeck, MS, Fishery Management Specialist
Anne Lange, MS, NMFS Contractor
Delisse Ortiz, PhD, Knauss Fellow
Margo Schulze-Haugen, MS, Division Chief
George Silva, MS, Fishery Management Specialist
Jackie Wilson, PhD, Fishery Management Specialist

The development of this document also involved considerable input from other staff members and Offices throughout NOAA including, but not limited to:

- Other Divisions within the Office of Sustainable Fisheries (Emily Menashes and Carrie Selberg);
- NOAA General Counsel (Meggan Engelke-Ros, Caroline Park, Megan Walline, and Stacey Nathanson); and;
- NMFS NEPA (Steve Leathery).
- PPI/NOAA NEPA (Emily Johannes, Steve Kokkinakis, Cristi Reid)

Literature Cited:

- Carlson, J.K. and D. M. Bethea. 2007. Catch and bycatch in the shark gillnet fishery: 2005-2006. NOAA Technical Memorandum NMFS-SEFSC-552, 26 p.
- Cortés, E. and J. Neer. 2005. Updated Catches of Atlantic Sharks. LCS05/06-DW-16, 58 pp.
- Larkin, S.L., C.M. Adams, and D.J. Lee. 2000. Reported trip costs, gross revenues, and net returns for U.S. Atlantic pelagic longline vessels. *Marine Fisheries Review* 62(2): 49-60.
- NMFS. 2003. Fishery Management Plan for the Dolphin and Wahoo Fishery of the Atlantic. South Atlantic Fishery Management Council in Cooperation with the New England Fishery Management Council, Mid-Atlantic Fishery Management Council. Charleston, SC, Public Document. 386 pp.
- NMFS. 2006. Final Consolidated Atlantic Highly Migratory Species Management Plan. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. 1600 pp.
- NMFS. 2004. Final Amendment 15 to the Fishery Management Plan for Coastal Migratory Pelagic Resources in the Atlantic and Gulf of Mexico Including Environmental Assessment, Regulatory Impact Review, And Regulatory Flexibility Act Analysis. South Atlantic Fishery Management Council in Cooperation with the Gulf of Mexico and Mid-Atlantic Fishery Management Councils. Charleston, SC, Public Document. 132 pp.
- NMFS. 2008. Stock Assessment and Fishery Evaluation (SAFE) Report for Atlantic Highly Migratory Species 2008. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, 1315 East West Highway, Silver Spring, MD. Public Document. 446 pp.
- NMFS. 2009. Final Amendment 1 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan, Essential Fish Habitat. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 395.
- NMFS. 2010. Final Amendment 3 to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 632.
- Porter, R.M., M. Wendt, M.D. Travis, and I. Strand. 2001. Cost-earnings study of the Atlantic-based U.S. pelagic longline fleet. Pelagic Fisheries Research Program. SOEST 01-02; JIMAR contribution 01-337. 102pp.

- SAFMC. 1998. Dolphin/Wahoo Workshop Report. Prepared by the South Atlantic Fishery Management Council, May 1998. Available from: SAFMC, 1 Southpark Circle, Suite 306, Charleston, South Carolina 29407-4699.
- SAFMC. 2009a. South Atlantic Fishery Management Council, Regulations by Species – Spanish Mackerel. May 4, 2009.
<http://www.safmc.net/FishIDandRegs/FishGallery/SpanishMackerel/tabid/329/Default.aspx>
- SAFMC. 2009b. South Atlantic Fishery Management Council, Regulations by Species – King Mackerel. May 4, 2009.
<http://www.safmc.net/FishIDandRegs/FishGallery/KingMackerel/tabid/297/Default.aspx>
- SAFMC. 2009c. Snapper Grouper Management in South Atlantic Federal Waters, Interim Rule Request for Red Snapper and Snapper Grouper Amendment 17, Frequently Asked Questions. May 4, 2009.
<http://www.safmc.net/Portals/6/Library/FMP/SnapGroup/RedSnapperFAQ09.pdf>
- SAFMC. 2010a. South Atlantic Update – Winter 2010. pp. 12. Available at:
<http://www.safmc.net/Portals/6/Newsletters/Winter10Update31110Revised.pdf>
- SAMFC. 2010b. Council Approves Measures to End Overfishing of Red Snapper. Available at:
<http://www.safmc.net/News/NewsReleases/NewsReleaseJune92010/tabid/646/Default.aspx>
- SEDAR. 2008. SEDAR Stock Assessment Report South Atlantic Spanish Mackerel. pp. 95. Available at:
<http://www.sefsc.noaa.gov/sedar/download/S17%20SM%20SAR%201.pdf?id=DOCUMENT>
- SEDAR. 2009. SEDAR Stock Assessment Report South Atlantic and Gulf of Mexico King Mackerel. Available at:
http://www.sefsc.noaa.gov/sedar/download/SEDAR16_final_SAR.pdf?id=DOCUMENT
- SEFSC. 2007. Southeast Fisheries Science Center – SEDAR homepage. June 19, 2007.
http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=0

**FINDING OF NO SIGNIFICANT ENVIRONMENTAL IMPACT FOR A FINAL RULE TO ESTABLISH
QUOTAS FOR 2011 COMMERCIAL FISHING SEASON AND ADAPTIVE MANAGEMENT MEASURES
FOR THE ATLANTIC SHARK FISHERY
NATIONAL MARINE FISHERIES SERVICE**

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

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

or

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

This EA tiers from and incorporates by reference the pre-existing Amendment 2 to the 2006 Consolidated Highly Migratory Species HMS FMP (Amendment 2) and Amendment 3 to the 2006 Consolidated Highly Migratory Species HMS FMP (Amendment 3), as well as the scope and effect of activities analyzed in the April 2008 Final Environmental Impact Statement (FEIS) for Amendment 2 and the March 2010 FEIS for Amendment 3. This action would:

- Adjust quotas for the 2011 fishing season for the non-sandbar large coastal shark (LCS), blacknose, non-blacknose small coastal shark (SCS), pelagic shark, and sandbar shark research fisheries based on any over- and/or underharvests experienced during the 2009 and 2010 Atlantic commercial shark fishing season;
- Establish the opening date for the commercial Atlantic shark fishing seasons; and
- Consider alternatives that would add flexibility to shark management by analyzing criteria that would allow for delays to the start of the different shark species/complex fishing seasons through the annual specifications process each year as well as allow for adjustments via inseason actions to the shark trip limits to extend the fishing season, as necessary.

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 (CEQ) regulations at 40 C.F.R. 1508.27 state that the significance of an action should be analyzed both in terms of context and intensity. Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQs context and intensity criteria. These include:

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

No. The final action is consistent with the overall quotas for LCS, SCS, and pelagic sharks. The preferred management measures analyze criteria that would allow for delays to the start of the different shark species/complex fishing seasons through the annual specifications process each year as well as allow for adjustments via inseason actions to the shark trip limits to extend the fishing season, as necessary. The measures would add flexibility to shark management and are not expected to significantly increase fishing mortality of any target species beyond what has been previously analyzed under the 2006 Consolidated HMS FMP or its amendments. Under the preferred alternatives, NMFS would establish criteria that would allow for flexibility in opening the Atlantic commercial shark fishing season each year through the annual specifications process. NMFS would continue to establish yearly shark quotas and announce the opening of the fishing season through annual rulemaking with notice and public comment at the beginning of each fishing season. In addition, NMFS would establish criteria that would allow for shark trip limit adjustments via inseason actions to provide the furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas while also considering the ecological needs of the different species. NMFS would modify the trip limit via an inseason action with five days advance notice upon filing of such a change. Neither one of these alternatives is expected to jeopardize the sustainability of any target species as they would not increase fishing effort and would maintain the rebuilding plans for sandbar, dusky, and blacknose sharks.

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

No. The final action is not expected to jeopardize the sustainability of any non-target species or bycatch because it is not expected to result in a significant increase in bottom longline (BLL) or gillnet fishing effort, the primary gears used to harvest Atlantic sharks. The management measures maintain the same overall quotas established for non-sandbar LCS, sandbar sharks, and pelagic sharks in Amendment 2 and blacknose sharks and non-blacknose SCS in Amendment 3. Depending on the delay, delaying the fishing seasons could benefit pupping females if the delay prevented fishing during the shark pupping period. Some fishing effort may be displaced to other gillnet and BLL fisheries in which shark fishermen participate during times they are not fishing for sharks. However, many shark fishermen currently possess limited access permits in other fisheries, such as the South Atlantic snapper/grouper and Gulf of Mexico reef fisheries, and participate in these fisheries already as few fisheries are open year round. If fishermen do not

currently hold permits in these fisheries, it would be difficult and expensive for them to enter these fisheries in the future. In addition, for shark fishermen that hold permits in these fisheries, strict retention limits and quotas are either in place or will be implemented in the near future, which would protect these stocks from further overfishing and becoming overfished as a result of redirected shark fishing effort. Therefore, displaced effort is not anticipated to result in significant increases in bycatch of non-target species or interactions with protected resources.

3. Can the final 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. As described in Amendment 1 to the 2006 Consolidated HMS FMP, there is no evidence that physical effects caused by shark BLL or gillnet gear are adversely affecting EFH for targeted or non-targeted species, to the extent that physical effects can be identified on the habitat or the fisheries. The preferred management measures that would establish criteria that would allow for delayed openings in the commercial Atlantic shark fisheries and adjusting the shark trip limits during the fishing season, as needed, would not affect fishing effort. Therefore, the preferred alternatives are not expected to have significant impacts on EFH. As a precautionary measure, NMFS recommends fishermen take appropriate steps to identify and avoid bottom obstructions in order to mitigate any adverse impacts on EFH. The other gear types used to target sharks, such as pelagic longline (PLL) and rod and reel gear, are unlikely to have any impact on EFH because they are fished in the water column and are not in contact with the bottom.

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

No. The final management measures analyze criteria that would allow for delays to the start of the different shark species/complex fishing seasons through the annual specifications process each year as well as allow for adjustments via inseason actions to the shark trip limits to extend the fishing season, as necessary. These actions would have no impacts on public health and safety.

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

No. The preferred management measures are not expected to have significant impacts on endangered or threatened species, marine mammals, or critical habitat of these species that have not already been previously analyzed. The preferred management measures analyze criteria that would allow for delays to the start of the different shark species/complex fishing seasons through the annual specifications process each year as well as allow for adjustments via inseason actions to the shark trip limits to extend the fishing season, as necessary. This action would not result in any change or increase in fishing activity beyond what was analyzed in the May 2008 Biological Opinion (BiOp) for Amendment 2. The May 2008 BiOp concluded, based on the best available scientific information, that the continuation of the Atlantic shark fishery under the management measures implemented in Amendment 2 was not likely to jeopardize the continued existence of

endangered green, leatherback, and Kemp's ridley sea turtles; the endangered smalltooth sawfish; or the threatened loggerhead sea turtle. The BiOp found that Amendment 2 was not expected to increase endangered species or marine mammal interaction rates. Furthermore, the BiOp concluded that Amendment 2 was not likely to adversely affect listed species of marine mammals, invertebrates (*i.e.*, listed species of coral) or other listed species of fishes (*i.e.*, Gulf sturgeon and Atlantic salmon) in the action area.

6. Can the final 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 management measures would not have a substantial impact on biodiversity and ecosystem function within the affected area, as the criteria to allow for the delay in the non-sandbar fishing seasons through the annual specifications process or adjust shark trip limits via inseason actions would not increase fishing effort or fishing mortality. The reduction of fishing effort at the beginning of the year due to potentially delaying the fishing season, which could include reduced effort during shark pupping seasons, could lead to decreased mortality of sharks, including pregnant females, that are important top predators, which may help to preserve biodiversity and ecosystem function.

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

No. The preferred management measures consider alternatives that would add flexibility to shark management by establishing criteria to allow for delays in the start of the different shark species/complex fishing seasons through the annual specifications process each year as well as allow for adjustments via inseason actions to shark trip limits to extend the fishing season, as necessary. Based on these criteria, delays could provide beneficial environmental impacts to shark stocks by reducing fishing mortality on pupping female sharks in this area during April, May, and June. In addition, the delays in the fishing season could afford fishermen in an entire region more equitable share of the shark quotas as sharks do not migrate into waters of the mid and north Atlantic until later in the fishing season (after June of each year). For example, shark fishermen in the mid and north Atlantic did not have a shark fishing season in 2009 as the fishery closed (74 FR 30479, June 26, 2009) before sharks migrated into North Atlantic waters. Thus, delaying the fishing season would allow fishermen across the entire Atlantic region a chance to fish for sharks and would avoid potential negative economic impacts. In addition, a delay in the opening of the non-sandbar LCS fishery in the Gulf of Mexico region could provide shark fishing opportunities as intended by Amendment 2 to all participants in the Gulf of Mexico region and allow shark product to be available during the religious holiday of Lent (*i.e.*, beginning on March 9, 2011). However, the delay in the season could result in direct negative socioeconomic impacts on shark fishermen in the South Atlantic who would not be able to fish for sharks until later in the year despite year round availability of sharks. In addition, shark dealers and other entities that deal with shark products could experience negative economic impacts as shark products would not be available at the beginning of the season. Also, delaying the non-sandbar LCS fishery in the Gulf of Mexico could result in direct negative socioeconomic impacts on shark fishermen in the western Gulf of Mexico who want the fishery open at the

beginning of the fishing year when other fisheries are closed during that time period. However, fishermen would have the entire quota available to them upon opening of the fishing season, and delays in the fishing season are not anticipated to keep fishermen from catching the available quota. The delay of the season and/or reduction in shark trip limits could allow the shark season to extend throughout the year, making shark markets more stable and shark product available later in the year. Thus, no significant social or economic impacts interrelated with significant natural or physical environmental effects are anticipated from this final action.

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

The final actions in this rulemaking should not be highly controversial. The final actions in this rulemaking should mitigate the effects on the quality of the human environment by creating criteria that would allow flexibility in the start dates of the Atlantic shark fishing seasons and the shark trip limits to accommodate for unanticipated events in the fishery, such as inclement weather or large change in effort. This flexibility in opening shark fishing seasons could allow for the furtherance of equitable fishing opportunities to the extent practicable for commercial shark fishermen in all regions and areas, and therefore, is not expected to be controversial. If NMFS were to use the criteria to implement adjusted shark trip limits via inseason actions, there may be some associated controversy as fishermen are accustomed to the current trip limits. However, such a reduction may be necessary to extend the fishing season, according to the intent of Amendment 2, although NMFS is not changing the shark trip limits at this time.

9. Can the final 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 final 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 ocean. In addition, there is no park land, prime farmlands, wetlands, or wild and scenic rivers within the action area so there would be no adverse impacts on these areas.

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

No. The effects of the commercial shark fishery on the human environment have been analyzed in previous environmental impacts statements, such as the Amendment 2 and Amendment 3. Therefore, the effects are not highly uncertain and do not involve unique or unknown risks.

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

No. The overall impacts of the commercial Atlantic shark fishing seasons and quotas have been previously analyzed in the FEISs for Amendment 2 and Amendment 3. The final action is not anticipated to have additional significant impacts beyond impacts that have already been

analyzed in these documents. The final action would establish flexibility in the opening of the Atlantic shark fishing seasons through the annual specifications process and adjustments via inseason actions to shark trip limits based on criteria that would allow NMFS to consider unforeseen events that could affect the shark fishery, such as the impacts of the oil spill in the Gulf of Mexico or inclement weather. Such flexibility could offer fishermen in all areas and regions the opportunity to fish for sharks within a given season. The preferred criteria that would allow for inseason adjustments to the shark trip limits would be for the furtherance of equitable fishing opportunities to the extent practicable for commercial shark fishermen in all regions and areas while also considering the ecological needs of the different species. This should not result in a cumulative significant impact as the different shark quotas would not change.

12. Is the final 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 management measures would occur in U.S. federal waters of the Atlantic Ocean, Gulf of Mexico, and 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 final action reasonably be expected to result in the introduction or spread of a nonindigenous species?

No. Commercial shark fishing is a targeted fishery using BLL and gillnet gear and bait caught from the same area where the shark fishing occurs. Therefore this action would not result in the introduction or spread of non-indigenous species.

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

No. The final action would not likely establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration. This final action would help add flexibility to future opening dates for the shark fishing seasons through the annual specifications process and adjustments via inseason actions to shark trip limits; however, these actions are not anticipated to have significant effects above what has already been analyzed in Amendment 2 and Amendment 3. In addition, NMFS would continue to do rulemakings to establish future commercial Atlantic shark fishing seasons, as necessary.

15. Can the final 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 final action is consistent with the Magnuson-Stevens Act and the regulations at 50 CFR 635. NMFS has consulted with the Coastal Zone Management Plans of the 20 coastal states of the Atlantic, Gulf of Mexico and Caribbean Oceans regarding consistency of this action with CZM programs. In September 2010, NMFS provided all coastal states along the eastern

seaboard and the Gulf of Mexico (19 states), including Puerto Rico and the U.S. Virgin Islands with a copy of the proposed rule and draft EA to establish quotas for 2011 commercial fishing season and adaptive management for the Atlantic shark fishery and requested their concurrence. Under 15 C.F.R. § 930.41, states and/or U.S. territories have 60 days to respond after the receipt of the consistency determination and supporting materials. States can request an extension of up to 15 days. If a response is not received within those time limits, NMFS can presume concurrence (15 C.F.R. § 930.41(a)). To date, eleven states replied within the response time period that the proposed regulations were consistent, to the extent practicable, with the enforceable policies of their CMPs (New Hampshire, Rhode Island, Connecticut, New Jersey, Delaware, Virginia, North Carolina, Florida, Alabama, Mississippi, and Louisiana). Another eight states (Maine, Massachusetts, New York, Maryland, South Carolina, Georgia, Puerto Rico and the U.S. Virgin Islands) did not respond within the response time period, nor did they request an extension in the comment period; therefore, NMFS presumes their concurrence. NMFS does not expect to threaten a violation of Federal, State, or local law or requirement imposed for the protection of the environment. Therefore, the final action would not be expected to threaten a violation of Federal, State, or local law or requirement imposed for the protection of the environment.

16. Can the final 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 preferred management measures would establish flexibility in the opening of the Atlantic shark fishing seasons through the annual specifications process and adjustments via inseason actions to shark trip limits based on criteria that would allow NMFS to consider unforeseen events that could affect the shark fishery, such as the impacts of the oil spill in the Gulf of Mexico or inclement weather. Such flexibility could offer fishermen in all areas and regions the opportunity to fish for sharks within a given season. The preferred criteria that would allow for adjustments via inseason actions to shark trip limits would allow NMFS to adjust the trips limits, as necessary, to provide for the furtherance of equitable fishing opportunities to the extent practicable for commercial shark fishermen in all regions and areas while also considering the ecological needs of the different species. These criteria should not result in cumulative adverse effects on target or non-target species as shark quotas would not change. The overall Atlantic shark fishing seasons and quotas have previously been analyzed in the FEISes for the 2006 Consolidated HMS FMP and its amendments, and no additional impacts are expected for target and non-target species besides what has been previously analyzed.

In addition, a BiOp for Atlantic Shark Fisheries was prepared in May 2008 in response to the proposed measures in Amendment 2 to the Consolidated HMS FMP. The BiOp concluded, based on the best available scientific information, that the continuation of the Atlantic shark fishery under the new management measures implemented in Amendment 2 was not likely to jeopardize the continued existence of endangered green, leatherback, and Kemp's ridley sea turtles; the endangered smalltooth sawfish; or the threatened loggerhead sea turtle. The BiOp found that Amendment 2 was not expected to increase endangered species or marine mammal interaction rates. Furthermore, the BiOp concluded that Amendment 2 was not likely to adversely affect listed species of marine mammals, invertebrates (*i.e.*, listed species of coral) or other listed species of fishes (*i.e.*, Gulf sturgeon and Atlantic salmon) in the action area.

In view of the information presented in this document and the analysis contained in the attached final EA prepared for trip limit and season length management measures in the Atlantic LCS, SCS, and pelagic shark fisheries, it is hereby determined that this action would not significantly impact the quality of the human environment as described above and in the final EA. In addition, all impacts to potentially affected areas, including national, regional and local, have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

for James P. Bugen

Emily Menashes
Acting Director, Office of Sustainable Fisheries, NOAA

Date 11/17/2010

In view of the information presented in this document and the analysis contained in the attached final EA prepared for trip limit and season length management measures in the Atlantic LCS, SCS, and pelagic shark fisheries, it is hereby determined that this action would not significantly impact the quality of the human environment as described above and in the final EA. In addition, all impacts to potentially affected areas, including national, regional and local, have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

for James P. Bugen

Emily Menashes
Acting Director, Office of Sustainable Fisheries, NOAA

Date 11/17/2010