

FINAL
ENVIRONMENTAL ASSESSMENT,
REGULATORY IMPACT REVIEW, AND
FINAL REGULATORY FLEXIBILITY ANALYSIS
FOR A
FINAL RULE
TO REVISE THE ATLANTIC HIGHLY MIGRATORY SPECIES SHARK
FISHERY CLOSURE REGULATIONS

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

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ABSTRACT

- Action:** Update and revise existing HMS regulations so that NMFS may close Atlantic HMS shark fisheries with no fewer than four days' notice, when landings or projections of landings reach 80-percent of the commercial quota and are anticipated to reach 100 percent of the quota by the end of the season.
- Type of statement:** Environmental Assessment (EA), Regulatory Impact Review (RIR), and FINAL Regulatory Flexibility Analysis (FRFA)
- Lead Agency:** National Marine Fisheries Service (NMFS): Office of Sustainable Fisheries
- For further information:** Highly Migratory Species Management Division (F/SE1)
1315 East-West Highway
Silver Spring, Maryland 20910
Phone: 301-427-8503; Fax: 301-713-1917
- Abstract:** This final EA analyzes potential changes to the landings threshold that prompts a shark fishery closure and the length of time between public notice and the effective date of a given shark fishery closure. The goal is to improve the efficacy of management while also avoiding overharvests in these fisheries.

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1.0 PURPOSE AND NEED FOR ACTION

1.1. REGULATORY AUTHORITIES

The National Marine Fisheries Service (NMFS), on behalf of the Secretary of Commerce, is responsible for managing Atlantic highly migratory species (HMS), including the federal Atlantic shark, tuna, and swordfish fisheries under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), Section 304(g). Under the Magnuson-Stevens Act, NMFS must, consistent with ten National Standards, manage fisheries to maintain optimum yield (OY) on a continuing basis while preventing overfishing. Since 1993, NMFS has implemented several fishery management plans (FMPs), FMP amendments, and numerous regulations relating to the Atlantic HMS fisheries under the authority of the Magnuson-Stevens Act. Currently, the Atlantic HMS fisheries are managed under the 2006 Consolidated HMS FMP, its amendments, and implementing regulations at 50 CFR part 635.

In accordance with the Magnuson-Stevens Act, the final alternatives in this rulemaking address the potential environmental, economic, and social impacts of the percent landings threshold that prompts a closure, and the length of time between public notice and the effective date of a given shark fishery species and/or management group closure. In addition to the Magnuson-Stevens Act, any management measures must also be consistent with other applicable laws including, but not limited to, the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), and the Coastal Zone Management Act (CZMA). This document is prepared, in part, to comply with NMFS' responsibilities under NEPA, as implemented by the regulations published by the Council on Environmental Quality, 50 C.F.R. Parts 1501-1508 (CEQ Regs), and NOAA Administrative Order 216-6 (NAO 216-6).

This final action considers issues, which affect commercial fishing for shark species and/or management groups in the Atlantic Ocean including the Gulf of Mexico and Caribbean Sea.

1.2. MANAGEMENT HISTORY

This section provides a brief overview of Atlantic shark management relative to the final action. More detail regarding the history of Atlantic shark management can be found in Chapter 3 of this document.

NMFS began managing Atlantic sharks in 1993. At that time, NMFS required federally-permitted dealers to report to NMFS every two weeks to effectively monitor quotas and close the shark fisheries when necessary to avoid exceeding the quotas. Because these reports were paper based and had to be mailed, the data NMFS used to monitor the fisheries were often a month or more out of date.

As established in Amendment 2 to the 2006 Consolidated HMS FMP (NMFS, 2008) and its implementing regulations (73 FR 35778, June 24, 2008; 73 FR 40658, July 15, 2008), the Atlantic HMS shark commercial fisheries season structure is managed as one fishing “season”

that lasts the entire calendar year (i.e., beginning January 1 and closing on December 31) unless otherwise provided in a rule or inseason action. NMFS currently closes a shark fishery when the overall, regional, and/or sub-regional landings for the species or management group has reached or is projected to reach 80-percent of the available overall, regional, and/or sub-regional commercial quota. Once closed, current regulations do not provide for re-opening the fishery within the season.

Current regulations provide that any shark fishery closure is effective no less than five days from notice of filing with the Office of the Federal Register. The minimum notice period was established to allow fishermen to complete their trip and land a portion of the remaining quota. As a result of other changes in Amendment 2 (e.g., the reduction in retention limit), most shark fishermen now take one or two day trips and may not need the full five-day notice.

Additionally, when the 80-percent landings threshold was established in 2008, all federal shark dealers reported on a biweekly basis using paper reports. This 80-percent threshold was meant to account for the delay in data entry from the paper reports, landings that occurred during the five-day notice period, state water landings continuing to occur after a federal closure, delayed landing reports from state-only dealers, and the potential for late dealer reporting. However, since January 1, 2013 (77 FR 47303, August 8, 2012), all Atlantic HMS federal dealers have been required to report commercial harvests of sharks, swordfish, and bigeye, albacore, yellowfin, and skipjack (BAYS) tunas on a weekly basis through a NMFS-approved electronic dealer reporting system (eDealer). Although most states also require all state-only dealers to report electronically, some states still allow for paper reports, and/or require reporting once a month rather than weekly. Overall, eDealer has resulted in more timely data on landings.

NMFS has received numerous comments at several HMS Advisory Panel (AP) meetings and during various rulemakings on commercial shark management (e.g., the Commercial Retention Limit for Blacknose Sharks and Non-Blacknose Small Coastal Sharks in the Atlantic Region in 2016) requesting that NMFS modify the current 80-percent threshold. Most commenters believe that because eDealer is now an established reporting system providing timely quota monitoring, NMFS could close various shark management groups after landings exceed 80-percent of the relevant quota without exceeding the quota. Many of these commenters suggested changing the threshold to 90-percent.

In September 2017, NMFS solicited opinions and advice from the HMS AP on a potential range of options and if additional options should be considered in the rulemaking process. Some AP members commented that an immediate closure at any quota threshold would be infeasible given that some state regulations must provide more than 24 hours of notice before closing a fishery. Additionally, requesting immediate closure could cause confusion in fisheries that occur in both state and federal waters. Other AP members suggested that NMFS consider: maintaining the existing 80-percent closure threshold as a precautionary approach; raising the threshold to 90 percent only in the Atlantic region and maintaining the 80-percent threshold in the Gulf of Mexico region; or determining closure thresholds for each region and/or management group based on the stock status and characteristics of the fishery. AP members also requested clarification on how bycatch and discards are accounted for in the quota and total allowable

catch (TAC), and suggested that NMFS consider the relationship of scientific and management uncertainty in the shark fisheries.

Based on the comments received from the HMS AP, NMFS developed a draft EA and proposed rule on the fishery closure procedures for the Atlantic shark fisheries. The proposed rule published on February 23, 2018 (83 FR 8037). The 30-day public comment period closed on March 26, 2018. During the public comment period, NMFS held one webinar and presented information at the HMS AP meeting. In addition to the comments received at those meetings, NMFS received nine verbal and 10 written comments regarding the shark fishery closure threshold and shark fishery closure notice period from fishermen, states, environmental groups, academia, and other interested parties.

NMFS received several comments supporting the preferred alternatives to continue to prevent overfishing on sharks and to fully utilize the quotas. Some commenters supported combining the preferred alternative with another alternative that would establish criteria to evaluate future closures. Other commenters supported increasing the shark fishery closure threshold (e.g., 85- or 90-percent) or maintaining the status quo. The State of North Carolina questioned why the 80-percent threshold is still needed given NMFS now has electronic dealer reporting and suggested examining changes that effectively balance sustainability with optimum harvest.

NMFS also received comments regarding the shark fishery closure notice period. Some commenters supported the preferred alternative. Other commenters, along with the States of North Carolina and Louisiana, supported Alternative 2a (No Action) since the preferred alternative (three-day closure notice) would create some inconsistencies if state and federal waters do not close together, resulting in fishermen needing to discard product if they miss the closure date.

1.3. SHARK QUOTA UTILIZATION

Currently, a shark fishery will close when NMFS calculates that the overall, regional, and/or sub-regional landings for that species and/or management group has reached or is projected to reach 80-percent of the applicable quota. This closure is effective five calendar days after the date of filing with the Office of the Federal Register. The following analyses focus on the years 2008 through the present, with the Atlantic HMS shark commercial fisheries season structure beginning January 1 and closing on December 31. From 2005 through 2008, the shark fishery was managed using trimester seasons within a year, and data would not be comparable to the single season fishery used today.

As stated above, once a fishery closure date has been announced, the closure date is not effective for five days. Fishermen may continue fishing during these five days. As such, NMFS may continue to receive legal shark landing reports by dealers even after the official closure date. Some fisheries have exceeded their quota because of these reported landings after a closure (Figure 1.1).

From 2008 to 2012 prior to the implementation of eDealer (“Pre eDealer”), three of the nine shark management groups (approximately one third) that were closed, exceeded their quota. These included the 2009 Atlantic non-sandbar large coastal shark (LCS), the 2010 Gulf of Mexico non-sandbar LCS, and the 2010 Atlantic non-sandbar LCS management groups. All three of these management groups were closed before or just after reported landings reached 80-percent. Following the implementation of eDealer (2013-2017), 5 of 17 shark management groups (approximately one third) that have closed have exceeded their quota. These include the 2013 Gulf of Mexico aggregated LCS, 2014 Gulf of Mexico aggregated LCS, 2014 Gulf of Mexico non-blacknose small coastal shark (SCS), 2015 Atlantic blacknose sharks, and 2016 western Gulf of Mexico hammerhead shark management groups. By weight, the largest observed underharvests occurred in the Gulf of Mexico blacktip shark and the Gulf of Mexico non-blacknose SCS management groups in 2014, 2015, and 2016. All five management groups were closed before or just after reported landings reached 80-percent except for the Western Gulf of Mexico hammerhead and Atlantic blacknose fisheries. High catch rates, late reporting, and a small quota for the Western Gulf of Mexico hammerhead fishery resulted in overharvest occurring very rapidly in 2016. Temporarily high catch rates in the Atlantic blacknose fishery led projections to overestimate the catch, leading to a closure before 80-percent of the quota was caught. On average between 2013 to 2017, 16 percent of the quota was landed after a closure was announced.

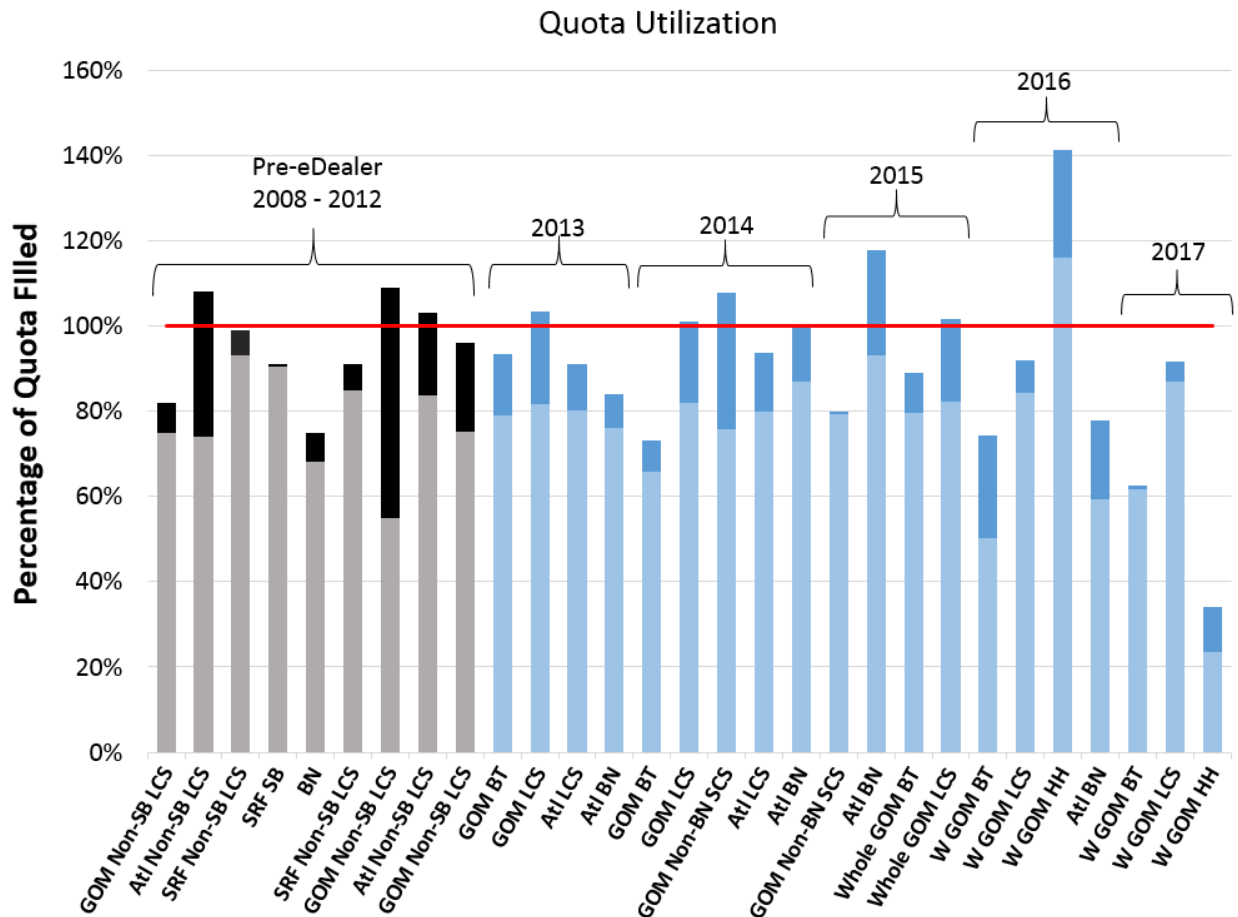


Figure 1.1 Quota utilization by shark species other than porbeagle sharks. Landings are represented as a percent of the regional quota for non-porbeagle shark fisheries which were closed once they reached 80% of quota (does not include closures due to quota linkage). The gray and black bars represent fishery closures during pre-eDealer years 2009 through 2012 and the blue bars are closures that occurred Post-eDealer from 2013 through 2017. Gray and light blue bars represent landings reported at the time of a shark fishery closure. Black and dark blue bars are landings reported after a shark fishery closure, with the stacked bars adding together to the total landings. The red line represents full quota utilization for each shark fishery. Acronyms: GOM=Gulf of Mexico region. Non-SB LCS – Large coastal sharks other than sandbar sharks. Atl = Atlantic region. SRF = Shark Research Fishery. SB= Sandbar. BT = blacktip. BN = blacknose. HH = Hammerhead sharks.

Harvest levels for porbeagle sharks, before and after eDealer implementation, are displayed in Figure 1.2. The porbeagle shark base quota is small (1.7 mt dw) and accounting for any overharvests from previous years can reduce it further. With such a limited quota, small increases in the fishing rate, even for a short period of time, can easily lead to overharvest. Before eDealer, the porbeagle fishery quota was exceeded every year. Since eDealer, because of those overharvests, the fishery was closed for two years; there were no landings reported in 2016, and reported landings were less than 0.1 mt dw in 2017. As a result, it is hard to know if the implementation of eDealer has improved monitoring for porbeagle sharks, although it can be presumed that eDealer would likely have similar benefits over paper reporting as for other shark fisheries.

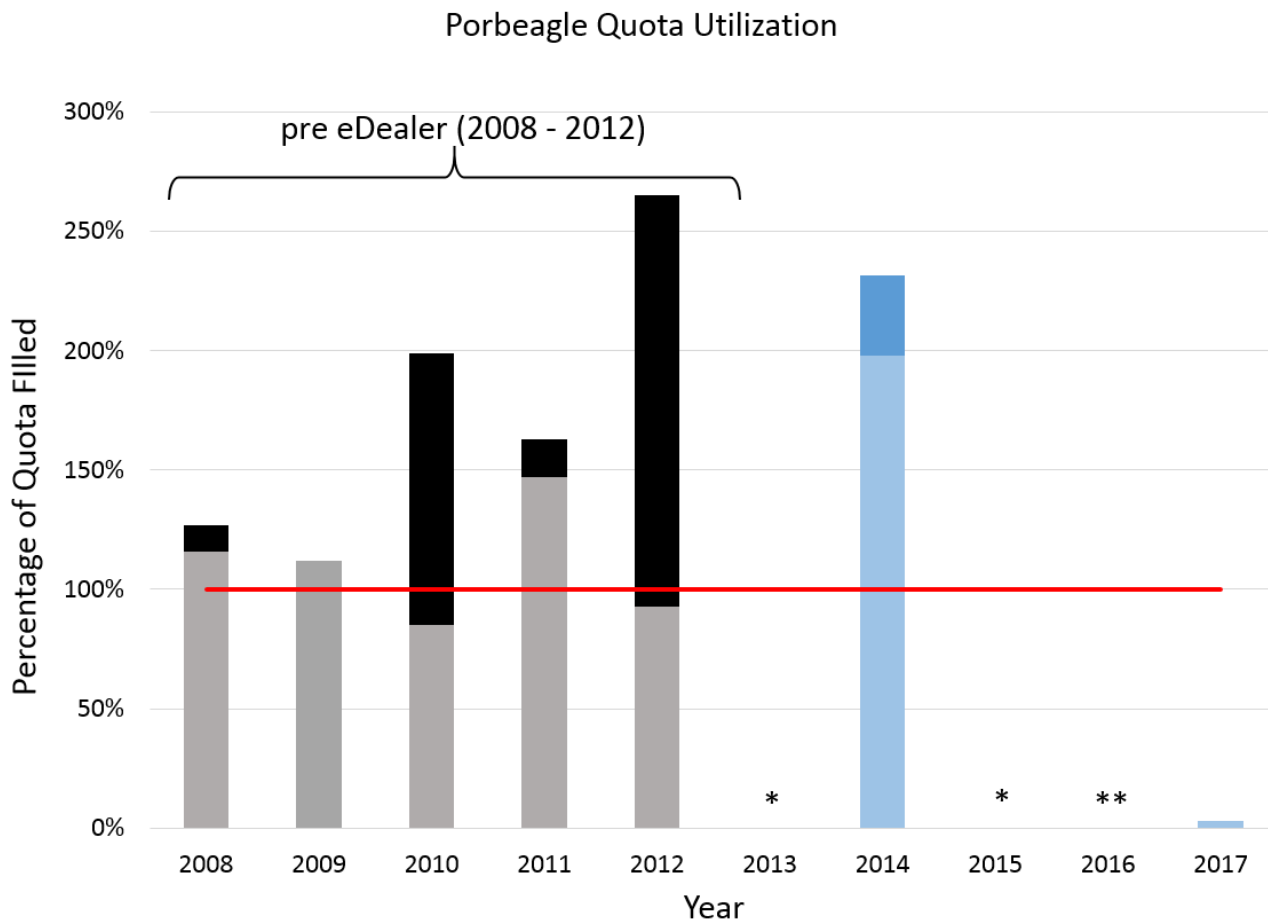


Figure 1.2 Porbeagle shark quota utilization. Quota utilization data for the porbeagle shark fishery is displayed separately in Figure 1.2 to prevent distortion of other data due to the high overharvest percentage. The gray and black bars are years from 2008 through 2012 (pre eDealer) and the blue bars are closures that happened from 2013 through 2017 (post eDealer). Black and dark blue bars are landings reported after a shark fishery closure. The years 2009 and 2017 closed at the end of the season on December 31st, not because of landings approaching or exceeding the 80-percent closure threshold. The red line represents full quota utilization for each shark fishery. Gray and light blue bars represent landings reported before a shark fishery closure, * the fishery was closed, ** rulemaking implemented that required live release of porbeagle sharks based on ICCAT recommendation.

NMFS reviewed the data and found that the overharvest of porbeagles may have occurred due to delayed landings reports, or continued landings during the five-day notice period preceding a closure.

Regional differences between the Atlantic and Gulf of Mexico also make closing a shark fishery more difficult in the Gulf of Mexico. For example, while all shark dealers located in the Atlantic states from Maine through Florida are required to hold a federal shark dealer permit in addition to any required state dealer permit per the Atlantic States Marine Fisheries Commission (ASMFC) Coastal Shark FMP, shark dealers located in Gulf of Mexico states (Alabama through Texas including the U.S. Virgin Islands and Puerto Rico) are not required to hold a federal dealer permit in addition to any required state dealer permit unless they buy sharks from federally

permitted vessels. While all shark dealers from Maine through Florida are required to have a federal dealer permit and thus report to NMFS electronically every week, state dealers in the Gulf of Mexico without federal dealer permits can report on a monthly basis electronically, or on paper forms, which takes time to enter into an electronic system. Additionally, while all Atlantic states close state waters to commercial shark fishing at the same time as federal waters, some Gulf of Mexico states, such as Alabama¹, allow at least limited shark landings in state waters after federal closures. These delayed reports from Gulf of Mexico state dealers, along with the potential for additional landings after federal closure, directly affect NMFS' (and the states') ability to monitor shark quotas effectively.

It is important to note that when overharvests occur, those overharvests may be accounted for by reducing the respective quota in subsequent years. While overharvests could have a short-term benefit for the fisherman and dealer who landed or bought the overharvested fish, overharvests have direct negative impacts on all fishermen and dealers who rely on the shark fishery. In addition, if overharvests happen frequently, it can lead to overfishing, and can delay rebuilding of overfished stocks. In other words, overharvests can have long-term negative impacts on fishermen and dealers.

NMFS found that underharvests generally occurred because NMFS's landings projections were overly optimistic or there were unexpectedly low landings during the five-day closure notice period. These types of errors can be made as a result of market changes (e.g., other more profitable fisheries open and people stop shark fishing) or if the weather turns (e.g., bad storms or hurricanes). Additionally, where quotas are linked, the closure of one shark management group results in the closure of all linked management groups. For example, the western Gulf of Mexico aggregated LCS and hammerhead shark sub-regional management groups are linked. When either the aggregated LCS or hammerhead shark fisheries are closed, the other group closes to avoid further mortality for the closed species and/or management group. Additionally, due to concern regarding the discards of aggregated LCS or hammerhead sharks when fishing for blacktip sharks, NMFS has also closed the blacktip shark fishery in that sub-region.

Unlike overharvests, underharvests do not always result in an adjustment the following year. When the status of a stock is declared to be not overfished and overfishing is not occurring, underharvest can be carried over to subsequent years. For instance, Gulf of Mexico blacktip sharks are declared not overfished and no overfishing is occurring, so quota remaining at the end of the year, as seen in 2014 through 2017 (Figure 1.1), can be added to the following year's adjusted quota from the base quota. However, when the status of the stock is overfished, overfishing is occurring, or the status is unknown, NMFS does not adjust for the underharvest in the following year, and the quota remains at the base level.

Updating and revising existing HMS regulations for commercial shark fisheries could provide more flexibility regarding when NMFS could close a fishery. Potential modifications

¹ Alabama Department of Conservation & Natural Resources. "Saltwater Regulations and Enforcement". (<http://www.outdooralabama.com/saltwater-fishing/saltwater-regulations-and-enforcement>) Updated May 2018.

could include changing the percent closure threshold or the five-day notice. This rulemaking would not change any base commercial quotas.

1.4. PURPOSE AND NEED FOR ACTION

As described above, both the 80-percent threshold and five-day notice requirement for commercial shark fisheries went into effect before electronic reporting and before the impacts of Amendment 2 (NMFS, 2008) on fishing behavior, including trip lengths, were fully understood. NMFS is considering if changes are needed to the landings threshold that prompts a shark fishery closure and to the length of time between public notice and the effective date of a given fishery closure. The goal is to improve the efficacy of management while also avoiding overharvests in these fisheries. This action would be responsive to repeated public requests regarding the 80-percent threshold.

Purpose: The purpose of this final action is, if necessary, to update and revise existing HMS regulations that require closure of commercial shark fisheries with no fewer than five-days' notice when landings or projections of landings reach 80-percent of the commercial quotas with the goal of more fully utilizing available quota while also avoiding overharvest in these fisheries.

Need: To achieve this purpose, NMFS needs to consider implementing regulations that could modify the percent landings threshold to a level that allows fishermen to utilize the full quota while avoiding under- and overharvest, and determine a length of time between public notice and the effective date of a given fishery closure while avoiding under- and overharvest.

1.5. SCOPE AND ORGANIZATION OF THIS DOCUMENT

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

This document, as an EA, assesses the potential environmental, economic, and social impacts of modifying inseason action regulatory criteria; specifically, the percent landings threshold that prompts a closure and the length of time between public notice and the effective date of a given fishery closure. The chapters that follow describe the management measures and potential alternatives (Chapter 2), the affected environment as it currently exists (Chapter 3), the probable consequences on the human environment that may result from the implementation of the management measures and their alternatives, including the potential impacts on the fishery (Chapter 4), and any mitigating measures (Chapter 5).

In developing this document, NMFS adhered to the procedural requirements of NEPA, the CEQ regulations for implementing NEPA (40 C.F.R. 1500-1508) and National Oceanic and Atmospheric Administration's (NOAA) procedures for implementing NEPA. NOAA

Administrative Order (NAO) 216-6 identifies NOAA's procedures to meet the requirements of NEPA to:

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

The following definitions were generally used to characterize the nature of the various impacts evaluated in this EA. Chapter 4 describes more specifically how these definitions were used for each alternative.

- Short-term or long-term impacts. These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period. Long-term impacts are those that are more likely to be persistent and chronic.
- Direct or indirect impacts. A direct impact is caused by a final action and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a final action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.
- Minor, moderate, or major impacts. These relative terms are used to characterize the magnitude of an impact. Minor impacts are generally those that might be perceptible but, in their context, are not amenable to measurement because of their relatively minor character. Moderate impacts are those that are more perceptible and, typically, more amenable to quantification or measurement. Major impacts are those that, in their context and due to their intensity (severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (40 C.F.R. § 1508.27) and, thus, warrant heightened attention and examination for potential means for mitigation to fulfill the requirements of NEPA.
- Adverse or beneficial impacts. An adverse impact is one having unfavorable, or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.
- Cumulative impacts. CEQ regulations implementing NEPA define cumulative impacts as the "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions

regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 C.F.R. § 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time within a geographic area.

In addition to NEPA, NMFS must comply with other Federal statutes and requirements such as the Magnuson-Stevens Act, Executive Order 12866, and the Regulatory Flexibility Act. This document comprehensively analyzes the alternatives considered for all these requirements. Thus, Chapter 4 provides a summary of all the economic analyses and associated data. Chapter 6 meets the requirements under Executive Order 12866 and Chapter 7 provides the Final Regulatory Flexibility Analysis required under the Regulatory Flexibility Act. Chapters 8 through 11 provide additional information that is required under various statutes. While some of the chapters were written in a way to comply with the specific requirements under these various statutes and requirements, it is the document as a whole that meets these requirements and not any individual chapter.

2.0 SUMMARY OF THE ALTERNATIVES

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

To warrant detailed evaluation, an alternative must be reasonable² and meet the purpose and need of the action (see Chapter 1). The following discussion identifies screening criteria used to evaluate whether an alternative is reasonable; evaluates various alternatives against the screening criteria (including the final measures) and identifies those alternatives found to be reasonable; identifies those alternatives found not to be reasonable; and for the latter, provides the basis for this finding. Alternatives considered but found not to be reasonable are not evaluated in detail in this EA.

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

- An alternative must be consistent with the 10 National Standards set forth in the Magnuson-Stevens Act.
- An alternative must be administratively feasible. The costs associated with implementing an alternative cannot be prohibitively exorbitant or require unattainable infrastructure.
- An alternative cannot violate other laws (e.g., Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), etc.).
- An alternative must be consistent with the 2006 Consolidated HMS FMP and its amendments.

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

2.1. SHARK FISHERY CLOSURE THRESHOLD

This group of alternatives offers options to change the landings threshold that prompts a shark fishery closure, with the goal of avoiding under- and overharvests in these fisheries. For all the following alternatives, projections of future landings would continue to be conducted using the current method. Currently, projections are based upon a range of catch rates observed throughout the fishing year (e.g., the maximum, minimum, and average) for that species and/or

² “Section 1502.14 (of the CEQ implementing regulations for NEPA) requires the EA to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is “reasonable” rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.” (Council on Environmental Quality (CEQ), *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, 46 FR 18,026, Mar. 23, 1981)).

management group, along with external factors such as predicted weather, presence of alternative fisheries, and number of participants. HMS landings data are received weekly via electronic dealer reporting, and are used as a basis for this projection method.

Alternative 1a: No action – Maintain the 80-percent threshold for shark fishery closures

Under Alternative 1a, NMFS would maintain the status quo and would not change the current process of closing a shark species and/or management group when NMFS calculates that the overall, regional, and/or sub-regional landings for any species and/or management group has reached or is projected to reach 80-percent of the applicable quota. Timing of this closure could be consistent with any of the alternatives under Section 2.2.

Alternative 1b: Change the shark fishery closure threshold to 90-percent of the available overall, regional, and/or sub-regional quota

In Alternative 1b, NMFS would close any shark fishery species and/or management group when relevant landings reach, or are projected to reach 90-percent of the applicable overall, regional, and/or sub-regional quota. Timing of this closure could be consistent with any of the alternatives under Section 2.2.

Alternative 1c: Change the shark fishery closure threshold to 70-percent of the available overall, regional, and/or sub-regional quota

In Alternative 1c, NMFS would close any shark fishery species and/or management group when relevant landings reach or are projected to reach 70-percent of the applicable overall, regional, and/or sub-regional quota. Timing of this closure could be consistent with any of the alternatives under Section 2.2.

Alternative 1d: Increase the shark fishery closure threshold to 90-percent in the Atlantic Region, while maintaining the Gulf of Mexico closure threshold or overall non-regional threshold at 80-percent

Under Alternative 1d, NMFS would close any shark fishery species and/or management group in the Atlantic region when relevant landings reach or are projected to reach 90-percent of the applicable overall, regional, and/or sub-regional quota. NMFS would maintain the shark fishery species and/or management group in the Gulf of Mexico region or management groups (e.g., pelagic sharks) that are managed across both regions at the 80-percent of quota threshold. In the regulations, the boundary between the Gulf of Mexico region and the Atlantic region is defined (50 CFR §635.27(b)(1)) as a line beginning on the east coast of Florida at the mainland at 25°20.4' N. lat., proceeding due east. Any water and land to the south and west of that boundary is considered, for the purposes of quota monitoring and setting of quotas, to be within the Gulf of Mexico region. Any water and land to the north and east of that boundary, for the purposes of quota monitoring and setting of quotas, is considered to be within the Atlantic region. This boundary between regions would not change. Timing of this closure could be the same for all regions, and could be consistent with any of the alternatives under Section 2.2.

Alternative 1e: Establish objective criteria to evaluate whether a shark species and/or management group should be closed when the relevant

landings reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, or allowed to remain open until 90-percent of the applicable quota is reached

Under Alternative 1e, when any shark fishery species and/or management group landings reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, NMFS would evaluate the criteria listed below before determining if a closure notice is needed. If evaluation of the criteria shows the species and/or management group is not in need of a closure at 80-percent, it would remain open until landings reach, or are projected to reach 90-percent. Timing of this closure could be consistent with any of the alternatives under Section 2.2. The criteria would be:

- A. The stock status of the relevant species or management group and any linked species and/or management groups;
- B. The patterns of over- and underharvest in the fishery over the previous five years;
- C. The likelihood of continued landings after the federal closure of the fishery;
- D. The effects of the closure on accomplishing the objectives of the 2006 Consolidated HMS FMP and its amendments;
- E. The likelihood of landings exceeding the quota by December 31 of each year; and
- F. The impacts of the closure on the catch rates of other shark management groups, including likelihood of an increase in dead discards.

Alternative 1f: *Allow a shark fishery to remain open after the fishery's landings have reached or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, if the fishery's landings are not projected to reach 100 percent of the applicable quota before the end of the season – Preferred Alternative.*

In Alternative 1f, one of the preferred alternatives, NMFS would close a shark fishery species and/or management group when the relevant landings reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, but the species and/or management group could remain open if projected landings would not exceed the full quota, i.e. reach 100-percent, before the end of the commercial fishing year (December 31). Timing of this closure could be consistent with any of the alternatives under Section 2.2.

2.2. SHARK FISHERY CLOSURE NOTICE PERIOD

These alternatives offer options to change the period of time between filing the shark fishery closure notice with the Office of the Federal Register and the effective closure of the shark fishery.

Alternative 2a: No action – Maintain five-day period between filing of the closure notice with the Federal Registry and the closure going into effect.

Under Alternative 2a, NMFS would maintain the status quo and would not change the notice period of five days for shark fishery species and/or management group closure.

Alternative 2b: Change the minimum notice time between filing of the closure notice with the Office of the Federal Register and the closure going into effect to three days

Under Alternative 2b, NMFS would change the timing of shark fishery species and/or management group closures to allow a minimum of three days between filing with the Office of the Federal Register and the closure becoming effective.

Alternative 2c: Allow immediate closure of a shark fishery upon filing of the closure notice with the Federal Registry

Under alternative 2c, NMFS would change the timing of shark fishery species and/or management group closures to allow immediate closure upon filing of the closure notice with the Office of the Federal Register.

Alternative 2d: *Change the minimum notice time between filing of the closure notice with the Office of the Federal Register and the closure going into effect to four days – Preferred Alternative*

Under Alternative 2d, one of the preferred alternatives, NMFS would change the timing of shark fishery species and/or management group closures to allow a minimum of four days between filing with the Office of the Federal Register and the closure becoming effective. This is a new alternative developed in response to public comments on the Proposed Rule and Draft EA.

3.0 AFFECTED ENVIRONMENT

This chapter describes the affected environment (the fishery, the gears used, the communities involved, etc.), and provides a view of the current condition of the fishery, which serves as a baseline against which to compare potential impacts of the different alternatives. This chapter also provides a summary of information concerning the biological status of HMS managed shark species, the marine ecosystems in the fishery management unit, the social and economic condition of the fishing interests, fishing communities, and fish processing industries, and the best available scientific information concerning the past, present, and possible future condition of shark stocks, ecosystems, and fisheries.

3.1. STOCK STATUS AND BIOLOGY

3.1.1. LIFE HISTORY

As described in more detail in Chapter 3 of Amendment 6 to the 2006 Consolidated HMS FMP (Amendment 6; NMFS, 2015a), sharks have a very low reproductive potential compared to many other fish. Various factors determine this low reproductive rate: slow growth, late sexual maturity, one- to two-year reproductive cycles, a small number of young per brood, and specific requirements for nursery areas. These biological factors leave many species of sharks vulnerable to overfishing. The diversity in size, feeding habits, behavior, and reproduction has contributed greatly to the evolutionary success of sharks. Currently, forty-two shark species are managed by the HMS Management Division. Based on ecology and fishery dynamics, sharks are divided into five species groups or complexes for purposes of HMS management: (1) LCS, (2) SCS, (3) pelagic sharks, (4) prohibited species, and (5) smoothhound sharks (Table 3.1). These complexes are further broken out into species and/or management groups for quota monitoring (Table 3.2).

Table 3.1 Common names of shark species included within the five species complexes.

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

Smoothhound Sharks (3)	Smooth dogfish, Florida smoothhound, and Gulf smoothhound
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*Prohibited from commercial retention on pelagic longline gear and recreationally if swordfish, tunas, and/or billfish are also retained

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

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

^ Listed under CITES Appendix II

§ Must be released when caught alive on pelagic longline gear and recreationally if swordfish, tunas, and/or billfish are also retained

Table 3.2. Species in each shark management group that has multiple species.

Note: Blacknose, blue, and porbeagle sharks have separate species-specific quotas.

Aggregated Large Coastal (LCS)	Hammerhead	Non-Blacknose Small Coastal	Pelagic Sharks other than Porbeagle or Blue	Smoothhound
<ul style="list-style-type: none"> • Blacktip (Atlantic region only*) • Bull • Lemon • Nurse • Silky • Tiger • Spinner 	<ul style="list-style-type: none"> • Great Hammerhead • Smooth Hammerhead • Scalloped Hammerhead 	<ul style="list-style-type: none"> • Atlantic sharpnose • Bonnethead • Finetooth 	<ul style="list-style-type: none"> • Common thresher • Shortfin mako • Oceanic whitetip 	<ul style="list-style-type: none"> • Smooth dogfish** • Florida smoothhound • Gulf smoothhound

*Blacktip shark is part of its own management group in the Gulf of Mexico Region

** Smooth dogfish is the only smoothhound species in the Atlantic Region

3.1.2. STOCK STATUS

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

Additional details on stock statuses and their determination for many LCS, SCS, pelagic, and smoothhound sharks can be found in Chapter 3 of Amendment 3, Chapters 1 and 3 of Amendment 6 (NMFS, 2015a), Chapter 3 of Amendment 9, Chapter 3 of Amendment 5b, and Table 2.1 and 2.2 of the 2017 SAFE Report (NMFS 2017). Current status is summarized below in Table 3.3 and 3.4.

Table 3.3 Atlantic HMS Stock Status Summaries (Domestic and International): Overfished (and Years to Rebuild), Not Overfished, and Status Unknown

Species	Current Relative Biomass Level	B_{MSY}	International Threshold	Domestic Minimum Stock Size Threshold	International Stock Status	Domestic Stock Status	Years to Rebuild	Rebuilding Start Date (End Date)	Most Recent Assessment
Northwest Atlantic porbeagle sharks	$B_{2008}/B_{MSY} = 0.43 - 0.65$	29,382 – 40,676 mt	B_{MSY}	$(1-M)B_{MSY}^1$	Overfished	Overfished	100	7/24/2008 (2108)	2009
North Atlantic blue sharks	$B_{2013}/B_{MSY} = 1.35-3.45$	<i>Unspecified</i> ²	B_{MSY}	$(1-M)B_{MSY}$	Not likely overfished	Not overfished			2015
North Atlantic shortfin mako sharks	$B_{2015}/B_{MSY} = 0.57 - 0.95$	62,555 - 123,475 mt ³	B_{MSY}	$(1-M)B_{MSY}^1$	Overfished	Overfished	4	4	2017
Sandbar sharks	$SSF_{2015}/SSF_{MSY} = 0.77$	$SSF_{MSY} =$ (numbers of sharks)	NA	(based on SSF_{MSY})	NA	Overfished	66	1/1/2005 (2070)	2018 ⁵

Gulf of Mexico blacktip sharks	$\frac{SSF_{2010}}{SSF_{MSY}} = 2.00-2.66$	$SSF_{MSY} = 1,570,000 - 6,440,000$ (numbers of sharks)	NA	1,327,697 - 5,446,093 (1-M)SSF _{MSY}	NA	Not overfished			2012
Atlantic blacktip sharks	Unknown	Unknown	NA	(1-M)B _{MSY}	NA	Unknown			2005/2006
Dusky sharks	$\frac{SSF_{2015}}{SSF_{MSY}} = 0.41 - 0.64$	Unknown ²	NA	(1-M)SSB _{MSY}	NA	Overfished	~100	7/24/2008 (2107)	2017
Scalloped hammerhead sharks	$\frac{N_{2005}}{N_{MSY}} = 0.45$	N _{MSY} = 62,000 (numbers of sharks)	NA	(1-M)N _{MSY}	NA	Overfished	10	7/3/2013 (2023)	2009
Atlantic Bonnethead sharks	Unknown	Unknown	NA	Unknown	NA	Unknown			2013
Gulf of Mexico Bonnethead sharks	Unknown	Unknown	NA	Unknown	NA	Unknown			2013
Atlantic sharpnose sharks – Atlantic stock	$\frac{SSF_{2011}}{SSF_{MSY}} = 2.07$	$SSF_{MSY} = 4,860,000$ (numbers of sharks)	NA	(1-M)SSF _{MSY}	NA	Not overfished			2013

Atlantic sharpnose sharks - Gulf of Mexico stock	$SSF_{2011}/SSF_{MSY} = 1.01$	$SSF_{MSY} = 17,900,000$	NA	$(1 - M)SSF_{MSY}$	NA	Not overfished			2013
Atlantic blacknose sharks – Atlantic stock	$SSF_{2009}/SSF_{MSY} = 0.43 - 0.64$	$SSF_{MSY} = 77,577 - 288,360$ (numbers of sharks)	NA	$62,294 - 231,553$ $(1 - M)SSF_{MSY}$	NA	Overfished	30	7/3/2013 (2043)	2011
Atlantic blacknose sharks – Gulf of Mexico stock	Unknown	Unknown	NA	$(1 - M)B_{MSY}$	NA	Unknown			2011
Finetooth sharks	$N_{2005}/N_{MSY} = 1.80$	$N_{MSY} = 3,200,000$ (numbers of sharks)	NA	$2,400,000$ $(1 - M)N_{MSY}$	NA	Not overfished			2007
Atlantic smooth dogfish	$SSF_{2012}/SSF_{MSY} = 1.96 - 2.81$	$SSF_{MSY} = 4,746,000$	NA	$3,701,000$ $(1 - M)SSF_{MSY}$	NA	Not overfished			2015
Gulf of Mexico smoothhound shark complex	$N_{2012}/N_{MSY} = 1.68 - 1.83$	$N_{MSY} = 7,190,000$	NA	$5.53E+06$ $(1 - M)N_{MSY}$	NA	Not overfished			2015

¹ M is unknown.

² A value for BMSY (or its proxy) was not provided in the stock assessment.

³ Only the BSP2-JAGS and JABBA model provided BMSY values in biomass. The BMSY range encompasses the 8 scenarios run of the BSP2-JAGS and JABBA models. The SS3 model provided BMSY values in numbers.

⁴ To be established by ICCAT in 2019

⁵ NMFS is currently working on a sandbar shark stock assessment.

Table 3.4 Atlantic HMS Stock Status Summaries (Domestic and International): Overfishing Is Occurring, Overfishing Is Not Occurring, and Overfishing Status is Unknown

Species	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	International Stock Status	Domestic Stock Status	Most Recent Assessment
Northwest Atlantic porbeagle shark	$F_{2008}/F_{MSY} = 0.03 - 0.36$	$F_{MSY} = 0.025 - 0.075$	Overfishing is not occurring	Overfishing is not occurring	2009
North Atlantic blue shark	$F_{2013}/F_{MSY} = 0.04-0.75$	$F_{MSY} = 0.19-0.20$	Overfishing is not likely occurring	Overfishing is not occurring	2015
North Atlantic shortfin mako shark	$F_{2015}/F_{MSY} = 1.93 - 4.38$	$F_{MSY} 0.015 - 0.056^1$	Overfishing is occurring	Overfishing is occurring	2017
Sandbar	$F_{2009}/F_{MSY} = 0.58$	$F_{MSY} =$	Not assessed internationally	Overfishing is not occurring	2018
Gulf of Mexico blacktip	$F_{2010}/F_{MSY} = 0.05 - 0.27$	$F_{MSY} = 0.021 - 0.163$	Not assessed internationally	Overfishing is not occurring	2012
Atlantic blacktip	<i>Unknown</i>	<i>Unknown</i>	Not assessed internationally	<i>Unknown</i>	2005/2006

Dusky shark	$F_{2015}/F_{MSY} = 1.08 - 2.92$	$F_{MSY} = 0.015 - 0.046$	Not assessed internationally	Overfishing is occurring	2017
Scalloped hammerhead shark	$F_{2005}/F_{MSY} = 1.29$	$F_{MSY} = 0.11$	Not assessed internationally	Overfishing is occurring	2009
Bonnethead shark – Atlantic stock	<i>Unknown</i>	<i>Unknown</i>	Not assessed internationally	<i>Unknown</i>	2013
Bonnethead shark – Gulf of Mexico stock	<i>Unknown</i>	<i>Unknown</i>	Not assessed internationally	<i>Unknown</i>	2013
Atlantic sharpnose shark – Atlantic stock	$F_{2011}/F_{MSY} = 0.23$	$F_{MSY} = 0.184$	Not assessed internationally	Overfishing is not occurring	2013
Atlantic sharpnose shark - Gulf of Mexico stock	$F_{2011}/F_{MSY} = 0.57$	$F_{MSY} = 0.331$	Not assessed internationally	Overfishing is not occurring	2013
Atlantic blacknose shark – Atlantic stock	$F_{2009}/F_{MSY} = 3.26 - 22.53$	$F_{MSY} = 0.01 - 0.15$	Not assessed internationally	Overfishing is occurring	2011
Atlantic blacknose shark – Gulf of Mexico stock	<i>Unknown</i>	<i>Unknown</i>	Not assessed internationally	<i>Unknown</i>	2011
Finetooth shark	$F_{2005}/F_{MSY} = 0.17$	$F_{MSY} = 0.03$	Not assessed internationally	Overfishing is not occurring	2007
Atlantic smooth dogfish	$F_{2012}/F_{MSY} = 0.61-0.99$	$F_{MSY} = 0.129$	Not assessed internationally	Overfishing is not occurring	2015
Gulf of Mexico smoothhound shark complex	$F_{2012}/F_{MSY} = 0.07-0.35$	$F_{MSY} = 0.106$	Not assessed internationally	Overfishing is not occurring	2015

¹ Range obtained from 8 Bayesian production and 1 SS3 model runs. Value from SS3 is SSF_{MSY} . Low value is lowest value from 4 production model (JABBA and BSP2JAGS) runs and high value is from the SS3 base run.

3.2. HABITAT

The Magnuson-Stevens Act requires NMFS to identify and describe essential fish habitat (EFH) for each life stage of managed species (16 U.S.C. § 1855(b)(1), as implemented by 50 C.F.R. § 600.815), and to evaluate the potential adverse effects of fishing activities on EFH, including the cumulative effects of multiple fisheries activities (50 C.F.R. § 600.815(a)(2)). Habitats that satisfy the criteria in the Magnuson-Stevens Act have been identified and described as EFH in the 1999 FMP and in Amendment 1 to the 1999 FMP. EFH designations for Atlantic shark fisheries are available at <https://www.fisheries.noaa.gov/action/amendment-10-2006-consolidated-hms-fishery-management-plan-essential-fish-habitat>.

NMFS announced the initiation of a 5-Year Review and intent to initiate an amendment to the 2006 Consolidated HMS FMP to revise Atlantic HMS EFH descriptions and designations. NMFS solicited information for this review from the public on March 24, 2014 (79 FR 15959). The initial public review/submission period ended on May 23, 2014. The Draft Atlantic HMS EFH 5-Year Review was made available on March 5, 2015 (80 FR 11981), and the public comment period ended on April 6, 2015. NMFS analyzed the information gathered through the EFH review process, and the notice of availability for the Final Atlantic HMS EFH 5-Year Review was published on July 1, 2015 (80 FR 37598). During this review, NMFS determined that revisions to EFH descriptions and designations were warranted, and Amendment 10 to the 2006 Consolidated HMS FMP was initiated. In addition to the literature informing the 5-year Review, NMFS incorporated all newly available data collected prior to January 1, 2015, to ensure that the best available data were analyzed for Draft Amendment 10. On September 8, 2016, NMFS published a notice of availability for the Draft EA for Amendment 10 (81 FR 62100).

The public comment period for Draft Amendment 10 ended December 22, 2016, and included two public hearing webinars (81 FR 71076) which provided opportunities for interested members of the public to submit verbal comments. NMFS staff also presented the amendment at meetings of the HMS AP (September 8, 2016) and relevant Regional Fishery Management Councils (Caribbean, Gulf of Mexico, South Atlantic, Mid-Atlantic, and New England Fishery Management Councils).

NMFS then adjusted EFH based on the inclusion of new data, availability of new scientific publications or information, scientific recommendations from staff at the Northeast Fisheries Science Center (NEFSC) and Southeast Fisheries Science Center (SEFSC), and information received during the public comment period. The Final Amendment 10 was presented to the September 2017 AP meeting, and was published on September 6, 2017.

3.3. MANAGEMENT HISTORY

The management history included here focuses on issues of shark fishery closure, overharvest, and underharvest. For a more complete history of the shark fisheries, please refer to Chapter 3 of Amendment 5b to the 2006 Consolidated HMS FMP (Amendment 5b; NMFS, 2017), incorporated here through reference.

3.3.1. PRIOR TO AMENDMENT 2

As part of implementing the 1993 Shark FMP, NMFS released a final rule (59 FR 52453, October 18, 1994) which required shark dealers wishing to purchase sharks from federally permitted fishermen to have a federal dealer permit and participate in a dealer reporting program. Prior to this, catch and scientific information was obtained from fishermen's logbooks and weigh-out slips. There was a voluntary dealer reporting program in place, but it was determined that more timely and accurate data, needed to prevent overfishing, could be provided by mandatory dealer reporting. This program required dealers to submit reports postmarked by the 20th day of the month accounting for all shark and other applicable species received from the first to through the 15th of the month. An addition dealer report had to be postmarked by the fifth day of the following month, accounting for all applicable species received from the 16th day through the last day of the month.

Additionally, NMFS implemented several commercial shark management measures to allow better management of seasonal commercial shark fisheries, control fishing effort, and reduce mortality during important pupping seasons. These measures included the use of regional quotas, trimester fishing seasons throughout the year, accounting for historical catch rates in season openings and closures, accounting for dead discards in the fishery, and establishing over- and underharvest adjustment procedures. In the 1999 FMP, NMFS updated its dealer reporting requirements, allowing reports to be postmarked 10 days after the end of the reporting period (the 25th day of the month and 10th day of the following month), instead of the original five day deadline. In 2003, as part of Amendment 1 to the 1999 FMP, NMFS implemented trimester seasons where the fishing season closed when the quota for a given trimester was filled, and any over- and/or underharvest was accounted for in the corresponding trimester of the following year.

3.3.2. AMENDMENT 2

On July 24, 2008, NMFS issued the FEIS for Amendment 2 (NMFS, 2008) which addressed stock assessment findings that a number of HMS shark species were overfished and/or experiencing overfishing. Amendment 2 was a major action that changed how the commercial shark fishery operated by requiring all sharks be landed with fins naturally attached and implementing a prohibition on the landing and sale of sandbar sharks except for a limited number of shark fishermen participating in a shark research fishery. Amendment 2 also implemented a reduced trip limit for all directed shark permit holders and split LCS quotas into two regions.

Additionally, Amendment 2 (NMFS, 2008) removed the trimester season structure and established a single fishing season, which began on January 1 and closed on December 31, unless otherwise stated in a shark season rule or inseason action. In Amendment 2, NMFS established the 80-percent closure landings threshold. Under this threshold, when NMFS calculates that the overall or regional landings for that management group have reached or are projected to reach 80-percent of the available overall or regional quota, NMFS closes the relevant species and/or

management group. Amendment 2 also established that a shark fishery closure is effective no less than five days from notice of filing with the Office of the Federal Register.

Finally, Amendment 2 (NMFS, 2008) altered the dealer reporting rules, requiring that dealer reports be received within 10 days of the end of the reporting period, instead of determining timeliness through the postmark date.

3.3.3. ELECTRONIC DEALER REPORTING

Since January 1, 2013 (77 FR 47303, August 8, 2012), all Atlantic HMS federal dealers have been required to report commercial harvests of sharks, swordfish, and BAYS tunas on a weekly basis through a eDealer or another NMFS-approved electronic dealer reporting system. These reporting requirements were enacted to help address patterns of later reporting and duplicate reports from HMS dealers, which negatively affected quota monitoring, especially for the small quotas in the shark fisheries. To facilitate quota monitoring, “negative reports” for sharks are also required from dealers when no purchases have been made, allowing NMFS to determine who has not purchased fish versus who has neglected to report. Since January 1, 2013, all shark dealers have been required to report a positive (HMS purchased) or a negative report on a weekly basis. These dealer reporting requirements are not in place for all state-registered dealers, so some state dealers report monthly instead of weekly, or through paper forms.

3.3.4. ADDITIONAL RULEMAKINGS

In recent years, NMFS has implemented several rulemakings helping to address early season closures and overharvest issues. For example, overharvest in the Atlantic blacknose commercial shark fishery (which exceeded its quota in 2015) was addressed by establishing a commercial trip limit for the species via rulemaking (81 FR 90241; December 14, 2016). The small porbeagle shark fishery quota was exceeded from 2009 to 2012 and again in 2014. Recommendation 15-06 was adopted by the International Commission for the Conservation of Atlantic Tunas (ICCAT) and implemented by NMFS to reduce fishing mortality of porbeagle sharks in ICCAT fisheries (81 FR 57803; August 24, 2016). As a result, all live porbeagle sharks caught within ICCAT fisheries must be released unharmed, to the extent practicable. In recent years, a series of inseason actions have been used to adjust the retention limit for the directed LCS fishery in the Atlantic region, in order to maintain fishing opportunities throughout the entire Atlantic region. These inseason adjustments were based on inseason retention limit adjustment criteria listed in § 635.24(a)(8), with the overall goals of maintaining fair allocation across the Atlantic region and preventing early closures of the fishery based on the 80-percent landings threshold.

An overview of current (as of November 1, 2017) state regulations related to Atlantic HMS is provided in Chapter 1 of the 2017 SAFE Report <https://www.fisheries.noaa.gov/bulletin/2017-stock-assessment-and-fishery-evaluation-report-atlantic-highly-migratory-species>.

3.4. DESCRIPTION OF FISHERY

3.4.1. GEARS

Shark fishermen use a variety of gears, some targeting particular species, and others being fairly non-selective. A revised list of authorized fisheries and fishing gear became effective December 1, 1999 (64 FR 67511, December 2, 1999). The rule applies to all U.S. marine fisheries, including Atlantic HMS. As stated in the rule, “no person or vessel may employ fishing gear or participate in a fishery in the exclusive economic zone (EEZ) not included in this List of Fisheries (LOF) without giving 90 days’ advance notice to the appropriate Fishery Management Council (Council) or, with respect to Atlantic HMS, the Secretary of Commerce (Secretary).” Authorized gear types routinely used in Atlantic shark fisheries include:

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

Commercial landings of all Atlantic sharks are presented in the 2017 SAFE Report, including information on gear type, recent catch, landings, and discards.

There is variation between these gears in the length of a normal fishing trip, and these trip lengths have changed over time. Historically (pre-2008), directed shark fishing trips, primarily targeting LCS, averaged between one and four days in length, but could be longer. Trips using pelagic long line (PLL) gear, and interacting with pelagic sharks can be longer, with the typical trip lasting nine days. However, because of trip-based retention limits implemented in Amendment 2, most shark fishermen now take trips of one or two days. Trips using PLL gear generally target swordfish and BAYS tuna, so these fisheries have not seen the same changes following Amendment 2.

3.4.2. FISHERY PARTICIPANTS

In order to understand the universe of entities potentially affected by this action, NMFS analyzed the number of vessel and dealer permits that were issued as of October 2017. There are two commercial limited access shark vessel permits, shark directed and shark incidental limited access permits, each with different default retention limits. There is also an open access commercial smoothhound shark permit, which allows fishermen to target and retain smoothhound sharks. As of October 2017, there were 490 commercial permits in the Atlantic (Inclusive of the Gulf of Mexico) shark fisheries (221 directed and 269 incidental permits) and 154 open access Smoothhound shark permits. Table 3.5 provides the distribution of these permits across states and a summary of permits since 2011.

As of October 2017, there were 113 Atlantic shark dealer permits. HMS dealer permits are open access and required for the “first receiver” of Atlantic tunas, swordfish, and sharks. A

first receiver is any entity, person, or company that takes, for commercial purposes (other than solely for transport), immediate possession of the fish, or any part of the fish, as the fish are offloaded from a fishing vessel. Table 3.5 shows the distribution of Atlantic shark dealer permits across the states, and a summary of permits held between 2011 and 2017. Detail regarding shark dealer permit holders is provided in the 2017 SAFE Report.

Table 3.5 Number of limited access shark and dealer permits by state, 2017.

State	Directed Shark Permit	Incidental Shark Permit	Shark Dealer Permits
ME	1	6	2
MA	3	11	6
RI	1	3	6
CT	-	2	-
NY	10	12	13
PA	1	2	-
NJ	23	26	10
DE	2	2	-
MD	2	2	2
VA	1	3	4
NC	20	9	20
SC	7	11	9
GA	3	3	1
FL	118	129	31
AL	4	2	2
MS	-	1	-?
LA	23	33	7
TX	3	11	1
OR	-	1	-?
Trinidad/Tobago	1	-	-?
Annual Totals			
2017*	221	269	113
2016	223	271	111
2015	224	275	102
2014	206	258	96
2013	220	265	97
2012	215	271	92

2011	217	262	117
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* As of October 2017. Number of permits and permit holders in each category and state is subject to change as permits are renewed or expire.

3.4.3. ECONOMIC ASPECTS

A full analysis of the economics of the shark fisheries is available in the 2017 SAFE Report and Chapter 3 of the FEIS for Amendment 5b (NMFS, 2017). The 2016 total ex-vessel revenue of Atlantic HMS shark fisheries was \$2.5 million. Table 3.6 reports 2017 ex-vessel prices by shark species group region and/or sub-region. Price data from 2010 to 2016 is available in the 2017 SAFE Report.

Table 3.6 2017 Average ex-Vessel Prices per lb dw for Each Shark Management Group.
Source: eDealer database.

Region	Species	Price (Meat)	Price (Fins)
WGOM	Blacktip	\$0.51	\$11.03
	Aggregated LCS	\$0.51	\$12.51
	Hammerhead	\$0.67	\$11.67
EGOM	Blacktip	\$0.62	\$8.22
	Aggregated LCS	\$0.43	\$13.00
	Hammerhead	\$0.55	\$12.80
GOM	Non-BKN SCS	\$0.41	\$8.37
	Smoothhound	-	-
ATL	Aggregated LCS	\$0.95	\$11.47
	Hammerhead	\$0.41	\$13.91
	Non-BKN SCS	\$0.96	\$7.33
	Blacknose	\$1.05	-
	Smoothhound	\$0.70	\$1.63
No Region	LCS Research	\$0.80	\$12.40
	Sandbar Research	\$0.50	\$12.40
	Blue	\$1.40	\$11.44
	Porbeagle	\$1.54	\$2.82

	Other Pelagics	\$1.52	\$2.82
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3.5. ESA AND MMPA

The ESA is the primary Federal legislation governing interactions between fisheries and species listed as threatened or endangered and effects on critical habitat. Through a consultation process, the ESA requires Federal agencies to evaluate actions they authorize, fund, or carry out that may affect a listed species. In the case of marine fisheries, the NMFS Office of Sustainable Fisheries consults with the Office of Protected Resources (OPR) to determine what impacts fishery management actions could have on threatened or endangered marine species and what actions can be taken to reduce or eliminate negative impacts. Under the ESA Section 7 consultation process, if a federal action is determined by NMFS to jeopardize the continued existence of a species or destroy or adversely modify critical habitat, NMFS issues a biological opinion (BiOp), which analyzes those effects and, as appropriate, specifies Terms and Conditions which must be met, suggests Reasonable and Prudent Measures (RPMs) or Reasonable and Prudent Alternatives (RPAs) depending on the determination, to mitigate those effects, and authorizes any allowable "incidental take" of the species. On December 12, 2012, NMFS released a BiOp for shark fisheries, which stated that the continued operation of the Atlantic shark fisheries is not likely to jeopardize the continued existence of Atlantic sturgeon, smalltooth sawfish, or any ESA-listed species of large whale or sea turtle. This action is not anticipated to affect the above-referenced ESA-listed species in any way not previously analyzed for existing regulations and there is no new information that would alter this conclusion.

In July 2014, NMFS published a final rule that, among other things, listed the Central and Southwest Atlantic Distinct Population Segments (DPS) of scalloped hammerhead sharks as threatened species under the ESA (79 FR 38213, July 3, 2014). In September 2014, NMFS listed as threatened five new Caribbean species of corals and maintained the threatened listing for two other Caribbean coral species (79 FR 53851, September 10, 2014). On October 30, 2014, NMFS determined that ongoing operation of this fishery consistent with the RPA and RPMs in the existing BiOp and consistent with conservation and management measures is not likely to jeopardize the continued existence of the hammerhead or coral species consistent with section 7(a)(2) of the ESA, or result in an irreversible or irretrievable commitment of resources consistent with section 7(d) of the ESA during this re-initiation of consultation. NMFS may implement requirements of the new BiOp to the shark gillnet or bottom longline (BLL) fisheries in the future, if needed.

The MMPA established a national policy to prevent marine mammal species and population stocks from declining beyond the point where they ceased to be significant functioning elements of the ecosystems of which they are a part. The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Under MMPA requirements, NMFS produces an annual List of Fisheries that classifies domestic commercial fisheries, by gear type, relative to their rates of incidental mortality or serious injury of marine mammals. The List of Fisheries includes three classifications:

- Category I fisheries are those with frequent serious injury or mortality to marine mammals (e.g., Pelagic Longline (PLL));
- Category II fisheries are those with occasional serious injury or mortality (e.g., shark gillnet); and
- Category III fisheries are those with remote likelihood of serious injury or mortality to marine mammals (e.g., shark BLL).

Fishermen participating in Category I or II fisheries are required to be registered under the MMPA and, if selected, to accommodate an observer aboard their vessels. Vessel owners or operators, or fishermen, in Category I, II, or III fisheries must report all incidental mortalities and injuries of marine mammals during the course of commercial fishing operations to NMFS. There are currently no regulations requiring recreational fishermen to report takes, nor are they authorized to have incidental takes (i.e., they are illegal). NMFS does require reporting and authorizes takes by charter/headboat fishermen (considered “commercial” by the MMPA), and, no takes have been reported to NMFS to date.

The majority of shark commercial landings are from fishermen using gillnet and BLL gear. The gillnet fishery is currently listed as a Category II fishery and the shark BLL fishery is currently listed as a Category III fishery under the MMPA. Some additional commercial landings of sharks come from PLL gear, a category I fishery, and handgear, a category III fishery. Strict control and operations through the regulations of these fishing gears means these gear types are not likely to result in mortality or serious injury of marine mammals or sea turtles.

Please refer to Sections 3.8 and 3.9.9 of the 2006 Consolidated HMS FMP for additional information on the protected species and marine mammals in the area of Atlantic HMS fisheries. Sections 3.9.9.1 and 3.9.9.2 specify the 22 cetacean species of concern that occur off the Atlantic and Gulf coasts, including six endangered whale species.

4. PURPOSE AND ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

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

4.1. SHARK FISHERY THRESHOLD

As described in Chapter 2.0, the following five alternatives consider modifying the current 80-percent threshold in order to provide more flexibility regarding when NMFS could close a shark fishery. At this time, NMFS prefers alternative 1f.

Alternative 1a:	No action – Maintain the 80-percent threshold for shark fishery closures
Alternative 1b:	Change the shark fishery closure threshold to 90-percent of the available overall, regional, and/or sub-regional quota
Alternative 1c:	Change the shark fishery closure threshold to 70-percent of the available overall, regional, and/or sub-regional quota
Alternative 1d:	Change the shark fishery closure threshold to 90-percent in the Atlantic Region, while maintaining the Gulf of Mexico closure threshold or overall non-regional threshold at 80-percent
Alternative 1e:	Establish objective criteria to evaluate whether a shark fishery could be closed when the fishery’s landings reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, or allowed to remain open until 90-percent of the applicable quota is reached
Alternative 1f:	<i>Allow a shark fishery to remain open after the fishery’s landings have reached or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, if the fishery’s landings are not projected to reach 100 percent of the applicable quota before the end of the season – Preferred Alternative.</i>

4.1.1. ECOLOGICAL IMPACTS

The alternatives examined below all represent potential changes in the percentage of quota landed in a shark fishery that would result in a closure. This amounts to an administrative change because the shark quotas and impact of fishing those quotas would all remain the same, and none of these alternatives is expected to have an impact on the current level of fishing, catch rates, or distribution of fishing effort. As the closure threshold is approached, it is possible that catch rates and fishing pressure could change as fishermen and dealers anticipate a closure, but

this effect exists under current management measures, and as such was analyzed at the time the quota themselves were adopted and would be expected to continue under all of these alternatives.

Alternative 1a, the no action alternative, would maintain the existing 80-percent threshold to close shark species and/or management groups. Under this alternative, shark fishermen would continue to fish until the shark landings either reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota for a management group. As described in Chapter 1, the current 80-percent threshold was put into place prior to electronic reporting to account for landings that occur during the five-day notice period, state-water landings continuing to occur after a federal closure, delayed landing reports from state only dealers, and the potential for late dealer reporting. Since January 1, 2013, NMFS has implemented electronic dealer reporting, which has resulted in more timely data on landings, and allotted for weekly resolution of quota monitoring. Since 2013, under the existing 80-percent closure threshold, the landings in one third of the shark fisheries that NMFS closed ultimately did not reach the available quotas by the end of the year (Figure 1.1). For instance, the 2016 Atlantic blacknose shark fishery closed early because a projection showed landings would exceed 80-percent of the quota. This closure resulted in underutilized quota, with more than 20-percent of the quota remaining unused in the blacknose shark fishery, and more than 70-percent of the quota in the Atlantic non-blacknose SCS fishery remaining unused at the end of the year. Therefore, a season closure of both the Atlantic blacknose shark and non-blacknose SCS fishery, based on the 80-percent closure threshold, resulted in significant amounts of quota remaining unused at the end of the year. This unharvested quota could aid in rebuilding or preventing overfishing, if applicable, and therefore could have minor beneficial direct ecological impacts on shark species and/or management groups that are overfished with overfishing occurring if there is a large amount of underharvest remaining at the end of the year. However, landings in one third of the shark fisheries that NMFS has closed since 2013 have exceeded the available quotas. For example, the 2014 Gulf of Mexico SCS fishery, despite closing based on the 80-percent threshold, exceeded its quota by approximately eight percent. These overharvests could have minor adverse direct ecological impacts on shark stocks, particularly those that are overfished or experiencing overfishing. As such, maintaining the current 80-percent closure threshold is expected to have neutral ecological impacts when compared against the current baseline.

Because NMFS would leave the current shark fishery closure threshold in place under this alternative, it is likely that Alternative 1a would have neutral direct and indirect short- and long-term ecological impacts on shark stocks. Under Alternative 1a, there would be no expected changes to the allowable level of fishing pressure, dynamics within the fisheries themselves, or number of expected interactions with non-target, incidentally caught species. In combination with any of the notification alternatives (Alternative 2a (five-day closure notice), Alternative 2b (three-day closure notice), Alternative 2c (immediate closure), or Alternative 2d (four-day closure notice), Alternative 1a would likely have neutral direct and indirect short- and long-term ecological impacts to the shark fishery as the shark fishery quotas would remain unchanged and would have no impact on the allowable level of fishing pressure, catch rates or distribution of fishing effort. However, Alternative 2b or Alternative 2c could lead to more underharvest as fishermen and dealers would have less time to catch any remaining quotas. As such, maintaining the 80-percent threshold for shark fishery closures with any of the closure notice alternatives could allow a substantial percentage of the available quota to be landed, while still preventing

overharvest by having a sufficient buffer to account for landings occurring after closure and delayed dealer reports from state-only dealers.

Under Alternative 1b, NMFS would change the shark fishery closure threshold to 90-percent. NMFS believes that it is likely the increased threshold to 90-percent could also have neutral direct and indirect short- and long-term ecological impacts on the shark stocks. Additionally, NMFS does not expect total effort and fishing mortality to increase if the closure threshold is changed to 90-percent. This is because the commercial shark base quotas are not being modified in this rulemaking, resulting in fishermen still being limited in the total amount of sharks that could be harvested. As described in Alternative 1a, NMFS has the ability through weekly electronic dealer reporting to close the season in a timely manner as the closure threshold, 90-percent in this alternative, is met or projected to be met. Alternative 1b could potentially lead to moderate adverse direct ecological impacts if there is a large increase in landings combined with late dealer reporting, resulting in consistent overharvest. For instance, the current 80-percent threshold has not been effective at closing in time to prevent overharvest of shark species that have small quotas, such as porbeagle sharks (see Figure 1.2). As such, changing the percent closure threshold to 90-percent might be detrimental to this and similar shark stocks, as it may not provide sufficient buffer to prevent overharvest. Additionally, quota monitoring data from 2013 – 2017 (eDealer) show that on average 16-percent of the quota is landed after a closure is announced. Therefore, with a 90-percent closure threshold, these average post-closure landings would likely result in consistent overharvests and have moderate adverse direct ecological effects for shark species that have small quotas. However, this would be only in the short-term as NMFS has the ability to monitor quotas on a weekly basis and promptly close shark fisheries. In combination with either Alternatives 2b or 2c, there could likely be neutral direct and indirect short- and long-term ecological impacts to the shark fishery. Alternative 1b, in combination with the five-day and four-day closure notices, Alternative 2a and 2d, respectively, may lead to moderate adverse direct ecological effects in the short-term if there are a number of delayed landings reports and/or continued landings during the existing five-day notice period or a four-day notice period preceding an effective closure that cause landings to exceed the allotted ten-percent buffer provided by this alternative.

Under Alternative 1c, NMFS would change the shark fishery closure threshold to 70-percent of the available overall, regional, and/or sub-regional quota. This change would result in more of the applicable quota being left as a buffer for fishermen to complete trips and NMFS to receive delayed dealer reports. NMFS believes that it is likely the change in threshold to 70-percent would have neutral direct and indirect short- and long-term ecological impacts on the shark stocks. Alternative 1c could potentially have minor beneficial indirect impacts if there is a large amount of underharvest remaining every year, after accounting for late dealer reports. The unused quota could benefit the rebuilding of shark stocks. However, these impacts would be only in the short-term as in recent years the quota of most species and/or management groups have been utilized, after accounting for landings during the five-day closure notice, late dealer reports, and state landings (Figure 1.1). In addition, because Alternative 1c would provide a larger buffer than Alternative 1a and Alternative 1b, this alternative could potentially have minor beneficial direct ecological impacts to sharks species and/ or management groups with small quotas, such as porbeagle sharks. This is because the change to a 70-percent threshold would provide a larger buffer to help account for late dealer reports and state landings, potentially preventing overharvest. In combination with Alternatives 2a, 2b, 2c, or 2d, Alternative 1c may

lead to minor beneficial direct ecological impacts in the short-term because of the expanded 30-percent buffer against delayed landings reports and/or continued landings during the notice period provided by this alternative. However, this would only be in the short-term, given that fishing effort or catch rates are expected to remain the same and electronic dealer reporting provides timely and accurate data on a weekly basis, ensuring NMFS closes the fishery in a timely manner.

Under Alternative 1d, NMFS would change the shark fishery closure threshold to 90-percent in the Atlantic Region, while maintaining the Gulf of Mexico closure threshold or overall non-regional threshold at 80-percent. This administrative change would allow more flexibility in shark fishery closures in order to facilitate the use of available quota used while still preventing overharvest. Under Alternative 1d, a fishery could close based on the regional differences in electronic reporting between the Atlantic and Gulf of Mexico. Additionally, between 2013 and 2017, on average, 16 percent of the total HMS quota is landed after a closure is announced. Of this 16 percent, Gulf of Mexico fisheries represents 84 percent of the landings and Atlantic fisheries represent 15 percent of the landings. All shark dealers in the Atlantic region (from Maine through Florida) are required to report to NMFS electronically every week and state waters close to commercial shark fishing at the same time as federal waters. The Atlantic region's reporting structure allows for more timely monitoring of landings and more accurate projections of landings that could occur after closure of the fishery. For instance, the overall aggregate LCS and hammerhead shark quotas in the Atlantic region have not been exceeded in recent years. A review of the landings data indicate that these species and management group have mostly remained open throughout the year in the Atlantic region (e.g., 2015, 2016, 2017), with quota remaining underutilized at the end of the year. In 2014, the aggregate LCS and hammerhead shark management groups closed early based on the 80-percent closure threshold, resulting in unused quota remaining at the end of the year (more than 50-percent for hammerhead sharks and 6-percent for aggregate LCS). Therefore, given the timely monitoring of landings and limited landings after federal closures in the Atlantic region, changing the shark fishery closure threshold to 90-percent in the Atlantic region could be appropriate as it could allow for full utilization of the quota while still preventing overharvest. Allowing for full utilization of the quota would not have any ecological impacts beyond what was already assessed when the base quotas were set. However, reviewing the breakdown of landings after closure, the Atlantic fisheries typically land almost 13 percent of their quota (roughly one fishery closure per year) after a closure is announced. Currently, if a closure threshold reaches 80 percent in the Atlantic and then closes, the Atlantic could reach 93 percent of the quota. Therefore, a 90-percent threshold could be problematic in the Atlantic region as it could potentially lead to minor adverse direct ecological impacts if there is a large increase in landings, resulting in overharvest.

Some Gulf of Mexico state dealers are required to report on a monthly basis, sometimes reporting on paper forms, and some Gulf of Mexico states allow limited shark landings in state waters after federal closures. As such, these delayed reports from Gulf of Mexico state dealers along with the potential for additional landings after Federal closure may potentially cause minor adverse direct ecological impacts, in the short-term, if overharvest occurs. For example, in 2014, the non-blacknose SCS management group quota in the Gulf of Mexico region was

overharvested due to landings by state-water fishermen fishing after the Federal closure. Additionally, in recent years, the aggregate LCS, hammerhead, and blacktip shark management groups in the western Gulf of Mexico sub-region have been closing early in the year (May 3, 2015; March 12, 2016; May 2, 2017). These early closures are, in part, the result of a high number of shark landings from state-water vessels in a short period of time. There are a large number of state-water vessels, often exceeding over 100 fishing vessels, in Louisiana that target sharks and have the ability to land multiple trip limits from one vessel if multiple state-water permit holders are on one vessel. Active federal permit holders in the Gulf of Mexico are a fraction of the number of Louisiana state-water vessels. In reviewing the breakdown of landings after closure, the Gulf of Mexico's fisheries typically land about 12 percent of their quota (three fishery closures per year) after a closure is announced. Currently, if a closure threshold reaches 80 percent in the Gulf of Mexico and then closes, the Gulf of Mexico could reach 92 percent of the quota. Given the large number of landings from state-water vessels combined with delayed state dealer reports and allowing shark landings after the Federal closures, maintaining the existing 80-percent threshold could be appropriate for the Gulf of Mexico region as it could allow for full utilization of the quota without increasing the probability of an overharvest. Because stocks that span the Atlantic and Gulf of Mexico (non-regional stocks such as pelagic sharks) experience both regions' reporting schemes, NMFS believes management measures should be treated in the more conservative manner, maintaining the 80-percent closure threshold similar to the Gulf of Mexico.

Overall, Alternative 1d would likely result in both neutral direct and indirect short-and long-term ecological impacts on shark stocks for both regions. If overharvest occurs in the Atlantic at 90-percent, it could result in minor adverse ecological impacts. Because quotas are monitored through recent landings, and thus based on typical fishing activity within the regions, there would be no expected ecological differences in how fishermen from the various regions interact with management groups compared to current conditions. In combination with Alternatives 2a, 2b, 2c, or 2d, Alternative 1d would have the same impacts as those previously described under Alternatives 1a and 1b. Given the commercial shark quotas would remain unchanged and NMFS expects no impact on the allowable level of fishing pressure, catch rates or distribution of effort, there would be neutral direct and indirect, short- and long-term ecological impacts to the shark fishery.

Under Alternative 1e, when any shark fishery species and/or management group landings reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, NMFS would evaluate the criteria listed in Chapter 2 before determining if a closure notice is needed. If evaluation of the criteria shows that the fishery is not in need of a closure at 80-percent, it would remain open until the fishery's landings reach, or are projected to reach 90-percent. The flexibility provided by this alternative would allow increased quota utilization and management efficacy while preventing overharvest of the quota. In addition, under this alternative as with the other alternatives, shark quotas are not being modified, meaning fishermen would continue to be limited in the total amount of shark that could be harvested, and the season would be closed once landings reach 80-percent of the quota or, if criteria are met, 90-percent, preventing overharvest in both cases. Therefore, similar to Alternative 1d, it is likely that Alternative 1e would potentially have both neutral direct and indirect short- and long-term ecological impacts on the shark fishery. In combination with Alternatives 2a, 2b, 2c, or 2d,

Alternative 1e would have the same impacts as those previously described under Alternative 1a. Given that the commercial shark quotas would remain unchanged and NMFS expects no impact on the allowable level of fishing pressure, catch rates or distribution of effort, there would be neutral direct and indirect short- and long-term ecological impacts to the shark fishery.

Under Alternative 1f, the preferred alternative, NMFS would maintain the 80-percent threshold but at that threshold, NMFS will make a determination, based on landings projections, about whether a closure is needed to avoid exceedance of the available overall, regional, and/or sub-regional quota. If the species and/or management group's landings are not projected to reach 100 percent of the applicable quota before the end of the season, the fishery will remain open. If the 80-percent threshold is reached but a closure is not necessary, NMFS would notify the public of this determination in the first monthly shark landings update listserv notice following achievement of the 80-percent level. If a closure is needed, NMFS will file a Notice in the Federal Register reflecting that determination and closing the fishery with appropriate notice. Alternative 1f, similar to Alternatives 1d and 1e, provide additional flexibility to achieve full quota utilization while still preventing overharvest of the quota. As described under Alternative 1d, Alternative 1f would also provide the flexibility to account for differences in regional reporting when monitoring quotas and the ability to close in time to ensure the quota is not exceeded. For instance, regions that are more timely in their reporting and have few landings after federal closures (i.e., Atlantic region) could remain open for the remainder of the season while closing other regions (i.e., Gulf of Mexico) that have landings after Federal closure and/or delays in reported landings from state-water vessels may need to be closed. This alternative would likely have both neutral direct and indirect short- and long-term ecological impacts on the shark fishery because it would not be expected to have any impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort otherwise authorized under actions that had assumed full utilization of the quota when analyzed. Alternative 1f would allow increased quota utilizations by keeping the fishery open as long as available quotas are not projected to be exceeded before the end of the season. In combination with Alternatives 2a, 2b, 2c, or 2d, Alternative 1f would have the same impacts as those previously described under Alternative 1a. NMFS expects that there would be neutral direct and indirect short- and long-term ecological impacts to the shark fishery as shark quotas would remain unchanged, leaving the fishery to operate under the current conditions. Alternative 1f would support full quota utilization while preventing overharvest of the quota. Given the flexibility and responsiveness this alternative provides, combined with neutral ecological impacts to the fishery stocks, NMFS prefers Alternative 1f at this time.

4.1.2. SOCIAL AND ECONOMIC IMPACTS

For this section, we compare the potential annual gross ex-vessel revenues (assuming the entire adjusted quota is harvested) and the expected gross ex-vessels revenues under each alternative (Table 4.1). This data has been sourced from the eDealer database, and has been updated from the 2016 estimates used in the Draft EA, to 2017 estimates for the Final EA. The use of the updated analyses provide a more accurate and recent assessment of certain impacts but did not affect the results of the analyses.

For the entire fleet, revenue from blacktip, aggregated LCS, and hammerhead shark meat in the western Gulf of Mexico sub-region would be \$469,078, while revenue from shark fins would be \$278,482. Thus, potential total average annual gross revenues for blacktip, aggregated

LCS, and hammerhead shark landings in the western Gulf of Mexico sub-region would be \$747,560 (\$469,078+ \$278,482) (Table 4.1, Column C). Similarly, the potential total average annual gross revenues for the entire fleet from blacktip, aggregated LCS, and hammerhead shark meat in the eastern Gulf of Mexico sub-region would be \$146,480, while revenue from shark fins would be \$93,977. Thus, potential total average annual gross revenues for blacktip, aggregated LCS, and hammerhead shark landings in the eastern Gulf of Mexico sub-region would be \$240,457 (\$146,480 + \$93,977) (Table 4.1, Column C). The potential annual gross revenues for the entire fleet for non-blacknose SCS and smoothhound shark meat in the Gulf of Mexico would be \$1,762,984, while revenue from shark fins would be \$134,663. Thus, potential total average annual gross revenues for non-blacknose SCS and smoothhound in the Gulf of Mexico would be \$1,897,647 (\$1,762,984 + \$134,663) (Table 4.1, Column C). The potential annual gross revenues for the entire fleet from aggregated LCS and hammerhead shark meat in the Atlantic would be \$378,416, while revenue from shark fins would be \$137,811. Thus, potential total average annual gross revenues for aggregated LCS and hammerhead shark in the Atlantic would be \$516,227 (\$378,416 + \$137,811) (Table 4.1, Column C). The potential annual gross revenues for the entire fleet from non-blacknose SCS, blacknose, and smoothhound shark meat in the Atlantic would be \$3,380,588, while revenue from shark fins would be \$355,944. Thus, potential total average annual gross revenues for aggregated LCS, non-blacknose SCS, blacknose, smoothhound, and hammerhead shark in the Atlantic would be \$3,736,532 (\$3,380,588 + \$355,944) (Table 4.1, Column C). The potential annual gross revenues for the entire fleet for pelagic sharks (blue, porbeagle, shortfin mako, and thresher sharks) would be \$2,483,671, while revenue from shark fins would be \$268,102. Thus, potential total average annual gross revenues for pelagic sharks would be \$2,751,773 (\$2,483,671 + \$268,102) (Table 4.1, Column C).

Alternative 1a, the No Action alternative, would maintain the existing 80-percent threshold to close a shark fishery and maintain current shark quotas. Currently, unless the management group is overharvested, the adjusted annual base quotas are not fully realized. Column G of Table 4.1 provides the realized ex-vessel revenues for 2017. Alternative 1a would likely result in neutral direct short- and long-term socioeconomic impacts because shark fishermen would continue to operate under current conditions, with shark fishermen continuing to fish at similar rates. Alternative 1a could also have neutral indirect impacts to those supporting the commercial shark fisheries, since the retention limits, and thus current fishing efforts, would not change under this alternative.

Under Alternative 1b, NMFS would change the shark fishery closure threshold to 90-percent of the available overall, regional, and/or sub-regional quota. Alternative 1b is likely to have neutral direct and indirect short- and long-term socioeconomic impacts because the base quotas would not change for any of the management groups and fishermen would still be limited in the total amount of sharks that could be harvested. This alternative could potentially lead to minor beneficial direct socioeconomic impacts if fishermen can land available quota that may have remained unharvested under the current 80-percent threshold after accounting for delayed reports and state landings. For example, in 2017, the quota for the aggregate LCS, blacktip, and hammerhead shark management groups from the western Gulf of Mexico sub-region was underutilized by 302,382 lb dw (Table 4.1, Column H) or 32 percent of the adjusted annual base quota, valued at \$247,518 in potential ex-vessel revenue (\$156,667 for meat + \$90,851 for fins) (Table 4.1, Column I). In the Atlantic, the blacknose shark management group was underutilized

by 20,680 lb dw (Table 4.1, Column H) or 53 percent of the quota, valued at \$25,807 in potential ex-vessel revenue (\$21,714 for meat + \$4,093 for fins) (Table 4.1, Column I). These socioeconomic benefits would be only in the short-term as NMFS has the ability to monitor quotas on a weekly basis and promptly close the shark fishery. However, Alternative 1b could also lead to minor adverse direct socioeconomic impacts in the short-term if the quotas are overharvested, because this would lead to lower quotas the following year. In addition, this alternative could potentially lead to minor adverse direct socioeconomic impacts if there is a large increase in landings combined with late dealer reporting, after the fishery is closed, that results in overharvest. For instance, the current 80-percent threshold has not been effective at closing in time to prevent overharvest of shark species that have small quotas, such as porbeagle sharks (see Figure 1.2). As such, changing the closure threshold to 90-percent might be detrimental to the porbeagle shark fishery, as it may not provide sufficient buffer to prevent overharvest and season closures that occurred in 2013 and 2015. In combination with Alternatives 2b or 2c, there could likely be direct and indirect short- and long-term neutral socioeconomic impacts to the shark fishery as shark quotas are not being modified, having no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort. Alternative 1b, in combination with the five-day or four-day closure notice, Alternative 2a and 2d, respectively, may lead to minor adverse direct socioeconomic impacts in the short-term if there are a number of delayed landings reports and/or continued landings during the existing five-day notice period preceding a closure that may cause landings to exceed the allotted ten-percent buffer provided under this alternative. In addition, any overharvest would reduce the quotas in the upcoming season and reduce the potential annual gross ex-vessel revenues.

Under Alternative 1c, NMFS would change the shark fishery closure threshold to 70-percent of the available overall, regional, and/or sub-regional quota. This change would potentially leave a larger buffer for fishermen to complete trips and for NMFS to receive delayed dealer reports. Given the average 15.8-percent of quota landed after a closure is announced, this alternative could potentially have minor adverse direct socioeconomic impacts if, after accounting for late dealer reports, there is a large amount of underharvest remaining every year that fishermen would no longer be able to harvest as compared to Alternative 1a, the No Action alternative.

However, these impacts would be only in the short-term because in recent years the quota of most species and/or management groups have been almost fully utilized, after accounting for landings during the five-day closure notice, late dealer reports and state landings (Figure 1.1). Alternative 1c, in combination with the closure notice Alternatives, 2a, 2b, 2c, or 2d, may lead to minor adverse direct socioeconomic impacts because of the expanded 30-percent buffer against delayed landings reports and/or continued landings during the notice period provided by this alternative. These impacts would be greatest with the shortest notice period, Alternative 2c. However, this would only be in the short-term, given that fishing effort or catch rates are expected to remain the same and electronic dealer reporting provides timely and accurate data on a weekly basis, ensuring NMFS can close the fishery in a timely manner.

	Aggregated LCS	Meat	\$0.43	188,593	\$81,095	No closure in 2017		143,029	\$61,502	45,564	\$19,593
		Fins	\$13.00	5,092	\$66,196			3,862	\$50,203	1,230	\$15,993
		Total			\$147,291				\$111,706		\$35,585
	Hammerhead sharks	Meat	\$0.55	29,421	\$16,182			14,786	\$8,132	14,635	\$8,049
		Fins	\$12.80	794	\$10,168			399	\$5,110	395	\$5,058
		Total			\$26,349				\$13,242		\$13,107
Gulf of Mexico	Non-Blacknose SCS	Meat	\$0.38	248,215	\$94,322			143,720	\$54,614	104,495	\$39,708
		Fins	\$8.68	6,702	\$58,172			3,880	\$33,682	2,821	\$24,489
		Total			\$152,493				\$88,296		\$64,198
	Smoothhound sharks	Meat	\$1.50	1,112,441	\$1,668,662			0	\$0	1,112,441	\$1,668,662
		Fins	\$1.91	40,048	\$76,491			0	\$0	40,048	\$76,491
		Total			\$1,745,153				\$0		\$1,745,153

Region/ Sub-Region	Management Group	(A)	(B)	(A*B = C)	(D)	(D*A = E)	(F)	(A*F = G)	(B - F = H)	(A*H = I)
		2017 Ex-Vessel Prices	Adjusted Annual Quota (lb dw)	Potential Ex-Vessel Revenue	Landings at Closure (lb dw)	Ex-Vessel Revenue	Final Landings (lb dw)	Realized Ex-Vessel Revenue	Under/Overharvest Landings (lb dw)	Missed Potential Ex-Vessel Revenue
Atlantic	Aggregated LCS	\$0.95	372,552	\$353,924			289,449	\$274,977	83,103	\$78,948

		Fins	\$11.47	10,059	\$115,376	No Closures in 2017		7,815	\$89,639	2,244	\$25,736
		Total			\$469,300				\$364,616		\$104,684
	Hammerhead sharks	Meat	\$0.41	59,736	\$24,492			21,106	\$8,653	38,630	\$15,838
		Fins	\$13.91	1,613	\$22,435			570	\$7,927	1,043	\$14,508
		Total			\$46,927				\$16,580		\$30,347
	Non-Blacknose SCS	Meat	\$0.96	582,333	\$559,040			277,240	\$266,150	305,093	\$292,889
		Fins	\$7.33	15,723	\$115,250			7,485	\$54,869	8,238	\$60,381
		Total			\$674,289				\$321,019		\$353,270
	Blacknose sharks	Meat	\$1.05	37,921	\$39,817		\$20,116	17,241	\$18,103	20,680	\$21,714
		Fins	\$7.33	1,024	\$7,505		\$1,618	466	\$3,412	558	\$4,093
		Total			\$47,322		\$21,735		\$21,515		\$25,807
	Smoothhound sharks	Meat	\$0.70	3,973,902	\$2,781,731			831,761	\$582,233	3,142,141	\$2,199,499
		Fins	\$1.63	143,060	\$233,189			29,943	\$48,808	113,117	\$184,381
		Total			\$3,014,920				\$631,040		\$2,383,880

Region/ Sub- Region	Management Group		(A)	(B)	(A*B = C)	(D)	(D*A = E)	(F)	(A*F = G)	(B - F = H)	(A*H = I)
			2017 Ex- Vessel Prices	Adjusted Annual Quota (lb dw)	Potential Ex- Vessel Revenue	Landings at Closure (lb dw)	Ex-Vessel Revenue	Final Landings (lb dw)	Realized Ex-Vessel Revenue	Under/ Overharvest Landings (lb dw)	Missed Potential Ex- Vessel Revenue
No Region	LCS – Research	Meat	\$0.80	110,230	\$88,184	No Closures in 2017		45,613	\$36,490	64,617	\$51,694
		Fins	\$12.40	2,976	\$36,905			1,232	\$15,271	1,745	\$21,634
		Total			\$125,089				\$51,762		\$73,327
	Sandbar sharks - Research	Meat	\$0.50	199,943	\$99,972			122,420	\$61,210	77,523	\$38,762
		Fins	\$12.40	5,398	\$66,941			3,305	\$40,986	2,093	\$25,955
		Total			\$166,912				\$102,196		\$64,716
	Blue sharks	Meat	\$1.40	601,856	\$842,598			4,272	\$5,981	597,584	\$836,618
		Fins	\$11.44	16,250	\$185,901			115	\$1,320	16,135	\$184,582
		Total			\$1,028,500				\$7,300		\$1,021,199
	Porbeagle sharks	Meat	\$1.54	3,748	\$5,772			120	\$185	3,628	\$5,587
		Fins	\$2.82	101	\$285			3	\$9	98	\$276

		Total			\$6,057				\$194		\$5,863
	Other Pelagic sharks	Meat	\$1.52	1,075,856	\$1,635,301			246,983	\$375,414	828,873	\$1,259,887
		Fins	\$2.82	29,048	\$81,916			6,669	\$18,805	22,380	\$63,110
		Total			\$1,717,217				\$394,219		\$1,322,997
Total					\$10,182,195				\$2,683,060		

Under Alternative 1d, NMFS would change the shark fishery closure threshold to 90-percent in the Atlantic Region, while maintaining the Gulf of Mexico closure threshold or overall non-regional threshold at 80-percent. Alternative 1d provides some flexibility in assigning different closure landings thresholds to account of regional differences between the Atlantic and Gulf of Mexico. In the Atlantic region, this alternative could potentially lead to minor beneficial direct socioeconomic impacts if fishermen can land available quota that may have remained unharvested under the current 80-percent threshold. In the Gulf of Mexico region and for fisheries with no region, this alternative could likely result in neutral direct and indirect, short- and long-term socioeconomic impacts because shark fishermen would continue to operate under current conditions, with shark fishermen continuing to fish at similar rates.

As examples, if landings of a shark species and/or management group reach 80-percent of the quota by September 1, then NMFS would close the fishery if it was in the Gulf of Mexico region, which would have neutral socioeconomic impacts in the region under Alternative 1d. In the Atlantic region, NMFS would wait until landings reach 90-percent of the quota to close the fishery under this alternative, which would cause minor beneficial direct socioeconomic impacts since fishermen would be able to fish more. If landings of a shark species and/or management group reach 80-percent of the quota by December 1, then NMFS would close the fishery if it was in the Gulf of Mexico region, but would not close in the Atlantic region under Alternative 1d. NMFS would wait until landings reach 90-percent of the quota to close the fishery in the Atlantic region.

Under Alternative 1e, when any shark species and/or management group landings reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, NMFS would evaluate the criteria listed in Chapter 2 before determining if a closure is needed at the 80-percent threshold. Alternative 1e provides flexibility in shark fishery closures with a set of criteria that maximize management efficacy while preventing overharvest of the quota. If this increased flexibility in determining when to close a fishery leads to full quota utilization of management groups, while still preventing overharvest in shark fisheries, then fishermen could potentially see additional revenue from being able to land sharks that would otherwise have remained unharvested under the existing 80-percent threshold.

As examples, if landings of a shark species and/or management group reach 80-percent of the quota by September 1, then NMFS would evaluate the criteria in Alternative 1e before determining if a closure is needed at the 80-percent threshold in the Gulf of Mexico and Atlantic region. Based on criteria A (stock status of the relevant species or management group and any linked species and/or management groups) and C (continued landings after the federal closure), NMFS would likely close the shark species and/or management group fishery in the Gulf of Mexico. In the Atlantic region, NMFS would likely also close the shark species/management group fishery based on criteria A since all of the shark species and/or management groups in the region, except for Atlantic smooth dogfish, have an overfished or unknown stock status. This would lead to neutral socioeconomic impacts in both regions since there would be no change from current regulations. If landings of a shark species and/or management group reach 80-percent of the quota by December 1, then NMFS would need to evaluate all of the criteria closely before doing a closure in either the Gulf of Mexico or Atlantic region. A key criterion to evaluate is the likelihood of landings exceeding the quota by December 31, or the end of the fishing year (Criteria E). In the Gulf of Mexico region, NMFS would also consider Criteria C (continued landings after the federal closure) and how this would impact the fishery. In the

Atlantic region, NMFS would likely keep the fishery open as long as landings are not projected to exceed the quota by the end of the year.

The inseason actions required to assess Alternative 1e's criteria and carry out this alternative would unnecessarily complicate the closure procedures, possibly confuse the regulated community, and would not necessarily enhance the accuracy of any closure notice. Requiring NMFS to step through specific criteria such as stock status that do not influence catch rates would add complexity to the process and would not improve accuracy of the projections and in fact may delay needed closures in some circumstances. Alternative 1f, the preferred alternative, would allow a shark fishery to remain open after the fishery's landings have reached or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, if the fishery's landings are not projected to reach 100 percent of the applicable quota before the end of the season. If the 80 percent threshold is reached but a closure is not necessary, NMFS would review landings projections indicating whether a closure is needed to avoid exceedance of the available overall, regional, and/or sub-regional quota by the end of the season. NMFS would then notify the public of this determination in the first monthly shark landings update listserv notice following achievement of the 80 percent level. If a closure is needed, NMFS will file a Notice in the Federal Register reflecting that determination and closing the fishery with the appropriate notice. Alternative 1f, similar to Alternatives 1d and 1e, would allow increased quota utilization through management flexibility, while still preventing overharvest. This alternative could therefore lead to neutral socioeconomic impacts, similar to Alternative 1a, the status quo alternative, if the fishery's landings are projected to reach 100-percent before the end of the fishing year. As examples, if landings of a shark species and/or management group reach 80-percent of the quota by September 1, then NMFS would likely have to close the fishery if it was in either the Gulf of Mexico or Atlantic regions since the landings would likely reach 100-percent before the end of the fishing year. This would cause neutral socioeconomic impacts because it would be the status quo for the fishery. If landings of a shark species and/or management group reach 80-percent of the quota by December 1, then NMFS would project whether the landings in the Gulf of Mexico and Atlantic regions would reach 100-percent before the end of the fishing year. If NMFS makes a determination that the landings would exceed 100-percent of the available quota before the end of the fishing year (December 31) absent a closure, then the fishery would remain open. Thus, this could lead to minor beneficial direct socioeconomic impacts since the quota could be fully utilized. A fishery reaching the 80-percent threshold without being projected to exceed its quota before the end of the season is most likely to occur late in the year.

4.2. SHARK FISHERY CLOSURE NOTICE PERIOD

As described in Chapter 2.0, based on public comments, a new preferred alternative (2d) has been developed. There are now four alternatives that consider modifying the shark fishery closure notice period, that is, the length of time between public notice and the effective date of a given fishery closure with the goal of improving the efficacy of management while also avoiding overharvest in these fisheries.

- Alternative 2a: No action – Maintain five-day period between filing of the closure notice with the Office of the Federal Register and the closure going into effect
- Alternative 2b: Change minimum notice time between filing of the closure notice with the Office of the Federal Register and the closure going into effect to three days
- Alternative 2c: Allow immediate closure of a shark fishery upon filing of the closure notice with the Office of the Federal Register
- Alternative 2d: *Change minimum notice time between filing of the closure notice with the Office of the Federal Register and the closure going into effect to four days - Preferred Alternative*

4.2.1. ECOLOGICAL IMPACTS

Under Alternative 2a, NMFS would maintain the status quo and would not change the notice period of five days for the closure of a management group. This alternative would have no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort. This alternative represents an administrative action that NMFS takes every year to allow fishermen to complete fishing trips that have already been initiated and/or provide fishermen a chance to catch additional quota if they continue fishing prior to the closure while still preventing overharvest. As such, it is likely that Alternative 2a, the No Action Alternative, would have both neutral direct and indirect short- and long-term ecological impacts to shark fishery stocks. This alternative could potentially result in interrupted fishing activities, potentially resulting in regulatory discards if trips were underway at the time of the notice of the closure. For instance, pelagic longline fishing vessels, which can take trips that last several weeks, may need to discard any dead sharks onboard and in their hold if the vessel is unable to land the sharks before the closure is effective. However, NMFS expects few dead discards as a result of closure notices, given that NMFS has implemented several management measures that prohibit retention of some sharks (i.e., silky, oceanic whitetip, hammerhead sharks) on vessels with pelagic longline gear onboard. These management changes have made pelagic longline fishermen unlikely to land many sharks in recent years. Additionally, NMFS has not, to date, closed the fisheries for those species pelagic longline fishermen are likely to interact with that they can keep (e.g., common thresher). In combination with all other alternatives (i.e., 1a, 1c, 1d, 1e, and 1f), except Alternative 1b, Alternative 2a would generally allow most fishermen, particularly those fishing for sharks, to complete their fishing trips while still preventing overharvest. In combination with Alternative 1b (e.g., 90-percent closure threshold), there is a risk of overharvest if the landings rate was high before the closure date is effective under Alternative 2a.

Under Alternative 2b, NMFS would change the minimum notice period to three days instead of the current five-day notice once the landings reach a threshold necessitating a closure. According to the data presented in Amendment 2, historically, shark fishing were up to nine days in length. In the directed shark fishery, recent observer reports show that most shark fishermen take trips of one or two days, and likely do not need the full five-day notice in order to land all

sharks before the closure date is effective. As such, this alternative should not interfere with directed shark trips already underway at the time of closure, but may have impacts on the PLL trips that may last several weeks. This alternative would allow more timely action in closing shark fisheries, helping to prevent overharvest. Additionally, under this alternative, fishermen and dealers would not have as much time to increase landings substantially between the filing of the closure notice and the effective date of the closure. In other words, under Alternative 2b, overharvests are unlikely although if NMFS's projection of landings are overly optimistic, it could lead to underharvests in combination with some of the other alternatives. Specifically, in combination with all other Alternatives (1a, 1b, 1d, 1e, and 1f), except Alternative 1c, Alternative 2b would reduce the risk of exceeding the quota, especially if landings rates are high before the closure date is effective. In combination with Alternative 1c (e.g., 70-percent closure threshold), Alternative 2b would increase the risk of a significant underharvest and could cause minor adverse socioeconomic impacts. This alternative would likely have both neutral direct and indirect short- and long-term ecological impacts to shark stocks because the allowable level of fishing pressure, catch rates, distribution of fishing effort, and the commercial quotas would remain the same. As described in Alternative 2a, Alternative 2b could potentially result in interrupted fishing activities for pelagic longline vessels, which generally take trips up to nine days in length, potentially resulting in regulatory discards if trips were underway at the time of the notice of the closure. However, NMFS expects few dead discards as a result of the closure notice timing as most pelagic longline fishermen do not target sharks and are unlikely to land many sharks given recent management measures to reduce shark mortality on pelagic longline vessels. This alternative was preferred in the draft EA and proposed rule primarily because it would increase flexibility to close the fishery while still preventing overharvests and allowing sufficient time for most fishermen to complete trips underway at the time of the notice of the closure. Based on public comment, this alternative is no longer preferred. During the public comment period, some commenters, including the States of North Carolina and Louisiana, did not support the preferred alternative (three-day closure notice) in the draft EA and instead preferred the existing five-day closure notice (Alternative 2a). Both states were concerned that a period of three days was not sufficient to implement complementary state water shark fisheries closures, creating inconsistencies in fishing closures between state and federal waters that would result in fishermen needing to discard product if they miss the closure date. On the other hand, as described in Chapter 1, NMFS has concerns about keeping the existing five-day closure notice (Alternative 2a). NMFS believes the potential for additional landings after federal closure affects the agency's ability to monitor quotas in a timely and efficient manner. This is because the continued landings during the existing five-day notice period preceding a closure could be contributing to overharvest, which if occurring on a frequent basis can lead to overfishing, delay rebuilding of overfished stocks, and in the long-term have negative impacts on fishermen and dealers. Based on public comments on the preferred alternative in the draft EA and NMFS' concerns about keeping the existing five-day closure notice, a new preferred alternative, 2d, was developed. The Alternative 2d would change the minimum notice period to four days instead of the current five-day notice once the landings reach a threshold necessitating a closure. This new preferred alternative better addresses concerns from the States that they need more than three days' notice in order to close state waters in conjunction with federal waters while also addressing NMFS need to increase flexibility to close the fishery as needed while still preventing overharvest. The allotted time before the closure becomes effective is also well within the range of the current directed shark trip lengths (i.e., one to two days). Because the EA examined

alternatives ranging from zero days to five days, this new alternative is within the range of originally proposed actions.

Under Alternative 2c, NMFS would change the timing of shark fishery species and/or management group closures to allow immediate closure upon filing of the closure notice with the Office of the Federal Register. This alternative would allow timely action in closing shark fisheries, helping to prevent overharvest. In combination with all other alternatives, Alternative 2c would either reduce the risk of exceeding the quota (i.e., Alternatives 1a, 1b, 1d, 1e, and 1f) or increase the risk of a significant underharvest (i.e., Alternative 1c). Therefore, it is likely that this alternative would have both neutral direct and indirect, short- and long-term ecological impacts to shark fishery stocks. However, as described in Alternative 2a, Alternative 2c could potentially result in interrupted fishing activities with little or no warning to the regulated community, potentially resulting in regulatory discards if trips were underway at the time of the notice of the closure and the closure was immediate upon filing of the closure notice. Additionally, HMS AP members from several states indicated that some states would have difficulty closing state water fisheries immediately. Thus, state landings after a federal closure could increase under Alternative 2c.

Under Alternative 2d, the new preferred alternative, NMFS would change the minimum notice period to four days instead of the current five-day notice once the landings reach a threshold necessitating a closure. This alternative is preferred because it addresses the concerns from the States that they need more than three days' notice in order to implement complementary state water shark fishery closures while addressing NMFS need to increase flexibility to close the fishery as needed while still preventing overharvest. By using a notice period of four days instead of the existing five-day notice, NMFS could reduce the potential for overharvest because fishermen and dealers would not have as much time to increase landings substantially between the filing of the closure notice and the effective date of the closure, allowing for more timely action in closing shark fisheries. In addition, because the allotted time is well within the range of the current directed shark trip lengths (i.e., one to two days), this alternative would not interfere with directed shark trips already underway at the time of closure, but may have impacts on the PLL trips that may last several weeks. However, NMFS expects few dead discards as a result of the closure notice timing as most pelagic longline fishermen do not target sharks and are unlikely to land many sharks given recent management measures to reduce shark mortality on PLL vessels. In combination with all other alternatives (i.e., 1a, 1c, 1d, 1e, and 1f), except Alternative 1b, Alternative 2d would allow most fishermen, particularly those fishing for sharks, to complete their fishing trips while still reducing the risk of exceeding the quota, especially if landings rates are high before the closure date is effective. In combination with Alternative 1b (e.g., 90-percent closure threshold), there is a risk of overharvest if the landings rate increases substantially between the filing of the closure notice and the effective date of the closure under Alternative 2d. This alternative would likely have both neutral direct and indirect short- and long-term ecological impacts to shark stocks because the allowable level of fishing pressure, catch rates, distribution of fishing effort, and the commercial quotas would remain the same. Because the EA examined alternatives ranging from zero days to five days, this new alternative is within the scope of the range of originally proposed actions.

4.2.2 SOCIAL AND ECONOMIC IMPACTS

Under Alternative 2a, NMFS would maintain the status quo and would not change the notice period of five days for the closure of a management group. This alternative would have no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort. As such, it is likely that Alternative 2a, the No Action Alternative, as well as this alternative in combination with any of the Alternatives 1a, 1b, 1c, 1d, 1e, or 1f would have both neutral direct and indirect short- and long-term socioeconomic impacts. If there is a large amount of landings made during the five-day period between notice and effective date of the closure, and closure later in the year under Alternatives 1b, 1c, and 1d then there could be the potential for minor beneficial direct socioeconomic impacts for those fisheries who have underutilized the quota in recent years (Figure 1.1, Table 4.1). The majority of fishing trips for sharks are currently one day in length, so a five-day closure notice should not result in regulatory discards for these trips. However, this alternative could potentially result in interrupted fishing activities, potentially resulting in regulatory discards if trips were underway at the time of the closure. For instance, pelagic longline fishing vessels, which can take trips that last several weeks, may need to discard any dead sharks onboard and in their hold if the vessel is unable to land the sharks before the closure is effective. However, NMFS expects few dead discards and little lost potential revenue as a result of closure notice timing as most pelagic longline fishermen do not target sharks and are unlikely to land many sharks given recent management measures to reduce shark mortality on pelagic longline vessels. In combination with all other alternatives (i.e., 1a, 1c, 1d, 1e, and 1f), except Alternative 1b, Alternative 2a would allow fishermen to complete their fishing trips while still preventing overharvest. In combination with Alternative 1b (e.g., 90-percent closure threshold), there is a risk of overharvest if the landings rate was high before the closure date is effective and potential reduced quotas the following season.

Under Alternative 2b, NMFS would change the minimum notice period to three days instead of the current five-day notice once the fisheries reached a landings threshold necessitating a closure. This change would allow timely action in closing shark fisheries, helping to prevent overharvest. In combination with all other Alternatives (1a, 1b, 1d, 1e, and 1f), except Alternative 1c, Alternative 2b would reduce the risk of exceeding the quota, especially if landings rates are high before the closure date is effective. In combination with Alternative 1c (e.g., 70-percent closure threshold), Alternative 2b would increase the risk of a significant underharvest and would cause minor adverse direct socioeconomic impacts. This alternative would likely have both neutral direct and indirect short- and long-term socioeconomic impacts to shark stocks because the allowable level of fishing pressure, catch rates, distribution of fishing effort, and the commercial quotas would remain the same. This alternative would increase flexibility to close the fishery as needed while still preventing overharvest and allowing sufficient time most for fishermen to complete trips underway at the time of the notice of the closure. This alternative could potentially result in interrupted fishing activities for pelagic longline vessels, which generally take trips up to nine days in length, potentially resulting in regulatory discards if shark trips were underway at the time of the notice of the closure. However, NMFS expects few dead discards and potential loss of revenue as a result of the closure notice timing as most pelagic longline fishermen do not target sharks and are unlikely to land many sharks given recent management measures to reduce shark mortality on pelagic longline vessels. In addition, the allotted time before the closure is effective is well within the range of the current directed shark trip lengths (i.e., one to two days). This alternative was preferred in the draft EA primarily because it would increase flexibility to close the fishery as needed while still preventing overharvest and allowing sufficient time for most fishermen to

complete trips underway at the time of the notice of the closure. Based on public comment, this alternative is no longer preferred. A new preferred alternative (2d) better addresses concerns from the States that they need more than three days' notice in order to close state waters in conjunction with federal waters while also addressing NMFS' need to increase flexibility to close the fishery as needed while still preventing overharvest.

Under Alternative 2c, NMFS would change the timing of shark fishery species and/or management group closures to allow immediate closure upon filing of the closure notice with the Office of the Federal Register. This alternative would allow timely action in closing shark fisheries, helping to prevent overharvest. In combination with all other alternatives, Alternative 2c would either reduce the risk of exceeding the quota (i.e., Alternatives 1a, 1b, 1d, 1e, and 1f) or increase the risk of a significant underharvest (i.e., Alternative 1c). Therefore, it is likely that Alternative 2c would have both neutral direct and indirect, short- and long-term socioeconomic impacts. However, as described when discussing Alternative 2b, Alternative 2c could potentially result in interrupted fishing activities with little or no warning to the regulated community, potentially resulting in regulatory discards if shark trips were underway at the time of the notice of the closure, with associated loss of revenue to a greater extent than Alternative 2b. HMS AP members from several states indicated that some states would have difficulty closing state water fisheries immediately.

Under Alternative 2d, the new preferred alternative, NMFS would change the minimum notice period to four days instead of the current five-day notice once the landings reach a threshold necessitating a closure. This alternative is preferred because it addresses the concerns from the States that they need more than three days' notice in order to close state waters in conjunction with Federal waters. In combination with all other alternatives (i.e., 1a, 1c, 1d, 1e, and 1f), except Alternative 1b, Alternative 2d would allow most fishermen, particularly those fishing for sharks, to complete their fishing trips while still reducing the risk of exceeding the quota, especially if landings rate increase substantially between the filing of the closure notice and the effective date of the closure. In combination with Alternative 1b (e.g., 90-percent closure threshold), there is a risk of overharvest if the landings rate was high before the closure date is effective under Alternative 2d. This alternative would likely have both neutral direct and indirect short- and long-term socioeconomic impacts to shark stocks because the allowable level of fishing pressure, catch rates, distribution of fishing effort, and the commercial quotas would remain the same.

4.3. CONCLUSION

NMFS prefers to allow a shark fishery to remain open after the fishery's landings have reached or are projected to reach 80-percent as long as landings are not projected to reach 100-percent before the end of the fishing year (Alternative 1f) and to change the minimum notice period to four days instead of the current five-day notice once the fishery reached a landings threshold necessitating a closure (new preferred Alternative 2d). Both of these preferred alternatives would be expected to have neutral ecological and socioeconomic impacts as the commercial quotas would remain the same and as a result, there would be no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort otherwise authorized under actions that had assumed full utilization of the quota when analyzed. In addition, the preferred alternatives increases flexibility to close the fishery as needed while still preventing overharvest and allowing sufficient time for fishermen to complete ongoing trips at

the time of the closure. Regarding, Alternative 2d, this new preferred alternative was developed to better address concerns from the States that they need more than three days' notice in order to close state waters in conjunction with federal waters while also addressing NMFS' need to increase flexibility to close the fishery as needed while still preventing overharvest due to continued landings after a federal closure.

NMFS does not prefer Alternative 1a (No Action Alternative) since this alternative does not meet the objectives of the rule, and could continue to leave some of the shark quotas underutilized. NMFS does not prefer Alternative 1b or 1d because by increasing the closure threshold to 90-percent in either all (1b) or part of the region (1d), these alternatives increase the potential for overharvest. NMFS does not prefer alternative 1c because of the potential for underharvest in the shark fisheries. NMFS does not prefer Alternative 1e because the inseason actions required to assess these criteria and carry out this alternative would unnecessarily complicate the closure procedures and possibly confuse the regulated community given past, relatively simple protocols for shark fishery closures.

NMFS does not prefer Alternative 2a (No Action Alternative) because this alternative does not increase flexibility or timeliness in management of the shark fisheries. NMFS preferred Alternative 2b (change the minimum notice period to three days instead of the current five-day notice once the fisheries reached a landings threshold necessitating a closure) in the draft EA. However, based on public comment and comments received at the HMS AP meeting (March 2018), NMFS introduced preferred Alternative 2d in the Final EA, which would change the minimum notice period to four days instead of the current five-day notice once the fisheries reached a landings threshold necessitating a closure. At the HMS AP meeting in March 2018, NMFS received comments from the States that the Alternative 2b would not work as the States need more than three-days' notice in order to close state waters in conjunction with federal waters. NMFS does not prefer Alternative 2c (change the timing of shark fishery species and or management groups closures to allow for immediate closure upon filing of the closure notice with the Office of the Federal Register) as this alternative could result in interrupted fishing activities with little or no warning to the regulated community, potentially increasing regulatory discards if shark trips were underway at the time of the closure. Regarding Alternative 2c, at the HMS AP meeting in September 2017, NMFS received comments from the Panel members who indicated that immediate closure (Alternative 2c) is infeasible given that most states provide more than 24 hours of notice before closing a fishery.

4.4. IMPACTS ON ESSENTIAL FISH HABITAT

Pursuant to 16 U.S.C. 1855(b)(1), and as implemented by 50 C.F.R. §800. 815, the Magnuson-Stevens Act requires NMFS to identify and describe EFH for each life stage of managed species and to evaluate the potential adverse effects of fishing activities on EFH including the cumulative effects of multiple fisheries activities. If NMFS determines that fishing gears are having an adverse effect on HMS EFH, or other species' EFH, then NMFS must include management measures that minimize adverse effects to the extent practicable. Ecological impacts to EFH due the preferred alternatives in this final rule – modifying closure landing threshold and closure notice- would likely be neutral and have no adverse effects, as there are not changes to the commercial quotas. As such, there would be no effect on EFH beyond what was already analyzed when those quotas were established.

In the 2006 Consolidated HMS FMP and Amendment 1 to the 2006 Consolidated HMS FMP (Amendment 1; NMFS, 2009), NMFS reviewed the various gear types with the potential to affect EFH and, based on the best information available at that time, NMFS determined that fishing for sharks is not likely to adversely affect EFH. Gears commonly used that would be impacted by this action include BLL, gillnet, and rod and reel gear. Amendment 1 (NMFS, 2009) analyzed EFH impacts resulting from these gear types. Amendment 1 found that BLL and gillnet interact with the sea floor in areas deemed EFH by the regional councils or NMFS, but that the impact did not warrant additional conservation measures. Amendment 1 also found that rod and reel gear does not typically interact with the sea floor; therefore, this gear type is unlikely to impact EFH.

NMFS initiated a Five-Year Review again in 2014, analyzing Atlantic HMS fishing gear (BLL, gillnet, and rod and reel gear) impacts on EFH. Impacts of shark BLL gear on hermatypic (reef-building) and shallow water corals recently listed under ESA were assessed by NMFS in a Biological Evaluation prepared in October 2014. The analysis conducted in the October 2014 Biological Evaluation stated that, although observer reports indicated interactions between shark BLL gear and coral, sea fans, and other coral reef life occurs, these instances are very rare. The Biological Evaluation found that fishermen setting shark BLL gear prefer sandy bottom away from coral habitats and generally set gear on sandy bottoms. NMFS has determined that the continued operation of the shark BLL fishery may affect, but not adversely affect, ESA and non-ESA listed deep water coral species or any of the designated coral EFH (NMFS 2014).

Both shallow and deep-water coral interactions with BLLs could cause long-term impacts to the reef habitat, but due to minimal interactions with coral habitats spatially and temporally, NMFS does not anticipate any adverse effects on shallow or deep water coral with BLL gear. NMFS conducted a literature review as part of Draft Amendment 10 to the 2006 Consolidated HMS FMP (81 FR 62100, September 8, 2016) to investigate additional impacts of HMS fishing gears on Atlantic HMS EFH since Amendment 1, and the Atlantic HMS EFH 5-Year Review document completed in 2015. NMFS did not find any significant changes in effects to HMS EFH from HMS and non-HMS fishing gears. NMFS found no new information that PLL, BLL, and rod and reel gear would have adverse effects on EFH. The Final Amendment 10 was published on September 6, 2017. The final rule measures are not expected to change the fishing gears authorized relative to the status quo. Therefore, the final action in the context of the fishery as a whole will not have an adverse impact on EFH; therefore, an EFH consultation is not required.

4.5. COMPARISON OF NEPA ALTERNATIVES

Table 4.2 provides a qualitative comparison of the impacts associated with the various alternatives considered in this rulemaking. This table summarizes the impacts that were discussed in detail in Chapters 4.1 – 4.5.

Table 4.2 Comparison of alternatives considered

Alternative	Ecological	Protected Resources	Socioeconomic
Alternative 1a: No Action: Maintain the 80-percent threshold for shark fishery closures	Neutral	Neutral	Neutral
Alternative 1b: Change the shark fishery closure threshold to 90-percent of the available overall, regional, and/or sub-regional quota	Neutral; with moderate adverse direct ecological impacts if there are large landings and late reports after closure	Neutral	Neutral; minor beneficial direct socioeconomic impacts if there is an additional portion of the available quota that fishermen could land; minor adverse direct effects if there is overharvest and quotas need to be reduced
Alternative 1c: Change the shark fishery closure threshold to 70-percent of the available overall, regional, and/or sub-regional quota	Neutral; with minor beneficial indirect impacts if there is a large amount of underharvest remaining every year	Neutral	Neutral; minor adverse direct socioeconomic impacts if there is a large amount of underharvest remaining every year
Alternative 1d: Change the shark fishery closure threshold to 90-percent in the Atlantic Region, while maintaining the Gulf of Mexico closure threshold or overall non-regional threshold at 80-percent	Neutral; minor adverse ecological impacts if overharvest occurs	Neutral	Neutral; minor beneficial direct socioeconomic impacts if there is an additional portion of the available quota that fishermen could land

Alternative 1e: Establish objective criteria to evaluate whether a shark fishery could be closed when the fishery’s landings reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, or allowed to remain open until 90-percent of the applicable quota is reached	Neutral	Neutral	Neutral; minor beneficial direct socioeconomic impacts from being able to land sharks that would otherwise have remained unharvested
Alternative 1f: <i>Allow a shark fishery to remain open after the fishery’s landings have reached or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, if the fishery’s landings are not projected to reach 100 percent of the applicable quota before the end of the season – Preferred Alternative</i>	Neutral	Neutral	Neutral; minor beneficial direct socioeconomic impacts if quota is fully utilized
Alternative 2a: No action: Maintain five-day period between filing of the closure notice with the Office of the Federal Register and the closure going into effect	Neutral	Neutral	Neutral
Alternative 2b: Change minimum notice time between filing of the closure notice with the Office of the Federal Register and the closure going into effect to three days	Neutral	Neutral	Neutral;
Alternative 2c: Allow immediate closure of a shark fishery upon filing of the closure notice with the Office of the Federal Register	Neutral	Neutral	Neutral; minor adverse direct socioeconomic impacts if trips either underway or planned are interrupted
Alternative 2d: <i>Change minimum notice time between filing of the closure notice with the Office of the Federal Register and the closure going into effect to four days – Preferred Alternative</i>	Neutral	Neutral	Neutral

4.6 CUMULATIVE IMPACTS

Under NEPA, a cumulative impact is the impact on the environment that results from the incremental impact of the final action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time (40 CFR § 1508.7). A cumulative impact includes the total effect on a natural resource, ecosystem, or human community due to past, present, and reasonably foreseeable future activities or actions of federal, non-federal, public, and private entities. Cumulative impacts may also include the effects of natural processes and events, depending on the specific resource in question. Cumulative impacts include the total of all impacts to a particular resource that have occurred, are occurring, and would likely occur as a result of any action or influence, including the direct and reasonably foreseeable indirect impacts of a federal activity. The goal of this chapter is to describe the cumulative ecological, economic, and social impacts of past, present, and reasonably foreseeable future actions on shark fishermen and the environment, with regard to the management measures presented in this document. For an overview of other non-HMS fisheries for which shark fishermen currently have permits and the shark fishermen's ability to enter other fisheries, please refer to the 2016 SAFE Report.

The management measures considered above would provide more flexible regulations regarding when NMFS could close commercial shark fisheries, improving efficacy of management while also avoiding overharvests in these fisheries. Because the commercial quotas would remain unchanged for all commercial shark fisheries and fishermen would continue to be quota-limited, there would likely be no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort. Therefore, the preferred actions would simultaneously have largely neutral cumulative ecological impacts and neutral cumulative impacts on protected species and marine mammals. Additionally, there would be no major adverse effects on EFH, and the preferred actions would both maintain sustainable shark fisheries and maintain the status quo for species currently under a rebuilding timeframe.

4.7. IMPACTS ON PROTECTED RESOURCES

On December 12, 2012, consistent with Section 7(b)(4) of the ESA, the NMFS Southeast Regional Office (SERO) Protected Resources Division (PRD) determined that the continued operation of the Atlantic shark fisheries is not likely to jeopardize the continued existence of Atlantic sturgeon, smalltooth sawfish, or any species of ESA-listed large whale or sea turtles. In order to be exempt from take prohibitions established by Section 9 of the ESA, NMFS must comply with the Reasonable and Prudent Measures (RPMs) and Terms and Conditions (TCs) listed in the 2012 Shark BiOp. The following sub-chapters contain a discussion of effects on protected resources that may result from the preferred alternative in this final action.

Impacts to protected resources resulting from the adoption of any of the alternatives related to changing the closure landing threshold or closure notice are expected to be neutral. Under Alternative 1a and 2a, the No Action alternatives, there would be no expected increase in fishing effort level or rates, as shark fisheries would continue to operate under the same conditions. Under Alternatives 1b, 1c, 1d, 1e, 1f, 2b, 2c, and 2d there would be no expected

changes in mortality or risk to marine mammals or sea turtles from the No Action Alternatives (1a and 2a), as changes to the closure landing threshold and closure notice represent administrative changes in the way quotas are monitored. None of the alternatives would change any of the commercial shark quotas, catch rates, or fishing effort and as such should not have any further impacts on protected resources.

Specifically, NMFS consulted over the effects of the use of commercial shark fishing gear, including BLL and gillnet gear, on listed species and critical habitat as required by Section 7 of the ESA. On December 12, 2012, NMFS released a BiOp for shark fisheries, which stated that the continued operation of the Atlantic shark fisheries is not likely to jeopardize the continued existence of Atlantic sturgeon, smalltooth sawfish, or any ESA-listed species of large whale or sea turtle. NMFS has implemented the RPMs and Terms and Conditions of the 2012 BiOp.

As the result of the July 2014 final rule, among other things, NMFS listed the Central and Southwest Atlantic DPS of scalloped hammerhead sharks as threatened species under the ESA (79 FR 38213, July 3, 2014) and the September 2014 final rule listing as threatened five new Caribbean species of corals and maintaining the threatened listing for two other Caribbean coral species (79 FR 53851, September 10, 2014). On October 30, 2014, the HMS Management Division requested reinitiation of ESA section 7 consultation for the 2006 Consolidated HMS Fishery Management Plan activities, as amended and as previously consulted on in the 2012 Shark BiOp.

In that October 30, 2014, request, NMFS determined that ongoing operation of the commercial shark fishery consistent with the reasonable and prudent alternative and reasonable and prudent measures in the existing biological opinion and consistent with conservation and management measures is not likely to jeopardize the continued existence of any listed species including the hammerhead or coral species consistent with section 7(a)(2) of the ESA, or result in an irreversible or irretrievable commitment of resources consistent with section 7(d) of the ESA during this re-initiation of consultation. NMFS may implement requirements of the new BiOp for the shark fishery in the future. This action is not anticipated to affect the above-referenced ESA-listed species in any way not previously analyzed and there is no new information that would alter this conclusion. ESA-listed species taken in the Atlantic shark fisheries would be considered against the Incidental Take Statement in the 2012 BiOp for the Atlantic shark fisheries.

Regarding marine mammals, BLL and rod and reel gear are considered Category III fisheries, which are those with a remote likelihood of serious injury or mortality to marine mammals. While gillnet gear is a Category II fishery, meaning there is occasional serious injury or mortality to marine mammals, the final management measures are not expected to alter fishing practices, techniques, or effort significantly and therefore should not have any further impacts on marine mammals.

4.8. ENVIRONMENTAL JUSTICE CONCERNS

Executive Order 12898 requires agencies to identify and address disproportionately high and adverse environmental effects of its regulations on minority and low-income populations. To determine whether environmental justice concerns exist, the demographics of the affected

area should be examined to ascertain whether minority populations and low-income populations are present. If so, a determination must be made as to whether implementation of the alternatives may cause disproportionately high and adverse human health or environmental effects on these populations.

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

Changing the landings threshold that prompt a shark fishery closure and the minimum time between filing of the closure with the Office of the Federal Register and the closure becoming effective would likely have neutral socioeconomic impacts in the short and long-term because there is no change in the commercial quotas and participants would still be limited by the existing quotas. As such, the preferred alternatives would not have any effects on human health nor are they expected to have any disproportionate social or economic effects on minority and low-income communities.

4.9. COASTAL ZONE MANAGEMENT ACT (CZMA) CONCERNS

The Coastal Zone Management Act (CZMA, 1972; reauthorized in 1996) requires that federal actions be consistent to the extent practicable, with the enforceable policies of all state coastal zone management programs. This action proposes to revise the current regulations related to season closures for commercial shark fisheries. Overall, this action explores alternatives that would change the landings threshold that prompts a shark fishery closure, and the length of time between public notice and the effective date of a given fishery closure with the goal of improving the efficacy of management while also avoiding overharvests in these fisheries. NMFS finds the alternatives analyzed in this action to be consistent to the maximum extent practicable with the enforceable policies of states that have approved coastal zone management programs. NMFS has determined that this final rule will not affect the coastal zone of any state beyond that previously analyzed in the consistency determinations for Amendments 2, 5a, 6, and 9 sent to the states following publication of the applicable rules. Consequently, no additional consistency consultation is required.

5. MITIGATION AND UNAVOIDABLE ADVERSE IMPACTS

Mitigation is an important mechanism that Federal agencies can use to minimize, prevent, or eliminate damage to the human and natural environment associated with their actions. As described in the CEQ regulations, agencies can use mitigation to reduce environmental impact in several ways. Mitigation may include one or more of the following: avoiding the impact by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and compensating for the impact by replacing or providing substitute resources or environments. The mitigation measures discussed in an EA must cover the range of impacts of the proposal and must be considered even for impacts that by themselves would not be considered "significant." If an action is considered as a whole to have significant effects, all of its specific effects on the environment must be considered, and mitigation measures must be developed where it is feasible to do so. NMFS may consider mitigation, provided that the mitigation efforts do not circumvent the goals and objectives of the rulemaking or the mandate to rebuild fisheries under the Magnuson-Stevens Act. More information on the ecological, social, and economic impacts of the preferred alternatives are found in Chapter 4 and not repeated here.

5.1. MITIGATING MEASURES

Preferred Alternatives 1f and 2d, allowing a shark fishery to remain open after the fishery's landings have reached or are projected to reach 80-percent as long as landings are not projected to reach 100 percent before the end of the fishing year, and changing the closure notice to four days, respectively, would likely have neutral ecological impacts, since an increase in overall fishing effort or fishing mortality is not expected. These alternatives would have no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort as the commercial quotas would remain the same. Therefore, no effects on the environment as a result of this action would need to be mitigated.

5.2 UNAVOIDABLE ADVERSE IMPACTS

In general, there are no unavoidable adverse ecological impacts expected as a result of the preferred alternatives, as discussed in Chapter 4. Thus, the actions would not be expected to change previously analyzed endangered species or marine mammal interaction rates or magnitudes, or substantially alter current fishing practices or bycatch mortality rates. In addition, NMFS does not expect this action to have any significant adverse socioeconomic impacts, as this action focuses on increasing flexibility when closing shark fisheries, to facilitate the use of available quota used while still preventing overharvests.

5.3. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

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

6.0 REGULATORY IMPACT REVIEW

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest, and is conducted to comply with Executive Order 12866 (E.O. 12866). The RIR provides analyses of the economic benefits and costs of each alternative to the nation and the fishery as a whole. The information contained in Chapter 6, taken together with the data and analysis incorporated by reference, comprise the complete RIR.

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

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

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

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

6.1. DESCRIPTION OF MANAGEMENT OBJECTIVES

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

6.2. DESCRIPTION OF FISHERY

6.2.1. 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 shark fishing activities. As of October 2017, there were a total of 490 commercial limited access permit holders in the Atlantic shark fishery (221 directed and 269 incidental permits) and 154 open access smoothhound shark permit holders (Table 6.1). Of those 221 commercial directed limited access permit holders, 32 permit holders landed LCS, 30 permit holders landed non-blacknose SCS, and 14 permit holders landed blacknose sharks in the Atlantic. In the Gulf of Mexico region, 10 permit holders landed LCS in the western sub-region, 6 permit holders landed LCS in the eastern sub-region, and 8 permit holders landed SCS. For pelagic sharks, 47 directed permit holders landed sharks. Of those 154 open access smoothhound shark permit holders, 75 permit holders landed sharks in the Atlantic region. The 2017 SAFE Report provides a summary of these permit holders since 2012. Further detail regarding commercial permit holders is provided in Chapter 3.

Table 6.1 Number of shark limited access and smoothhound permit holders between 2013 and 2017. Note: The 2017 permit numbers are through October 2017.

Year	# Directed Shark	# Incidental Shark	# Smoothhound Shark
2013	220	265	N/A
2014	206	258	N/A
2015	224	275	N/A
2016	223	271	142
2017	221	269	154

As of October 2017, there were a total of 113 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 and its amendments. All dealer permit holders are required to submit reports detailing the nature of their business. Since 2013, shark dealers must submit weekly electronic dealer reports on all HMS, other than BFT, that they purchase. To facilitate quota monitoring “negative reports” are also required from shark 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 2013-2017. Note: The 2017 permit numbers are through October 2017. The actual number of permits may change as permit holders move or sell their businesses.

Year	Atlantic shark dealers
2013	97
2014	96
2015	102
2016	111
2017	113

6.2.2. GROSS REVENUE OF THE COMMERCIAL SHARK FISHERMEN

Table 4.1 in Chapter 4 provides data on the prices shark fishermen received at the dock. The average values for ex-vessel prices and the estimated landings of shark meat are from the HMS eDealer database.

For information on the operating costs of both the PLL and BLL fisheries, please refer to the Section 6.1.3 in the 2017 SAFE Report for Atlantic HMS.

6.3. STATEMENT OF PROBLEM

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

6.4. DESCRIPTION OF EACH ALTERNATIVE

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

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

Table 6.4 summarizes the net economic benefits and costs of each of the alternatives analyzed in this EA. Additional details and more complete analyses are provided in Chapter 4.

Table 6.4 Net Economic Benefits and Costs of Alternatives.

Alternatives	Economic Benefits	Economic Costs
Alternative 1a: No action – Maintain the 80-percent threshold for shark fishery closures	This alternative would have neutral economic benefits, as fishing effort, quotas, and total landings are not expected to change.	This alternative would have neutral economic costs because fishing effort, quotas, and total landings are not expected to change.
Alternative 1b: Change the shark fishery closure threshold to 90-percent of the available overall, regional, and/or sub-regional quota	This alternative would have minor economic benefits, if fishermen are able to catch more of their quota without exceeding the quota.	This alternative would have minor economic costs if NMFS was unable to close a management unit before the quota was exceeded, resulting in reduced quotas the following year.
Alternative 1c: Change the shark fishery closure threshold to 70-percent of the available overall, regional, and/or sub-regional quota	This alternative would have minor economic benefits for porbeagle sharks since the 30-percent buffer would ensure the quotas are not exceeded. It would also reduce the risk of potential closures in future fishing years.	This alternative would have minor economic costs, if there is a large amount of underharvest each year. These costs will be in the short term however because the fisheries have achieved near full quota utilization in many shark fisheries.
Alternative 1d: Change the shark fishery closure threshold to 90-percent in the Atlantic Region, while maintaining the Gulf of Mexico closure threshold or overall non-regional threshold at 80-percent	This alternative would have minor economic benefits for Atlantic region shark fishermen if they are able to catch more of the quota with the higher closure threshold and neutral economic benefits for other fishermen, as fishing effort, quotas, and total landings are not expected to change.	This alternative would have minor economic costs for shark fishermen if NMFS was unable to close a management unit before the quota was exceeded.
Alternative 1e: Establish objective criteria to evaluate whether a shark fishery could be closed when the fishery’s landings reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, or allowed to remain open until 90-percent of the applicable quota is reached	This alternative would have minor economic benefits, if fishermen are able to catch more of their quota if the higher closure threshold is used.	This alternative would have neutral economic costs because fishing effort, quotas, and total landings are not expected to change.

<p><i>Alternative 1f: Allow a shark fishery to remain open after the fishery’s landings have reached or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, if the fishery’s landings are not projected to reach 100 percent of the applicable quota before the end of the season.– Preferred Alternative</i></p>	<p>This alternative would have minor economic benefits, if fishermen are able to catch more of their quota with the higher closure threshold.</p>	<p>This alternative would have minor economic costs if the projections were incorrect and NMFS did not close a management unit before the quota was exceeded.</p>
<p>Alternative 2a: No action – Maintain five-day period between filing of the closure notice with the Federal Registry and the closure going into effect</p>	<p>Same as 1a.</p>	<p>Same as 1a.</p>
<p>Alternative 2b: Change minimum notice time between filing of the closure notice with the Office of the Federal Register and the closure going into effect to three days</p>	<p>This alternative would have neutral economic benefits, as fishing effort, quotas, and total landings are not expected to change.</p>	<p>This alternative would have minor economic costs, if there is a large amount of underharvest each year and if fishermen have to discard sharks.</p>
<p>Alternative 2c: Allow immediate closure of a shark fishery upon filing of the closure notice with the Federal Registry</p>	<p>This alternative would have neutral economic benefits, as fishing effort, quotas, and total landings are not expected to change.</p>	<p>This alternative would have minor economic costs, if rapid closures result in large amounts of underharvest each year and if fishermen have to discard sharks. Additional minor costs could be incurred if planned and prepared for trips needed to be canceled with a closure.</p>
<p><i>Alternative 2d: Change minimum notice time between filing of the closure notice with the Office of the Federal Register and the closure going into effect to four days - Preferred Alternative</i></p>	<p>This alternative would have neutral economic benefits, as fishing effort, quotas, and total landings are not expected to change.</p>	<p>This alternative would have minor economic costs, if there is a large amount of underharvest each year and if fishermen have to discard sharks.</p>

6.6. CONCLUSION

As noted above, under E.O. 12866, a regulation is a “significant regulatory action” if it is likely to: (1) have an annual effect on the economy of \$100 million or more or adversely affect in

a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order. Pursuant to the procedures established to implement section 6 of E.O. 12866, the Office of Management and Budget has determined that this action is not significant. A summary of the expected net economic benefits and costs of each alternative, which are based on supporting text in Chapter 4, can be found in Table 6.4.

7.0 FINAL REGULATORY FLEXIBILITY ANALYSIS

This Final Regulatory Flexibility Analysis (FRFA) is conducted to comply with the Regulatory Flexibility Act (5 U.S.C. §§ 601 et seq.) (RFA). The goal of the RFA is to minimize the economic burden of federal regulations on small entities. To that end, the RFA directs federal agencies to assess whether a final 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 final rule that accomplish the objectives of applicable statutes and minimize any significant effects on small entities. Certain data and analysis required in an FRFA are also included in other Chapters of this document. Therefore, this FRFA incorporates by reference the economic analyses and impacts in Chapter 4 of this document.

7.1. DESCRIPTION OF THE REASONS WHY ACTION IS BEING CONSIDERED

Please see Chapter 1 for a description of the reasons why action is being considered for the final action.

7.2. STATEMENT OF THE OBJECTIVES OF, AND LEGAL BASIS FOR, THE FINAL RULE

Section 604(a)(1) of the RFA requires a succinct statement of the need for and objectives of the rule. The purpose of this final action is to consider modifications to the percent landings threshold that triggers a shark fishery closure to a level that allows fishermen to utilize the full quota while avoiding under- and overharvest, and to determine a length of time between public notice and the effective date of a given fishery closure while avoiding under- and overharvest.

7.3. STATEMENT OF SIGNIFICANT ISSUES RAISED BY PUBLIC COMMENTS IN RESPONSE TO THE IRFA

Section 604(a)(2) requires a summary of significant issues raised by public comment in response to the IRFA and 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 did not receive any comments specifically on the IRFA, nor did the Agency receive any comments regarding the economic impacts of the rule.

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

Section 604(a)(4) of the RFA requires Agencies to provide an estimate of the number of small entities to which the rule would apply. The Small Business Administration (SBA) has established size criteria for all major industry sectors in the United States, including fish harvesters. Provision is made under SBA's regulations for an agency to develop its own industry-specific size standards after consultation with Advocacy and an opportunity for public comment (see 13 CFR 121.903(c)). Under this provision, NMFS may establish size standards that differ from those established by the SBA Office of Size Standards, but only for use by

NMFS and only for the purpose of conducting an analysis of economic effects in fulfillment of the agency's obligations under the RFA. To utilize this provision, NMFS must publish such size standards in the Federal Register (FR), which NMFS did on December 29, 2015 (80 FR 81194, December 29, 2015). In this final rule effective on July 1, 2016, NMFS established a small business size standard of \$11 million in annual gross receipts for all businesses in the commercial fishing industry (NAICS 11411) for RFA compliance purposes. NMFS considers all HMS permit holders to be small entities because they had average annual receipts of less than \$11 million for commercial fishing.

As discussed in Section 6.2.1, the final rule would apply to the 113 commercial shark dealers, 490 commercial limited access permit holders in the Atlantic shark fishery (221 directed and 269 incidental permits), and 154 open access smoothhound shark permit holders, based on an analysis of permit holders as of October 2017. A further breakdown of these permit holders is provided in Table 6.1. Not all permit holders are active in the fishery in any given year. Active directed permit holders are defined as those with valid permits that landed one shark based on HMS electronic dealer reports. Of those 221 commercial directed limited access permit holders, 32 or 14 percent of permit holders landed LCS, 30, or 14 percent of permit holders landed non-blacknose SCS, and 14, or 6 percent of permit holders landed blacknose sharks in the Atlantic. In the Gulf of Mexico region, 10, or 5 percent of permit holders landed LCS in the western sub-region, 6, or 3 percent of permit holders landed LCS in the eastern sub-region, and 8, or 4 percent of permit holders landed non-blacknose SCS throughout the region. Of directed limited access permit holders, 47, or 21 percent landed pelagic sharks. Of the 154 open access smoothhound shark permit holders, 75, or 49 percent of permit holders landed sharks in the Atlantic region. NMFS has determined that the final rule would not likely affect any small governmental jurisdictions. More information regarding the description of the fisheries affected, and the categories and number of permit holders can be found in Chapter 6.

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

Section 604(a)(5) of the RFA requires Agencies to describe any new reporting, record-keeping and other compliance requirements. The action does not contain any new collection of information, reporting, or record-keeping requirements. The alternatives considered would review and modify the percent landings threshold that prompts a shark fishery closure, and the length of time between public notice and the effective date of a given fishery closure with the goal of avoiding under- and overharvests in these fisheries.

7.6. 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

Under section 604(a)(6) of the FRFA is to describe 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 why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected. These impacts are discussed below and in Chapters 4 and 6 of this document.

Alternative 1a, the No Action alternative, would maintain the existing 80-percent threshold to close the shark fishery and maintain current shark quotas. Based on the 2017 ex-vessel prices, the potential average annual gross revenue for the 10 active directed permit holders from blacktip, aggregated LCS, and hammerhead shark meat in the western Gulf of Mexico sub-region would be \$312,411, and average annual gross revenue from shark fins would be \$187,631. Thus, potential average annual gross revenue by each active directed permit holder for blacktip, aggregated LCS, and hammerhead shark landings in the western Gulf of Mexico sub-region would be \$50,004 $((312,411+187,631)/10$ active vessels). The potential total average annual gross revenue for the six active directed permit holders from blacktip, aggregated LCS, and hammerhead shark meat in the eastern Gulf of Mexico sub-region would be \$113,327, and average annual gross revenue from shark fins would be \$70,954. Thus, potential total average annual gross revenue by each active directed permit holder for blacktip, aggregated LCS, and hammerhead shark landings in the eastern Gulf of Mexico region would be \$30,713 $((113,327+70,954)/6$ active vessels). The potential total average annual gross revenue for the eight active directed permit holders for non-blacknose SCS and smoothhound shark meat in the Gulf of Mexico would be \$54,614, while revenue from shark fins would be \$33,682. Thus, potential total average annual gross revenue by each active directed permit holder for non-blacknose SCS in the Gulf of Mexico would be \$11,036 $((54,614+33,682)/8$ active vessels). Since there have been no landings of smoothhound sharks in the Gulf of Mexico, the annual gross revenue for the active directed permit holders would be zero. The potential annual gross revenues for the 32 active directed permit holders from aggregated LCS and hammerhead shark meat in the Atlantic would be \$283,630, while revenue from shark fins would be \$97,566. Thus, potential total average annual gross revenues by each active directed permit holder for aggregated LCS and hammerhead shark in the Atlantic would be \$11,912 $((283,630+97,566)/32$ active vessels). The potential annual gross revenues for the 30 active directed permit holders from non-blacknose SCS shark meat in the Atlantic would be \$266,150, while revenue from shark fins would be \$54,869. Thus, potential total average annual gross revenue by each active directed permit holder for non-blacknose SCS in the Atlantic would be \$10,700 $((266,150+54,869)/30$ active vessels). The potential annual gross revenues for the 14 active directed permit holders from blacknose shark meat in the Atlantic would be \$18,103, while revenue from shark fins would be \$3,412. Thus, potential total average annual gross revenue by each active directed permit holder for blacknose in the Atlantic would be \$1,537 $((18,103+3,412)/14$ active vessels). The potential annual gross revenues for the 75 active directed permit holders from smoothhound shark meat in the Atlantic would be \$582,233, while revenue from shark fins would be \$48,808. Thus, potential total average annual gross revenues by each active directed permit holder for smoothhound shark in the Atlantic would be \$8,414 $((582,233+48,808)/75$ active vessels). The potential annual gross revenues for the 47 active directed permit holders from pelagic sharks (blue, porbeagle, shortfin mako, and thresher sharks) meat would be \$381,580, while revenue from shark fins would be \$20,134. Thus, potential total average annual gross revenues by each active directed permit holder for pelagic sharks would be \$8,547 $((381,580+20,134)/47$ active vessels). Alternative 1a would likely result in neutral direct short- and long-term socioeconomic impacts because shark fishermen would continue to operate

under current conditions, with shark fishermen continuing to fish at similar rates. The No Action alternative could also have neutral indirect impacts to those supporting the commercial shark fisheries, since the retention limits, and thus current fishing efforts, would not change under this alternative.

Under Alternative 1b, NMFS would change the shark fishery closure threshold to 90-percent of the available overall, regional, and/or sub-regional quota. This alternative is likely to have neutral direct and indirect short- and long-term socioeconomic impacts because the base quotas would not change for any of the management groups and fishermen would still be limited in the total amount of sharks that could be harvested. This alternative could potentially lead to minor beneficial direct economic impacts if fishermen can land available quota that may have remained unharvested under the current 80-percent threshold. For example, in 2017, the quota for the blacktip, aggregated LCS, and hammerhead management groups from the western Gulf of Mexico sub-region was underutilized by 310,546 lb dw or 25 percent of the adjusted annual base quota, valued at \$247,518 in potential ex-vessel revenue. Assuming all of this unharvested quota were caught, based on the 10 vessels that landed LCS in the western Gulf of Mexico sub-region, the individual vessel impact would be an approximate gain of \$31,055 per year. This does not include incidental permit holders, who would receive a smaller amount per year. For example, in the Atlantic, the blacknose shark management group was underutilized by 21,238 lb dw or 35 percent of the quota, valued at \$25,807 in potential ex-vessel revenue. Based on the 14 vessels that landed blacknose in the Atlantic region, the individual vessel impact would be an approximate gain of \$1,843 per year. This does not include incidental permit holders, who would receive a smaller amount per year. Alternative 1b could also lead to minor adverse socioeconomic impacts in the short-term if the quotas are overharvested, which would lead to lower quotas the following year. In addition, this alternative could potentially lead to minor adverse socioeconomic impacts if there is a large increase of landings combined with late dealer reporting, after the fishery is closed, that resulted in overharvest. For instance, the current 80-percent threshold has not been effective at closing in time to prevent overharvest of shark species that have small quotas, such as porbeagle sharks. As such, changing the percent closure threshold to 90-percent might be detrimental to the porbeagle shark fishery, as it may not provide sufficient buffer to prevent overharvest and season closures that occurred in 2013 and 2015. However, this negative impact would be only in the short-term as NMFS has the ability to monitor quotas on a weekly basis and promptly close the shark fishery.

Under Alternative 1c, NMFS would change the shark fishery closure threshold to 70-percent of the available overall, regional, and/or sub-regional quota. This change would potentially leave a larger buffer for fishermen to complete trips and receive delayed dealer reports. It is likely the change in threshold to 70-percent would have neutral direct and indirect short- and long-term socioeconomic impacts since none of the commercial quotas are being changed and NMFS is not expecting an increase in effort or fishing. This alternative could potentially have minor adverse direct socioeconomic impacts if there is a large amount of underharvest remaining every year, after accounting for late dealer reports, that fishermen would no longer be able to harvest as compared to the No Action alternative. For instance, a 10 percent decrease in realized revenue for the western Gulf of Mexico blacktip, aggregated LCS, and hammerhead shark fisheries would equate to approximately \$50,004 (10 percent of \$500,042) loss in ex-vessel revenue. Based on the 10 vessels that landed LCS in the western Gulf of Mexico sub-region, the individual vessel impact would be an approximate loss of \$5,000 per

year. This does not include incidental permit holders, who would receive a smaller amount per year. However, these would be only be in the short-term because the fisheries have achieved close to full quota utilization in recent years for some shark quotas.

Under Alternative 1d, NMFS would change the shark fishery closure threshold to 90-percent in the Atlantic Region, while maintaining the Gulf of Mexico closure threshold or overall non-regional threshold at 80-percent. Alternative 1d provides some flexibility in assigning different closure thresholds between the Atlantic and Gulf of Mexico. In the Atlantic region, this alternative could potentially lead to minor beneficial direct economic impacts if fishermen can land available quota that may have remained unharvested under the current 80-percent threshold. For instance, a 10 percent increase in realized revenue for the Atlantic aggregated LCS and hammerhead shark fisheries would equate to an approximate \$38,119 (10 percent of \$381,196) gain in ex-vessel revenue. Based on the 32 vessels that landed LCS in the Atlantic region, the individual vessel impact would be an approximate increase of \$1,191 per year. This does not include incidental permit holders, who would receive a smaller amount per year. In the Gulf of Mexico region and for fisheries with no region, this alternative could likely result in neutral direct and indirect, short- and long-term socioeconomic impacts because shark fishermen would continue to operate under current conditions, with shark fishermen continuing to fish at similar rates. Impacts in the Gulf of Mexico would therefore be the same as those described in Alternative 1a.

Under Alternative 1e, when any shark fishery species and/or management group landings reach or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, NMFS would evaluate the criteria listed in Chapter 2 before determining if a closure is needed at the 80-percent threshold. This alternative would add additional flexibility to close a fishery depending on a set of criteria, helping to maximize management efficacy while preventing overharvest. If this increased flexibility in determining when to close a fishery leads to full quota utilization of management groups, while still preventing overharvest of shark fisheries, then fishermen could potentially see additional revenue from being able to land sharks that would otherwise have remained unharvested under the existing 80-percent threshold. For instance, a 20 percent increase in realized revenue for the Atlantic aggregated LCS and hammerhead shark fisheries would equate to an approximate \$76,239 (20 percent of \$381,196) gain in ex-vessel revenue. Based on the 32 vessels that landed LCS in the Atlantic region, the individual vessel impact would be an approximate increase of \$2,382 per year. This does not include incidental permit holders, who would receive a smaller amount per year. Based upon these criteria, the fishery could still operate similarly to the status quo 80-percent closure threshold, which would result in neutral socioeconomic impacts as described for Alternative 1a, the status quo alternative. As examples, if a shark species and/or management group quota reaches 80-percent by September 1, then NMFS would evaluate the criteria in Alternative 1e before determining if a closure is needed at the 80-percent threshold in the Gulf of Mexico and Atlantic regions. Based on criteria A (stock status of the relevant species or management group and any linked species and/or management groups) and C (continued landings after the federal closure), NMFS would likely close the shark species and/or management group quota in the Gulf of Mexico. In the Atlantic region, NMFS would likely also close the shark species and/or management group quota based on criteria A since all of the shark species and/or management groups in the region have an overfished or unknown stock status. This would lead to neutral socioeconomic impacts in both regions since there would be no change from current regulations.

If a shark species and/or management group quota reaches 80-percent by December 1, then NMFS would need to evaluate all of the criteria closely before implementing a closure in either the Gulf of Mexico or Atlantic region. A key criterion to evaluate is the likelihood of landings exceeding the quota by December 31 of each year (Criteria E). In the Gulf of Mexico region, NMFS would also consider Criteria C (continued landings after the federal closure) and how this would impact the fishery. In the Atlantic region, NMFS would likely keep the fishery open as long as landings are not projected to exceed the quota by the end of the year.

Under Alternative 1f, the preferred alternative, would allow a shark fishery to remain open after the fishery's landings have reached or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, if the fishery's landings are not projected to reach 100 percent of the applicable quota before the end of the season. If the 80 percent threshold is reached but a closure is not necessary, NMFS would notify the public of this determination in the first monthly shark landings update listserv notice following achievement of the 80 percent level. If a closure is needed, NMFS will file a Notice in the Federal Register reflecting that determination and closing the fishery with the appropriate notice. This alternative, similar to Alternatives 1d and 1e, would provide the flexibility of achieving full quota utilization while still preventing overharvest. This alternative could therefore lead to neutral socioeconomic impacts, similar to Alternative 1a, the status quo alternative, if the landings are projected to reach 100-percent before the end of the fishing year. As examples, if landings of a shark species and/or management group reach 80-percent by September 1, then NMFS would likely have to close the fishery if it was in either the Gulf of Mexico or Atlantic regions since the landings would likely reach 100-percent before the end of the fishing year. This would cause neutral socioeconomic impacts since it would be the status quo for the fishery. If landings of a shark species and/or management group reach 80-percent by December 1, then NMFS would project whether the landings in the Gulf of Mexico and Atlantic regions would reach 100-percent before the end of the fishing year. If NMFS makes a determination that the landings would exceed 100-percent of the available quota before the end of the fishing year (December 31) absent a closure, then NMFS would keep the fishery open. Thus, this could lead to minor beneficial socioeconomic impacts since the quota could be fully utilized. A fishery reaching the 80-percent threshold without being projected to exceed its quota before the end of the season is most likely to occur late in the year.

Under Alternative 2a, NMFS would maintain the status quo and would not change the notice period of five days for the closure of a management group. This alternative would have no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort. As such, it is likely that the No Action Alternative as well as this alternative in combination with any of the Alternatives 1b, 1c, 1d, 1e, or 1f would have both neutral direct and indirect, short- and long-term socioeconomic impacts. If there is a large amount of landings made during the five-day notice and a later closure under Alternatives 1b, 1c, or 1d, then there could be the potential for minor beneficial socioeconomic impacts for those fisheries who have underutilized the quota in recent years. The majority of fishing trips for sharks are currently one day in length, so a five-day closure notice should not result in regulatory discards for these trips. However, this alternative could potentially result in interrupted fishing activities, potentially resulting in regulatory discards if trips were underway at the time of the notice of the closure. For instance, pelagic longline fishing vessels, which can take trips that last several weeks, may need to discard any dead sharks onboard and in their hold if the vessel is unable to land the sharks before the

closure is effective. However, NMFS expects few dead discards as a result of closure notices given that NMFS has implemented several management measures that prohibit retention of some sharks (i.e., silky, oceanic whitetip, hammerhead sharks) on vessels with pelagic longline gear onboard. These management changes have made pelagic longline fishermen unlikely to land many sharks in recent years. In combination with all other alternatives (i.e., 1a, 1c, 1d, 1e, and 1f), except Alternative 1b, this alternative would allow fishermen to complete their fishing trips while still preventing overharvest. In combination with Alternative 1b (e.g., 90-percent closure threshold), there is a risk of overharvest if the landings rate was high before the closure date is effective and potential reduced quotas the following season.

Under Alternative 2b, NMFS would change the minimum notice period to three days instead of the current five-day notice once the fisheries reached a landings threshold necessitating a closure. This change would allow more timely action in closing shark fisheries, helping to prevent overharvest. In combination with all other Alternatives (1a, 1b, 1d, 1e, and 1f), except Alternative 1c, this alternative would reduce the risk of exceeding the quota, especially if the landings rate was high before the closure date is effective. In combination with Alternative 1c (e.g., 70-percent closure threshold), this alternative would increase the risk of a significant underharvest and would cause minor adverse socioeconomic impacts. This alternative would have no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort, as the commercial quotas would remain the same. Therefore, it is likely that this alternative would have both neutral direct and indirect, short- and long-term socioeconomic impacts. This alternative could potentially result in interrupted fishing activities for pelagic longline vessels, which generally take trips up to nine days in length, potentially resulting in regulatory discards if shark trips were underway at the time of the closure and the closure was immediate upon filing of the closure notice. However, NMFS expects few dead discards as a result of the closure notice timing as most pelagic longline fishermen do not target sharks and are unlikely to land many sharks given recent management measures to reduce shark mortality on pelagic longline vessels. In addition, the preferred time before the closure is effective is well within the range of the current directed shark trip lengths (i.e., one to two days). This alternative was preferred in the draft EA primarily because it would increase flexibility to close the fishery as needed while still preventing overharvest and allowing sufficient time for most fishermen to complete trips underway at the time of the notice of the closure. Based on public comment, this alternative is no longer preferred. A new preferred alternative (2d) better addresses concerns from the States that they need more than three days' notice in order to close state waters in conjunction with federal waters while also addressing NMFS' need to increase flexibility to close the fishery as needed while still preventing overharvest.

Under Alternative 2c, NMFS would change the timing of shark fishery species and/or management group closures to allow immediate closure upon filing of the closure notice with the Office of the Federal Register. This alternative would allow timely action in closing shark fisheries, helping to prevent overharvest. In combination with all other alternatives, this alternative would either reduce the risk of exceeding the quota (i.e., Alternatives 1a, 1b, 1d, 1e, and 1f) or increase the risk of a significant underharvest (i.e., Alternative 1c). Therefore, it is likely that this alternative would have both neutral direct and indirect, short- and long-term economic impacts. However, as described in above, this alternative could potentially result in interrupted fishing activities with little or no warning to the regulated community, potentially resulting in regulatory discards, if shark trips were underway at the time of the notice of the

closure, with associated loss of revenue. Additionally HMS AP members from several states indicated that some states would have difficulty closing state water fisheries immediately.

Under Alternative 2d, the new preferred alternative, NMFS would change the minimum notice period to four days instead of the current five-day notice once the landings reach a threshold necessitating a closure. This alternative is preferred because it addresses the concerns from the States that they need more than 3 days' notice in order to close state waters in conjunction with federal waters while addressing NMFS need to increase flexibility to close the fishery as needed while still preventing overharvest. In combination with all other alternatives (i.e., 1a, 1c, 1d, 1e, and 1f), except Alternative 1b, Alternative 2d would allow most fishermen, particularly those fishing for sharks, to complete their fishing trips while still reducing the risk of exceeding the quota, especially if landings rate increases substantially between the filing of the closure notice and the effective date of the closure. In combination with Alternative 1b (e.g., 90-percent closure threshold), there is a risk of overharvest if the landings rate was high before the closure date is effective under Alternative 2d. This alternative would likely have both neutral direct and indirect short- and long-term socioeconomic impacts to shark fishery participants because the allowable level of fishing pressure, catch rates, distribution of fishing effort, and the commercial quotas would remain the same.

8.0 COMMUNITY PROFILES

Section 102(2)(a) of the National Environmental Policy Act requires Federal agencies to consider the interactions of natural and human environments by using “a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences in planning and decision-making.” Federal agencies should address the aesthetic, historic, cultural, economic, social, or health effects that may be direct, indirect, or cumulative. The Magnuson-Stevens Act also requires, among other matters, consideration of social impacts. Consideration of the social impacts associated with fishery management measures is a growing concern as fisheries experience variable participation and/or declines in stocks.

Profiles for HMS fishing communities were included in Chapter 9 of the 2006 Consolidated HMS FMP and updated in Chapter 7 of the 2016 Stock Assessment and Fishery Evaluation Reports for Atlantic Highly Migratory Species. These profiles are incorporated here by reference. The shark fisheries of the Atlantic and Gulf of Mexico extend from Maine to Texas and include Puerto Rico and the U.S. Virgin Islands. Directed shark fishing occurs on a seasonal basis, depending on area and the length of the fishing year, and these vessels fish for different species at other times of the year. This final action would affect commercial fishing for shark species and/or management groups in the Atlantic Ocean including the Gulf of Mexico and Caribbean Sea. However, NMFS expects the impacts of the preferred alternatives to be neutral to these permit holders. As described above, NMFS expects the socioeconomic impacts of the preferred alternatives to be neutral to the fishermen in these states.

9.0 OTHER CONSIDERATIONS

9.1. MAGNUSON-STEVENS ACT

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

NS 1 requires NMFS to prevent overfishing while achieving, on a continuing basis, optimum yield from each fishery for the U.S. fishing industry. As summarized in other chapters and in recent documents, over the past several years, NMFS has undertaken numerous management actions, including Amendment 2 (NMFS, 2008), Amendment 3 (NMFS, 2010), Amendment 5a (NMFS, 2015b), Amendment 6 (NMFS, 2015a), and Amendment 5b (NMFS, 2017) to end overfishing and rebuild Atlantic shark stocks. The preferred alternatives were specifically designed to be consistent with NS 1, by allowing more complete utilization of scientifically determined quotas while still preventing overfishing. The preferred alternatives are not expected to have impacts on the allowable level of fishing pressure, catch rates, or distribution of fishing effort. By allowing shark fishing to continue beyond the 80-percent closure threshold when final landings are not projected to exceed the quota, these alternatives maximizes management efficacy while still preventing overharvest. Additionally, changing the minimum notice period for a shark fishery closure allows for more timely management action helping to prevent overharvest.

NS 2 requires that conservation and management measures be based on the best scientific information available. The preferred alternatives are consistent with NS 2 guidelines. The current management measures for Atlantic sharks are based on SEDAR or ICCAT SCRS assessments, which NMFS has determined to be the best scientific information available. Shark fishery landings and price data used to analyze the alternatives are based on dealer reports and self-reported fisheries logbook data, which represent the best scientific information available.

NS 3 requires that, to the extent practicable, an individual stock of fish be managed as a unit throughout its range and interrelated stocks of fish be managed as a unit or in close coordination. The preferred alternatives are consistent with NS 3 because they do not alter any previously established management measures related to regions and/or sub-regions.

NS 4 requires that conservation and management measures not discriminate between residents of different states. Furthermore, if it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation should be fair and equitable to all fishermen; should be reasonably calculated to promote conservation; and should be carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges. The preferred threshold alternative is equitable since it applies to all directed and incidental shark permit holders across all states and regions. The various closure measures would account for differences in regional reporting and the potential for landings after a federal closure.

NS 5 requires that conservation and management measures should, where practicable, consider efficiency in the utilization of fishery resources, with the exception that no such measure has economic allocations as its sole purpose. The preferred alternatives are consistent with NS 5, because the measures are administrative in nature, aimed at providing more flexibility regarding when NMFS could close a fishery while maintaining sustainable fisheries for, and preventing overfishing of Atlantic sharks.

NS 6 states that conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches. The preferred alternatives are consistent with NS 6. They provide more flexibility regarding when NMFS could close a fishery given the changes in the fishery since Amendment 2 (NMFS, 2008) and do not modify current quotas, fishing effort, or catches.

NS 7 states that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication. The preferred alternatives in this document are consistent with NS 7 because they would not implement new requirements that would increase costs for fishermen nor duplicate any current requirements.

NS 8 states that conservation and management measures shall, consistent with the conservation requirements of the Magnuson-Stevens Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to provide for the sustained participation of such communities, and to the extent practicable, minimize adverse economic impacts on such communities. The preferred alternatives are consistent with NS 8. The socioeconomic impacts of these alternatives are expected to be neutral because this action is primarily administrative in nature, targeting improvements to the efficacy of management related to shark fishery closures while still preventing overharvest.

NS 9 states that conservation and management measures shall, to the extent practicable, minimize bycatch, and to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch. The preferred alternatives are consistent with NS 9. The preferred alternatives are not expected to cause significant changes in fishing effort, areas, or practices, and thus are not expected to lead to increases in potential bycatch or increased interactions with non-target, incidentally caught species, including protected species.

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

9.2 E.O. 13132

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

10.0 LIST OF PREPARERS

This Environmental Assessment, Regulatory Impact Review, and Final Regulatory Flexibility Analysis were prepared by Delisse Ortiz, Gray Redding, Lauren Latchford, Guý DuBeck, Chanté Davis, Karyl Brewster-Geisz, Randy Blankinship, Brad McHale, and Margo Schulze-Haugen from the HMS Management Division, Office of Sustainable Fisheries. Please contact the HMS Management Division for a complete copy of current regulations for the Atlantic HMS commercial and recreational fisheries.

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

11.0 LIST OF AGENCIES/PERSONS CONSULTED

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

In September 2017 and March 2018, NMFS solicited opinions and advice from the HMS AP on the range of options presented in the Draft EA. Additionally, NMFS held a public comment period which closed on March 26, 2018. During the public comment period, NMFS held one webinar. NMFS received approximately 19 written and oral comments regarding the shark fishery closure threshold and shark fishery closure notice period from fishermen, states, environmental groups, academia, and other interested parties. Specifically comments were received from the following:

- Anna Baltudis
- Anonymous
- Bob Hueter, Mote Marine Laboratory, AP Member
- Faith Kuzma
- Gina Sanfilippo
- Glen Hopkins, Fisherman
- Jason Adriance, Louisiana Department of Wildlife and Fisheries, AP member
- Jean Publicee
- Katie Westfall, Environmental Defense Fund, AP member
- Kayla Castellanos
- Mariah Pflieger, Oceana
- North Carolina Division of Marine Fisheries
- Pat Augustine, Recreational Fisherman, AP member
- Rusty Hudson, Directed Sustainable Fisheries, Inc., AP member
- Rick Webber, South Jersey Marina, AP Member
- Robert Bogan, Recreational Fishermen, AP member

- Sonja Fordham, Shark Advocates International, AP member
- University of Arizona Environmental Law and Policy Class

Based on the comments received from the HMS AP and through the public comment period, NMFS finalized this EA on the management measures on the fishery closure procedures for the Atlantic shark fisheries.

12.0 REFERENCES

- Hayes CG, Jiao Y, Cortés E. 2009. Stock assessment of scalloped hammerheads in the Western North Atlantic Ocean and Gulf of Mexico. *North American Journal of Fisheries Management* 29:1406-1417.
- NMFS. 2008. Final Amendment 2 to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks, and Highly Migratory. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.
- NMFS. 2010. Final Amendment 3 to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks, and Highly Migratory. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.
- NMFS. 2009. Final Amendment 1 to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks, and Highly Migratory. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.
- NMFS. 2015a. Final Amendment 6 to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks, and Highly Migratory. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.
- NMFS. 2015b. Final Amendment 5a to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks, and Highly Migratory. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.
- NMFS. 2016. Stock Assessment and Fishery Evaluation (SAFE) Report for Atlantic Highly Migratory Species. NOAA, NMFS, Highly Migratory Species Management Division, Silver Spring, MD. 189 pp.
- NMFS. 2017. Final Amendment 5b to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks, and Highly Migratory. NOAA, National Marine Fisheries Service, Highly Migratory Species Management Division, Silver Spring, MD. Public Document.

13.0 FINDING OF NO SIGNIFICANT IMPACT

The Highly Migratory Species (HMS) Management Division of the Office of Sustainable Fisheries submits the attached Environmental Assessment (EA) for Atlantic HMS fisheries for Secretarial review under the procedures of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This EA analyzes the current 80-percent landings threshold that prompts a shark fishery closure and the length of time between public notice and the effective date of a given fishery closure. The responses in the Finding of No Significant Impact statement are supported by the analyses in the EA as well as in the other National Environmental Policy Act (NEPA) documents referenced. Copies of the EA/Regulatory Impact Review/Initial Regulatory Flexibility Analysis are available at the following address:

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

<https://www.fisheries.noaa.gov/topic/atlantic-highly-migratory-species>

The preferred alternatives of this action are:

- Alternative 1f. *Allow a shark fishery to remain open after the fishery's landings have reached or are projected to reach 80-percent of the available overall, regional, and/or sub-regional quota, if the fishery's landings are not projected to reach 100 percent of the applicable quota before the end of the season.*
- Alternative 2d. *Change minimum notice time between filing of the closure notice with the Office of the Federal Register and the closure going into effect to four days.*

The Council on Environmental Quality (CEQ) Regulations state that the determination of significance using an analysis of effects requires examination of both context and intensity, and lists ten criteria for intensity (40 CFR 1508.27). In addition, the Companion Manual for National Oceanic and Atmospheric Administration Administrative Order 216-6A (April 22, 2016) provides sixteen criteria, the same ten as the CEQ Regulations and six additional, for determining whether the impacts of a final action are significant. Each criterion is discussed below with respect to the final action and considered individually as well as in combination with the others.

1. Can the final action reasonably be expected to cause both beneficial and adverse impacts that overall may result in a significant effect, even if the effect will be beneficial?

The beneficial impact of the action are expected to outweigh any minimal adverse impacts associated with this action. Impacts due to actions in this EA would likely be neutral and have

no adverse impacts because the preferred alternative represents an administrative change for when NMFS would close a fishery. Thus the action of the fishery, itself, will not change.

2. Can the final action reasonably be expected to significantly affect public health or safety?

No. The action to allow NMFS to be more efficient at quota monitoring by keeping the fishery open as long as the fishery is not projected to be fully utilized before the end of the season, and allow NMFS more timely action in closing shark fisheries, helping to prevent overharvest is not likely to have substantial adverse impacts on public health and safety because the actions are not expected to change current fishery practices and behaviors. Therefore, no effects to public health and safety are anticipated from their implementation.

3. Can the final action reasonably be expected to result in significant impacts to unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?

No. This action would not result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas because fishing effort would occur in open areas of the Atlantic Ocean that do not contain such unique areas. In addition, the action area does not contain any park land, prime farmlands, wetlands, or wild and scenic rivers, so there could be no impacts to these areas.

4. Are the final action's effects on the quality of the human environment likely to be highly controversial?

No. This action is not expected to have impacts on the quality of the human environment. This action is responsive to repeated past public requests regarding the 80-percent landings threshold and five-day closure notice. Public comment on the proposed action did not indicate the action was controversial. The term "controversial" does not refer to the mere existence of opposition to, or interest in a final action; rather "controversial" refers to cases where a substantial dispute exists as to the size, nature, or effect of the major federal action. Such substantial dispute does not exist here, as the size, nature, and effect of the final action are well-defined by the preferred alternatives.

5. Are the final action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No. Effects on the human environment would be similar to those effects analyzed in similar shark actions since 1999, some of which have been considered in the Final Environmental Impact Statement (FEIS) prepared for the 2006 Consolidated HMS FMP as well as the EISs for the Amendments to the 2006 Consolidated HMS FMP. None of the previous actions resulted in highly uncertain effects or unique or unknown risks. This action allows NMFS to be more efficient at quota monitoring by keeping the fishery open as long as the fishery is not projected to be fully utilized before the end of the season and allows NMFS more timely action in closing shark fisheries, helping to prevent overharvest, none of which involve unique or unknown risks.

6. Can the final action reasonably be expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

No. The purpose of this final action is to update and revise existing HMS regulations that require NMFS close shark fisheries with no fewer than five-days' notice when landings or projections of landings reach 80-percent of the commercial quota. It is NMFS' goal is to improve the efficacy of management while also avoiding overharvests in these fisheries. This action would be responsive to repeated public requests and comments regarding the 80-percent threshold and 5-day closure notice. Therefore, this action does not set a precedent for future action or represent a formal policy direction.

7. Is the final action related to other actions that when considered together will have individually insignificant but cumulatively significant impacts?

No. NMFS does not anticipate there to be any significant cumulative ecological, economic, or social impacts. The management measures considered would provide more flexible regulations regarding when NMFS could close commercial shark fisheries, improving efficacy of management while also avoiding overharvests in these fisheries. Because the commercial quotas would remain unchanged for all commercial shark fisheries and fishermen would continue to be quota-limited, there would likely be no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort. Therefore, the preferred actions would simultaneously have largely neutral cumulative ecological impacts and neutral cumulative impacts on protected species and marine mammals. Additionally, there would be no major impacts on EFH, and the preferred actions would both maintain sustainable shark fisheries and maintain the status quo for species currently under a rebuilding timeframe.

8. Can the final action reasonably be expected to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?

No. The final action would occur in the inshore and offshore waters of the Atlantic Ocean, 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.

9. Can the final action reasonably be expected to have a significant impact on endangered or threatened species, or their critical habitat as defined under the Endangered Species Act of 1973?

No. There would not be any additional negative ecological impacts to endangered or threatened species, or the critical habitat of these species beyond those impacts currently analyzed in the 2012 Biological Opinion (BiOp) for the Atlantic shark and smoothhound shark fisheries. The 2012 Shark BiOp issued under the ESA determined that the continued operation of the Atlantic shark fisheries is not likely to jeopardize the continued existence of Atlantic sturgeon, smalltooth sawfish, or any species of ESA-listed large whale or sea turtles. In order to be exempt from take

prohibitions established by Section 9 of the ESA, NMFS must comply with the RPMs and TCs listed in the 2012 Shark BiOp. Impacts to protected resources resulting from the adoption of any of the alternatives related to changing the closure landing threshold or closure notice are expected to be neutral. Under the preferred alternatives, there would be no expected changes in mortality or risk to sea turtles, as changes to the closure landing threshold and closure notice represents an administrative change in the way quotas are monitored.

As the result of the July 2014 final rule, among other things, NMFS listed the Central and Southwest Atlantic Distinct Population Segments (DPS) of scalloped hammerhead sharks as threatened species under the ESA (79 FR 38213, July 3, 2014) and the September 2014 final rule listing as threatened five new Caribbean species of corals and maintaining the threatened listing for two other Caribbean coral species (79 FR 53851, September 10, 2014). On October 30, 2014, the HMS Management Division requested reinitiation of ESA section 7 consultation for the 2006 Consolidated HMS Fishery Management Plan activities, as amended and as previously consulted on in the 2012 Shark BiOp.

In that October 30, 2014, request, NMFS determined that ongoing operation of the commercial shark fishery consistent with the reasonable and prudent alternative and reasonable and prudent measures in the existing biological opinion and consistent with conservation and management measures is not likely to jeopardize the continued existence of any listed species including the hammerhead or coral species consistent with section 7(a)(2) of the ESA, or result in an irreversible or irretrievable commitment of resources consistent with section 7(d) of the ESA during this re-initiation of consultation. NMFS may implement requirements of the new BiOp for the shark fishery in the future. This action is not anticipated to affect the above-referenced ESA-listed species in any way not previously analyzed and there is no new information that would alter this conclusion. ESA-listed species taken in the Atlantic shark fisheries would be considered against the Incidental Take Statement in the 2012 BiOp for the Atlantic shark fisheries.

10. Can the proposed action reasonably be expected to threaten a violation of Federal, state, or local law or requirements imposed for environmental protection?

No. The action would be consistent with the Magnuson-Stevens Act and the HMS regulations at 50 CFR part 635. NMFS has determined that the final measure is consistent to the maximum extent practicable with the enforceable policies of those coastal states in the Atlantic that have approved coastal zone management programs. Letters will be sent to those states requesting their concurrence when the final rule is filed with the Office of the Federal Register. The final action would not be expected to violate any Federal, state, or local law or requirement imposed for the protection of the environment.

11. Can the final action reasonably be expected to adversely affect stocks of marine mammals as defined in the Marine Mammal Protection Act?

No. Bottom longline and rod and reel gear are considered Category III fisheries, which are those with a remote likelihood of serious injury or mortality to marine mammals. While gillnet gear is a Category II fishery, meaning there is occasional serious injury or mortality to marine

mammals, the final management measures are not expected to alter fishing practices, techniques, or effort significantly and therefore should not have any further impacts on marine mammals.

12. Can the final action reasonably be expected to adversely affect managed fish species?

No. The action is not expected to result in cumulative adverse effects that could have a substantial effect on target species or non-target species. Because the commercial quotas would remain unchanged for all commercial shark fisheries and fishermen would continue to be quota-limited, there would likely be no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort. Therefore, the preferred actions would simultaneously have largely neutral cumulative ecological impacts and neutral cumulative impacts on protected species and marine mammals. Additionally, there would be no major impacts on EFH, and the preferred actions would both maintain sustainable shark fisheries and maintain the status quo for species currently under a rebuilding timeframe.

13. Can the final action reasonably be expected to adversely affect essential fish habitat as defined under the Magnuson-Stevens Fishery Conservation and Management Act?

No. Impacts to EFH due to actions in this EA would likely be neutral and have no adverse effects because the preferred alternative represents an administrative change for when NMFS would close a fishery. There would be no adverse effects on EFH since the alternative would not impact current fishing effort on quota-limited commercial shark fisheries and/or management groups. Additionally, allowing NMFS to be more efficient at quota monitoring by keeping the fishery open as long as the fishery is not projected to be fully utilized before the end of the season and allowing NMFS more timely action in closing shark fisheries, helping to prevent overharvest are not expected to have any impacts on EFH because NMFS this action does not change the overall fishing effort. In the 2006 Consolidated HMS FMP, Amendment 1 to the 2006 Consolidated HMS FMP, and the 2015 Final 5-Year Review of Atlantic HMS EFH NMFS reviewed the various gear types with the potential to affect EFH and, based on the best information available at that time, NMFS determined that shark fishing is not likely to adversely affect EFH. Gears commonly used in the Atlantic shark fisheries include bottom longline, gillnet, and rod and reel gear. Amendment 1 to the 2006 Consolidated HMS FMP analyzed EFH impacts resulting from these gear types. Amendment 1 found that bottom longline and gillnet interact with the sea floor in areas deemed EFH by the regional councils or NMFS, but that the impact did not warrant additional conservation measures. There is no new information on the effects shark fishing gear would have on EFH. Certain fishing gears can have negative effects on EFH, but the preferred alternative is administrative in nature, and not expected to change the fishing gears. Thus, there is no evidence to suggest that implementing the preferred alternative in this draft EA would adversely affect EFH.

14. Can the final action reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

No. The final action is not expected to adversely affect vulnerable marine or coastal ecosystems because the preferred alternative represents an administrative change for when NMFS would close a fishery. Gears commonly used in the shark fishery include bottom longline, gillnet, and

rod and reel gear. Amendment 1 (NMFS, 2009) analyzed EFH impacts resulting from these gear types. Amendment 1 found that bottom longline and gillnet interact with the sea floor in areas deemed EFH by the regional councils or NMFS, but that the impact did not warrant additional conservation measures. Amendment 1 also found that rod and reel gear does not typically interact with the sea floor; therefore, this gear type is unlikely to impact EFH.

Both shallow and deep water coral interactions with BLLs could cause long-term impacts to the reef habitat but, due to minimal interactions with coral habitats spatially and temporally, NMFS does not anticipate any adverse effects on shallow or deep water coral with BLL gear. NMFS conducted a literature review as part of Draft Amendment 10 to the 2006 Consolidated HMS FMP (81 FR 62100, September 8, 2016) to investigate additional impacts of HMS fishing gears on Atlantic HMS EFH since Amendment 1, and the Atlantic HMS EFH 5-Year Review document completed in 2015. NMFS did not find any significant changes in effects to HMS EFH from HMS and non-HMS fishing gears. NMFS found no new information that pelagic longline, bottom longline, and rod and reel gear would have adverse effects on EFH. The final rule measures are not expected to change the fishing gears authorized relative to the status quo. Therefore, the final action is not expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems.

15. Can the final action reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

No. The preferred alternative is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area, because the final action represents an administrative change for when NMFS would close a fishery. This alternative would have no impact on the allowable level of fishing pressure, catch rates, or distribution of fishing effort, and as such would likely have both neutral direct and indirect, short- and long-term ecological impacts on the shark fishery and protected resources as shark quotas would remain unchanged, leaving the fishery to operate in the current conditions. Thus, the final action as a whole is not likely to have substantial adverse impacts on biodiversity and/or ecosystem function within the Atlantic Ocean including the Gulf of Mexico and Caribbean Sea.

16. Can the final action reasonably be expected to result in the introduction or spread of a nonindigenous species?

No. The final action is not expected to result in any change in fishing patterns or behaviors to those previously analyzed in Amendment 2 and the 2006 Consolidated HMS FMP. Most vessels in the Atlantic shark fisheries are small vessels with limited range, hold capacity, and do not travel between ecologically different bodies of water or exchange ballast water. Thus, they do not contribute to the introduction or spread of non-indigenous species.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for this Final Rule to Revise Atlantic Highly Migratory Species Shark Fishery Closure Regulations, it is hereby determined that this final

action will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the final action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an environmental impact statement for this action is not necessary.

Alan D. Risenhoover
Director, Office of Sustainable Fisheries, NOAA

Date