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8.0 FINAL REGULATORY FLEXIBILITY ANALYSIS

The Final Regulatory Flexibility Analysis (FRFA) is conducted to comply with the Regulatory Flexibility Act (5 USC 601 et. seq.) (RFA). The goal of the RFA is to minimize the economic burden of federal regulations on small entities. To that end, the RFA directs federal agencies to assess whether the proposed regulation is likely to result in significant economic impacts to a substantial number of small entities, and identify and analyze any significant alternatives to the proposed rule that accomplish the objectives of applicable statutes and minimize any significant effects on small entities. Certain data and analysis required in a FRFA are also included in other chapters of this FEIS. They include: Chapter 1 (purpose and need for action), Chapter 2 (alternative regulatory options to meet the purpose and need), Chapter 3 (description of the affected regulated community), Chapters 4 (economic consequences of amendment and implementing regulations), 6 (extensive discussion of economic impacts of alternative approaches) and Chapter 7 (Regulatory Impact Review). Therefore, the FRFA incorporates the economic impacts identified in the FEIS by reference as supporting data for this analysis.

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

Please see Chapter 1 for a full description of the objective of the proposed rule amendments to the 2006 Consolidated HMS FMP and implementing regulations including proposed fishery management actions. The management goals and objectives of the preferred management measures are to provide for the sustainable management of shark species under authority of the Secretary consistent with the requirements of the Magnuson-Stevens Act and other statutes which may apply to such management, including the ESA, MMPA and ATCA. The primary mandate of the Magnuson-Stevens Act is for the Secretary to provide for the conservation and management of HMS through development of an FMP for species identified for management and to implement the FMP with necessary regulations. In addition, the Magnuson-Stevens Act directs the Secretary, in managing HMS to prevent overfishing of species while providing for their OY on a continuing basis and to rebuild fish stocks that are considered overfished. The management objectives of the preferred management measures are to amend the 2006 Consolidated HMS FMP to ensure that overfishing of both the blacknose shark and short fin mako is ended, the blacknose shark stock is rebuilt, and smooth dogfish is brought under the management jurisdiction of the Secretary.

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

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

Comment 1 NMFS received comments regarding the current condition of shark product markets.

Response 1 NMFS examined the commercial shark fishing revenues over the past eight years in Chapter 6 of the Draft and Final EIS. Total ex-vessel revenue from small coastal shark meat has fluctuated between approximately \$535 thousand and \$823 thousand annually over that period with no discernable pattern.

Comment 2 Another comment noted that there is little or no fin value for smooth dogfish.

Response 2 NMFS estimates that the median ex-vessel price for smooth dogfish fins was \$2.02 per pound between 2004 and 2007. Based on ACCSP data from 1998-2007, in the commercial fishery an average of 1,321,695 lb ww of smooth dogfish were retained per year. Of this total, NMFS estimates 47,543 lb of fins would be available for sale per year. Using the median ex-vessel price of these products between 2004 and 2007, the fishery averaged \$ 96,037 in value per year.

Comment 3 NMFS received a comment regarding the ability to distribute the small SCS quota across all the permit holders.

Response 3 NMFS examined the per vessel impacts of the proposed SCS quotas across all permit holders in the IRFA and also in this FRFA. Based on data from 2004 to 2007 for directed and incidental shark permit holders that landed non-blacknose SCS, the average directed shark permit holder earned \$9,427 in average annual gross revenues, and the average incidental shark permit holder earned \$707 in average annual gross revenues from non-blacknose SCS landings. For those permit holders that actually landed blacknose shark during that same time period, the average directed shark permit holder earned \$3,640 in average annual gross revenues, and the average incidental shark permit holder earned \$1,722 in average annual gross revenues from blacknose shark landings. NMFS acknowledges that the availability of SCS quota proposed in the DEIS would be limited if spread across all permit holders. As described in the responses above, NMFS made changes to the SCS quotas based, in part, on the comments received. The preferred alternative in the FEIS for small coastal sharks is now 221.6 mt versus 56.9 mt preferred under the DEIS. The preferred alternative for blacknose shark quota was raised from 14.9 mt under the DEIS to 19.9 mt in the FEIS.

Comment 4 A comment indicated that multispecies fishermen need every species they can catch. The commenter was concerned that the economic impacts on these multispecies fishermen were not considered.

Response 4 NMFS examined the cumulative economic impacts of the proposed rule in section 4.11 of the EIS.

Comment 5 Another comment NMFS received noted that the fins attached rule decreased fishing effort on SCS because it is too much work processing the sharks twice

in hot weather. Prices are lower for SCS because the fins on rule decreased the quality due to increased processing time. NMFS acknowledges that the fins on rule could decrease the quality of the product due to increased processing time. However, other factors such as market demand and decreased supplies might also affect prices.

Response 5 NMFS will examine the impacts that leaving fins on sharks is having on prices for SCS as information becomes available.

Comment 6 NMFS received a comment noting that shortfin mako sharks are a significant secondary bycatch for the US pelagic fishing fleets from Maine to Texas and like most sharks this is a shared resource with other countries. The comment noted that NMFS is unilaterally proposing to hurt US fishermen first with economic impacts. NMFS acknowledges that the shortfin mako shark is often a bycatch species in other fisheries in the United States.

Response 6 The preferred alternatives for the commercial shortfin mako shark fishery would not change the current retention limits for U.S. fishermen at this time. NMFS would promote the live release of shortfin mako sharks, but would not make it a mandatory requirement of the fishery. NMFS is preferring to take action at the international level to end overfishing of shortfin mako sharks through participation in international fisheries organizations such as ICCAT. While the preferred alternatives could impact U.S. fishermen economically before it impacts fishermen in other countries, neither of these measures are expected to have a significant economic impact on U.S. commercial fishermen.

Comment 7 NMFS also received comments that the preferred blacknose shark recreational alternative in the DEIS would eliminate the recreational fishery and that there are no analyses of the economic benefits to the nation associated with this defacto allocation to the commercial sector.

Response 7 NMFS notes that blacknose sharks rarely reach a size greater than the current federal minimum size, therefore, the current 54 inch FL size limit creates a defacto retention prohibition of blacknose sharks in federal waters. As discussed in the DEIS, NMFS determined that prohibiting the retention of blacknose sharks in the recreational fishery under Alternative D4 could have some negative social and economic impacts on recreational fishermen, including tournaments and charter/headboats, if the prohibition of blacknose sharks resulted in fewer charters. However, since blacknose sharks are not one of the primary species targeted by recreational anglers, in tournaments or on charters and they rarely reach a size greater than the current federal minimum size, NMFS does not anticipate much negative social and economic impacts from Alternative D4 on recreational anglers, tournaments, or in the charter/headboat sector. In the FEIS, Alternative D1 is the preferred alternative because the effect is the same as prohibiting the retention of blacknose sharks, thereby contributing to the rebuilding of the species. NMFS chose to prefer this alternative rather than the previously preferred alternative, Alternative D4, because the effect is the same, therefore action is unnecessary.

Comment 8 A few commenters, including the State of Virginia, noted that there is no indication that finning has been, is, or is likely to become a problem in the smooth dogfish fishery because of the economics of the fishery. The State of Virginia notes that the smooth dogfish fishery subsists as a high volume and labor intensive endeavor, as a typical whole round weight of 1,000 pounds contains 200 to 250 individual dogfish. In a typical processed catch of smooth dogfish, the dockside value of the fins represents 20 to 30 percent of the price paid to fishermen for their total catch, and fishermen return dockside with meat and fins in separate containers. Delaying the removal of fins and tail until landing would result in decreased marketability. Smooth dogfish are harder than other species to extract from the net, butcher and clean, with the result that labor costs represent a higher percentage of the total value of the product. Cutting fins at sea is important practically to the fishery in order to maintain proper product freshness. In the absence of processing, there would be a loss of profitability to the industry because of the increased labor with re-handling each carcass.

Response 8 NMFS appreciates the State of Virginia's comment regarding finning and the smooth dogfish fishery. NMFS agrees that the smooth dogfish fishery is likely a labor intensive operation. While the delay in the removal of fins and tails until landing could reduce the quality and marketability of smooth dogfish, it is unclear whether any decreases in ex-vessel prices would exceed potential cost savings from reduced labor needs at sea associated with finning on the vessel. There would potentially be an increase in operating costs at dealers, if they end up processing the fins from the smooth dogfish carcasses.

Comment 9 Another comment noted that if NMFS set the smooth dogfish quota at 1,423,728 lb dw, the quota may not be reached every year but there would be years when it is. The comment also mentioned that pricing is dependent on the international market (years when the price is high, the quota will go fast).

Response 9 The proposed smooth dogfish quota in the DEIS was developed in order to accommodate average fishing levels. The 1,423,728 lb dw proposed quota was equal to the maximum annual landings between 1998-2007 plus one standard deviation. NMFS acknowledges that in rare years, this quota might constrain the fishery. In part to address this issue, NMFS added an additional alternative to the FEIS where the smooth dogfish quota would be set equal to the maximum annual landings from 1998-2007 plus two standard deviations (1,577,319 lb dw). This new preferred alternative should accommodate the potential few years were the smooth dogfish quota may exceed 1,423,728 lb dw. NMFS is also aware that international markets may impact the pricing of domestic smooth dogfish. However, NMFS does not currently have sufficient data on the fishery to model the degree to which high international prices may increase domestic landings of smooth dogfish.

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

NMFS considers all HMS permit holders to be small entities because they either had average annual receipts less than \$4.0 million for fish-harvesting, average annual

receipts less than \$6.5 million for charter/party vessels, 100 or fewer employees for wholesale dealers, or 500 or fewer employees for seafood processors. These are the Small Business Administration (SBA) size standards for defining a small versus large business entity in this industry.

The preferred management measures would apply to the 502 commercial shark permit holders in the Atlantic shark fishery based on an analysis of permit holders on March 18, 2009. Of these permit holders, 223 have directed shark permits and 279 hold incidental shark permits. Not all permit holders are active in the fishery in any given year. NMFS estimates that between 2004 and 2007, approximately 85 vessels with directed shark permits and 31 vessels with incidental shark permits landed SCS. A further breakdown of these permit holders is provided in Table 3.26.

The recreational measures proposed would also impact HMS Angling category and HMS Charter/Headboat category permit holders. In general, the HMS Charter/Headboat category permit holders can be regarded as small businesses, while HMS Angling category permits are typically obtained by individuals who are not considered small entities for purposes of the RFA. In 2008, 4,837 vessels obtained HMS Charter/Headboat category permits. Table 3.27 provides the geographic distribution of these permit holders by state and the overall historic trend in the number of permit holders since 2006. It is unknown what portion of these permit holders actively participate in shark fishing or market shark fishing services for recreational anglers.

Finally, the preferred alternatives to add smooth dogfish under NMFS management and develop management measures, such as a federal permit requirement, would impact an additional group of small entities. The number of entities impacted by this preferred alternative cannot be precisely measured at this time, since there is currently no federal permit requirement for smooth dogfish fishing. Utilizing VTR and Coastal Logbook data, an estimate of the number of participants in the commercial smooth dogfish fishery can be calculated. Within the VTR data, a primarily Northeast U.S. reporting system, an average of 213 vessels reported smooth dogfish landings per year between 2004 and 2007. Within the Coastal Logbooks data, a primarily Southeast U.S. reporting system, an average of 10 vessels reported smooth dogfish landings per year between 2004 and 2007. From these data, an estimated 223 commercial vessels would require a smooth dogfish permit.

To estimate the number of recreational participants in the smooth dogfish fishery, NMFS examined MRFSS data. Based on MRFSS data from 2004 to 2007, an average of 58,161 smooth dogfish were retained per year by private anglers and CHBs in the recreational fishery. This number is the upper limit of participants in the federal recreational fishery of the species, and is likely much lower since multiple individual fish are expected to have been caught by one fisherman. Furthermore, based on the life history of the species and the fact the most recreational fisherman are shore-based, the vast majority of smooth dogfish caught recreationally are in coastal, state waters and would not require a federal HMS angling permit.

NMFS has determined that the proposed rule would not likely affect any small governmental jurisdictions. More information regarding the description of the fisheries affected, and the categories and number of permit holders can be found in Chapter 3.

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

The commercial and recreational measures for SCS and pelagic sharks would not introduce any new reporting and record-keeping requirements. However, alternative F2, would implement federal management of smooth dogfish and establish a permit for commercial and recreational retention of smooth dogfish in federal waters.

The preferred federal permit requirement for smooth dogfish would allow NMFS to collect data regarding participants in the fishery and landings through federal shark dealer reports. The federal dogfish permit requirement would require a similar permit application to the other current HMS permits. The information collected on the application would include vessel information and owner identification and contact information. A modest fee to process the application and annual renewal would also likely be required. The cost would likely be similar to the current fee associated with the Atlantic Tunas General Category and Atlantic HMS Angling permits, which both cost \$16 in 2009 to obtain.

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

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

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

In order to meet the objectives of this proposed rule, consistent with Magnuson-Stevens Act and ESA, NMFS cannot exempt small entities or change the reporting requirements only for small entities because all the entities affected are considered small entities. Thus, there are no alternatives discussed that fall under the first and fourth categories described above. NMFS does not know of any performance or design standards that would satisfy the aforementioned objectives of this rulemaking while, concurrently, complying with the Magnuson-Stevens Act. Thus, there are no alternatives considered under the third category. As described below, NMFS analyzed several different alternatives in this proposed rulemaking and provides rationale for identifying the preferred alternative to achieve the desired objective.

The alternatives considered and analyzed have been grouped into three major categories. These categories include commercial measures, recreational measures, and smooth dogfish. Under commercial measures, alternatives for SCS commercial quotas, gear restrictions, and pelagic shark effort controls were considered and analyzed. The SCS commercial quota alternatives include: (A1) maintain the existing SCS quota; (A2) establish a new SCS quota of 392.5 mt dw and a blacknose commercial quota of 13.5 mt dw; (A3) establish a new SCS quota of 42.7 mt dw and a blacknose commercial quota of 16.6 mt dw; allow all current authorized gears for sharks; (A4) establish a new SCS quota of 56.9 mt dw and a blacknose commercial quota of 14.9 mt dw; remove shark gillnet gear as an authorized gear for sharks; (A5) close the SCS fishery; and (A6) establish a new SCS quota of 221.6 mt dw and a blacknose commercial quota of 19.9 mt dw. The commercial gear restrictions alternatives include: (B1) maintain current authorized gears for commercial shark fishing; (B2) close shark gillnet fishery; remove gillnet gear as an authorized gear type for commercial shark fishing; and (B3) close the gillnet fishery to commercial shark fishing from South Carolina south, including the Gulf of Mexico and the Caribbean Sea. The pelagic shark effort controls alternatives include: (C1) keep shortfin mako sharks in the pelagic shark species complex and do not change the quota; (C2) remove shortfin mako sharks from pelagic shark species quota and establish a shortfin mako quota; (C3) remove shortfin mako sharks from pelagic shark species complex and place this species on the prohibited shark species list; (C4a) establish a minimum size limit for shortfin mako sharks that is based on the size at which 50 percent of female shortfin mako sharks reach the sexual maturity or 32 inches interdorsal length (IDL); (C4b) establish a minimum size limit for shortfin makos that is based on the size at which 50 percent of male shortfin mako sharks reach the sexual maturity or 22 inches IDL; (C5) take action at the international level to end overfishing of shortfin mako sharks; and (C6) promote the release of shortfin mako sharks brought to fishing vessels alive.

Under recreational measures, NMFS considered alternatives for both SCS and pelagic sharks. The recreational measures considered for SCS include: (D1) maintain the current recreational retention and size limit for SCS; (D2) modify the minimum recreational size for blacknose sharks based on their biology, (D3) increase the retention limit for Atlantic sharpnose sharks based on current catches; and (D4) prohibit retention of blacknose sharks in recreational fisheries. The recreational measures considered for pelagic sharks include: (E1) maintain the current recreational measures for shortfin mako

sharks; (E2a) establish a minimum size limit for shortfin makos that is based on the size at which 50 percent of female shortfin mako sharks reach sexual maturity or 108 in FL; (E2b) establish a minimum size limit for shortfin makos that is based on the size at which 50 percent of male shortfin mako sharks reach sexual maturity or 73 inches FL; (E3) take action at the international level to end overfishing of shortfin mako sharks; (E4) promote the release of shortfin mako sharks brought to fishing vessels alive; and (E5) prohibit retention of shortfin mako sharks in recreational fisheries (catch and release only).

Finally, NMFS also considered alternatives for managing smooth dogfish. These alternatives include: (F1) do not add smooth dogfish under NMFS management, (F2) add smooth dogfish under NMFS management and establish a federal permit requirement, and (F3) add smooth dogfish under NMFS management and mirror management measures implemented in the ASMFC Interstate Shark FMP. NMFS considered several alternatives for adding smooth dogfish under NMFS management. These alternatives include: (F2 a1) Establish a smooth dogfish quota that is equal to the average annual landings from 1998-2007 (950,859 lb dw); (F2 a2) establish a smooth dogfish quota equal to the maximum annual landing between 1998-2007 (1,270,137 lb dw); (F2 a3) establish a smooth dogfish quota equal to the maximum annual landing between 1998-2007 plus one standard deviation (1,423,727 lb dw); (F2 b1) establish a separate smooth dogfish set-aside quota for the exempted fishing program of 6 mt ww; and (F2 b2) establish a smooth dogfish set-aside quota for the exempted fishing program and add it to the current 60 mt ww set aside quota for the exempted fishing program.

The potential impacts these alternatives may have on small entities have been analyzed and are discussed in the following sections. The preferred alternatives in the FEIS include: A6, B1, C5, C6, D1, E3, E4, F2, and preferred sub-alternatives F2 a4 and F2 b1. The economic impacts that would occur under these preferred alternatives were compared with the other alternatives to determine if economic impacts to small entities could be minimized while still accomplishing the stated objectives of this rule.

8.5.1 Commercial Measures

8.5.1.1 SCS Commercial Quotas

Under the No Action alternative, A1, there would be no additional economic impacts to directed and incidental shark permit holders as the average annual gross revenues from SCS landings, including blacknose shark landings, would be the same as the status quo. The average annual gross revenues from 2004 through 2007 from all SCS meat and fins was \$830,918.

Based on data from 2004 to 2007 for directed and incidental shark permit holders that landed non-blacknose SCS, the average directed shark permit holder earned \$9,765 in average annual gross revenues, and the average incidental shark permit holder earned \$687 in average annual gross revenues from non-blacknose SCS landings. For those permit holders that actually landed blacknose shark during that same time period, the average directed shark permit holder earned \$3,638 in average annual gross revenues, and the average incidental shark permit holder earned \$1,721 in average annual gross

revenues from blacknose shark landings. These revenues are not expected to be impacted by alternative A1. However, since alternative A1 would not reduce blacknose shark mortality to the level needed to rebuild blacknose sharks, NMFS does not prefer this alternative at this time.

Under the revised alternative A2, NMFS would remove blacknose sharks from the SCS quota and create a blacknose shark-specific quota of 12.1 mt dw and a separate “non-blacknose SCS” quota, which would apply to finetooth, Atlantic sharpnose, and bonnethead sharks, of 221.6 mt dw. NMFS anticipates that non-blacknose SCS landings should not decrease as the non-blacknose SCS quota would only be reduced by the average blacknose shark landings. Therefore, the 68 directed and 29 incidental shark permit holders that had non-blacknose SCS landings would not be affected by the new non-blacknose SCS quota. However, the blacknose shark quota would be a 78-percent reduction based on average landings from 2004-2007. Average annual gross revenues for the blacknose shark landings for the entire fishery would decrease from \$172,110 under the No Action alternative down to \$33,611 under alternative A2, which is an 80-percent reduction in average annual gross revenues for blacknose sharks. Thus, the 44 directed and 7 incidental shark permit holders that had blacknose shark landings would be affected by the new blacknose shark quota. As directed permit holders landed the majority of blacknose shark under the No Action alternative, it is anticipated that directed permit holders would experience the largest impacts under alternative A2. The decrease in average annual gross revenues for directed and incidental permit holders would depend on the specific trip limit associated with the blacknose quota established under A2 (see Appendix A). However, because discards would continue as fishermen directed on non-blacknose SCS, regardless of the retention limits, overall mortality for blacknose sharks would still be above the commercial allowance of 7,094 blacknose sharks/year, even if the retention of blacknose sharks was prohibited (see Appendix A). Therefore, NMFS does not prefer this alternative at this time.

Under the revised alternative A3, NMFS would remove blacknose sharks from the SCS quota and create a blacknose shark-specific quota of 19.9 mt dw and a separate “non-blacknose SCS” quota of 110.8 mt dw, which would apply to finetooth, Atlantic sharpnose, and bonnethead sharks. NMFS determined that by reducing the overall SCS fishery, NMFS would reduce the level of blacknose shark discards such that the total blacknose shark mortality would stay below the commercial allowance (see Appendix A).

While trip limits would not change for non-blacknose SCS for directed and incidental permit holders (*i.e.*, no trip limit for directed fishermen and a 16 non-blacknose SCS/pelagic sharks combined trip limit for incidental fishermen), given the reduction in the non-blacknose SCS quota, NMFS anticipates that the 68 directed and 29 incidental permit holders that had non-blacknose SCS landings would be affected by the new non-blacknose SCS quota. Average annual gross revenues for non-blacknose SCS landings for the entire fishery are anticipated to be \$310,222. This is a 53 percent reduction in average annual gross revenues compared to average annual gross revenues expected under the No Action alternative, A1. Since directed permit holders land approximately 97 percent of the non-blacknose SCS landings as explained in alternative A1, NMFS

anticipates that directed permit holders would lose more in average annual gross revenues from non-blacknose SCS landings compared to incidental permit holders under alternative A3. Average annual gross revenues for directed shark permit holders of non-blacknose SCS under alternative A3 would be \$300,916, which is a loss of \$343,200 in average annual gross revenues or a 53-percent reduction in average annual gross revenues from the average annual gross revenues expected under the No Action alternative, A1. Spread amongst the directed shark permit holders that land non-blacknose SCS, this is an anticipated loss of \$5,047 in average annual gross revenues from non-blacknose SCS landings per permit holder. Incidental permit holders land approximately 3 percent of the non-blacknose SCS. Average annual gross revenues for incidental shark permit holders of non-blacknose SCS under alternative A3 would be \$9,307, which is a loss of \$10,614 in average annual gross revenues or also a 53 percent reduction in average annual gross revenues from the average annual gross revenues expected under the No Action alternative, A1. Spread amongst the incidental shark permit holders that land non-blacknose SCS, this is an anticipated loss of \$366 in average annual gross revenues from non-blacknose SCS landings per permit holder.

The blacknose shark quota would be reduced to 19.9 mt dw based on average landings from 2004-2008. In addition, in order to keep the total mortality of blacknose sharks below the commercial allowance for the HMS Atlantic shark fishery (see Appendix A), incidental shark permit holders would not be allowed to retain blacknose sharks under alternative A3. Thus, the 44 directed and 7 incidental shark permit holders that had blacknose shark landings would be affected by the new blacknose shark quota. Since incidental permit holders would not be able to retain blacknose sharks, the total blacknose shark quota would be available only to directed shark permit holders. Average annual gross revenues for the blacknose shark landings for the directed fishery would decrease from \$160,062 under the No Action alternative down to \$51,409 under alternative A3, which is a loss of \$108,653 or a 68-percent reduction in average annual gross revenues for blacknose sharks for directed shark fishermen. Spread amongst the directed shark permit holders that land blacknose sharks, there would be an anticipated loss of \$2,469 in average annual gross revenues from blacknose landings per permit holder. However, since incidental shark permit holders would not be able to retain blacknose sharks, they would lose an estimated \$8,179 in average annual gross revenues from blacknose shark landings. Spread amongst the incidental permit holders that land blacknose sharks, there would be an anticipated loss of \$1,168 in average annual gross revenues from blacknose landings per permit holder.

Given the large reduction in the non-blacknose SCS quota under alternative A3, which would affect more directed and incidental permit holders compared to the smaller reduction in the non-blacknose SCS quota under alternative A6, NMFS does not prefer alternative A3 at this time.

Under alternative A4, NMFS would remove blacknose sharks from the SCS quota and create a blacknose shark-specific quota and a separate “non-blacknose SCS” quota equal to 55.4 mt dw, which would apply to finetooth, Atlantic sharpnose, and bonnethead sharks. NMFS determined that by reducing the overall SCS fishery, NMFS could reduce

the level of blacknose shark discards such that the total blacknose shark mortality would stay below the commercial allowance (see Appendix A). NMFS would establish a blacknose-specific quota of 15.9 mt dw, which is the amount of blacknose sharks that would be landed while the non-blacknose SCS quota is taken (see Appendix A); however, incidental fishermen would not be allowed to retain any blacknose sharks under alternative A4. In addition, this alternative assumes that gillnet gear would not be used to harvest sharks as explained under alternatives B2 and B3.

While trip limits would not change for non-blacknose SCS for directed and incidental permit holders (*i.e.*, no trip limit for directed fishermen and a 16 non-blacknose SCS/pelagic sharks combined trip limit for incidental fishermen), given the reduction in the non-blacknose SCS quota, NMFS anticipates that the 41 directed and 22 incidental shark permit holders that did not use gillnet gear to land non-blacknose SCS would be affected by the new non-blacknose SCS quota. Average annual gross revenues for non-blacknose SCS landings for the entire fishery are anticipated to be \$155,111. This is a 76-percent reduction in average annual gross revenues compared to the average annual gross revenues expected under the No Action alternative, A1. Since directed shark permit holders land approximately 97 percent of the non-blacknose SCS landings as explained in alternative A1, NMFS anticipates that directed shark permit holders would lose more in average annual gross revenues from non-blacknose SCS landings compared to incidental shark permit holders under alternative A4. Average annual gross revenues for directed shark permit holders of non-blacknose SCS under alternative A4 would be \$150,458, which is a loss of \$493,658 in average annual gross revenues or a 77-percent reduction in average annual gross revenues from the average annual gross revenues expected under the No Action alternative, A1. Spread amongst the directed shark permit holders that did not use gillnet gear to land non-blacknose SCS, there could be an anticipated loss of \$12,040 in average annual gross revenues from non-blacknose SCS landings per permit holder. Incidental shark permit holders land approximately 3 percent of the non-blacknose SCS landings as explained in alternative A1. Average annual gross revenues for incidental shark permit holders of non-blacknose SCS under alternative A4 would be \$4,653, which is a loss of \$15,268 in average annual gross revenues or a 77 percent reduction in average annual gross revenues from the average annual gross revenues expected under the No Action alternative, A1. Spread amongst the incidental shark permit holders that did not use gillnet gear to land non-blacknose SCS, there could be an anticipated loss of \$694 in average annual gross revenues from non-blacknose SCS landings per permit holder.

The blacknose shark quota would also be a 72-percent reduction based on average landings from 2004 through 2008. In addition, in order to keep the total mortality of blacknose sharks below the commercial allowance for the HMS Atlantic shark fishery (see Appendix A), incidental shark permit holders would not be allowed to retain blacknose sharks under alternative A4. Thus, the 15 directed and 5 incidental shark permit holders that did not use gillnet gear to land blacknose sharks would be affected by the new blacknose shark quota. Since incidental shark permit holders would not be able to retain blacknose sharks, the total blacknose shark quota would be available only to directed shark permit holders. Average annual gross revenues for the blacknose shark

landings for the directed fishery would decrease from \$160,062 under the No Action alternative down to \$41,075 under alternative A4, which is a loss of \$118,987 or a 74 percent reduction in average annual gross revenues from blacknose sharks for directed shark permit holders. Spread amongst the directed shark permit holders that did not use gillnet gear to land blacknose sharks, there could be an anticipated loss of \$7,932 in average annual gross revenues from blacknose landings per vessel. Incidental shark permit holders would lose an estimated \$12,048 in average annual gross revenues from blacknose shark landings. Spread amongst the incidental shark permit holders that did not use gillnet gear to land blacknose sharks, there could be an anticipated loss of \$1,791 in average annual gross revenues from blacknose landings per permit holder.

By reducing effort in the overall SCS fishery under Alternative A4, NMFS could reduce the level of blacknose shark discards such that the total blacknose shark mortality would stay below the commercial allowance needed to rebuild the stock. Gillnet fishermen would be affected the most by alternative A4 in combination with alternative B2 or B3, with estimated gross revenue losses between \$377,928 and \$365,067 from lost non-blacknose SCS and blacknose landings.

Alternative A5 would close the entire SCS commercial shark fishery, prohibiting the landing of any SCS, including blacknose sharks. Thus, this alternative would eliminate landings of all SCS, including finetooth, Atlantic sharpnose, bonnethead, and blacknose sharks. This would have negative economic impacts on the average 85 directed shark permit holders, and the average 31 incidental shark permit holders that had SCS landings during 2004-2007. This would result in a loss of average annual gross revenues of \$664,037 for non-blacknose SCS and \$172,110 from blacknose shark landings for a total loss of \$830,918 in average annual gross revenues from SCS landings. Directed shark permit holders would lose \$644,116 in average annual gross revenues from non-blacknose SCS landings and \$160,062 in average annual gross revenues from blacknose shark landings for a total of \$805,990 in average annual gross revenues. Spread among the 85 directed shark permit holders that landed SCS, this could result in a loss in average annual gross revenues of \$9,482 per permit holder.

Incidental shark permit holders would lose \$19,921 in average annual gross revenues from non-blacknose SCS landings and \$12,048 in average annual gross revenues from blacknose shark landings for a total of \$31,969 in average annual gross revenues under alternative A5. Spread among the 31 incidental shark permit holders that landed SCS, this could result in a loss in average annual gross revenues of \$1,031 per permit holder.

In addition, as gillnet gear is the primary gear used to target SCS, it is assumed that directed shark gillnet fishing would end, except for fishermen that use gillnet gear to strikenet for blacktip sharks. Approximately 11 directed shark permit holders use gillnet gear to land LCS. This would result in a decrease in LCS landings of 102,171 lb dw and a decrease in average annual gross revenues of \$107,280. Spread among the 11 directed shark permit holders that land LCS with gillnet gear, this alternative would result in a loss in average annual gross revenues of \$9,753 per permit holder.

While this alternative could reduce blacknose mortality below the commercial allowance of 44,853.8 lb dw, it would also completely eliminate the fishery for all SCS. Of the alternatives analyzed, alternative A5 would result in the most significant economic impacts to small entities. In addition, this alternative would severely curtail data collection on all SCS that could be used for future stock assessments. Thus, NMFS does not prefer this alternative at this time.

Alternative A6, the preferred alternative, combines parts of alternatives A2 and A3 that would establish a blacknose species-specific quota of 19.9 mt dw and a non-blacknose SCS quota of 221.6 mt dw. NMFS designed this alternative to minimize economic impacts on shark fishermen and other participants in the fishery related to SCS quota reductions. Alternative A6 would set the non-blacknose SCS quota at a level equal to the average annual landings from 2004 through 2008, and the blacknose quota at a level that is a 64 percent reduction of the average landings for that species over the same time period. This proposal comes in response to recently updated SEFSC data used for analysis, and in response to concerns raised by the commercial and scientific communities during the comment period for the DEIS. Under alternative A6 all currently authorized gears for shark fishing would be allowed in the fishery.

Under the non-blacknose SCS quota proposed in alternative A6, those fishermen with the 68 directed shark permits and 29 incidental shark permits that had non-blacknose SCS landings would be expected to fish as they currently do under the No Action alternative, and shark dealers and other entities that deal with shark products would be expected to operate as they do under the No Action alternative. Average annual gross revenues for non-blacknose SCS landings for the entire fishery are anticipated to decline by approximately 6-percent compared to the No Action alternative, to \$620,445, (Table 6.16) under alternative A6, representing a revenue loss of \$43,593. Average annual gross revenue for blacknose shark landings for the entire fishery is expected to decline to \$55,278, a loss of \$ 116,832.

Since directed shark permit holder accounted for 97 percent of the landings for non-blacknose SCS, the total revenue for these fishermen would decrease by 6 percent to \$601,832 (Table 6.16), a loss of \$42,284 from the No Action alternative non-blacknose directed shark permit revenue total of \$644,116 (Table 6.8). Spread across the 68 directed shark permit holders that reported non-blacknose landings, this would result in a per boat decrease of \$622 ($\$42,284 / 68$ directed vessels = \$622). With incidental shark permit holders accounting for 3 percent of the annual revenue from non-blacknose landings based on alternative A6, there would be a decrease in total revenue of \$1,308, or 7 percent, to \$18,613 (Table 6.9) from the No Action Alternative of \$19,921 (Table 6.8). This would result in a loss of revenue from non-blacknose SCS per incidental vessel of \$45 ($\$1,308 / 29$ incidental vessels = \$45). Therefore, social and economic impacts of the non-blacknose SCS quota on fishermen with directed and incidental shark permit would be slightly negative under alternative A6.

Under the blacknose shark quota 19.9 mt dw, the 44 directed shark permit holders and 7 incidental shark permit holders that had blacknose shark landings would experience

direct negative social impacts, as they would most likely have to fish in other fisheries to make up for lost blacknose landings or leave the fishery altogether. Other entities that deal with blacknose shark products, such as shark dealers, would indirectly experience negative social impacts as they would also have to change their business practices to make up for lost blacknose shark product. In total, average annual gross revenues for the blacknose shark landings for the directed shark permit holders would decrease from \$160,062 under the No Action alternative (Table 6.8) down to \$51,409 under alternative A6 (Table 6.16), which is a loss of \$108,653 or a 68 percent reduction in average annual gross revenues for blacknose sharks for directed shark fishermen. Spread amongst the directed shark permit holders that land blacknose sharks, there could be an anticipated loss of \$2,469 in average annual gross revenues from blacknose landings per permit holder ($\$108,653 / 44$ directed vessels = \$2,469 per vessel). For incidental shark permit holders the 68-percent reduction in blacknose shark landings would translate into an average annual gross revenue of \$3,869 (Table 6.10), which would be a loss of income of \$8,179 from the annual average of \$12,048 under the No Action alternative (Table 6.8). Spread amongst the 7 incidental shark permit holders, this would result in an annual loss of \$1,168 per permit holder ($\$8,179 / 7$ incidental vessels = \$1,168).

Under alternative A6, if either the non-blacknose SCS quota (221.6 mt dw) or blacknose shark quota (19.9 mt dw), reached 80 percent of the available landings, NMFS would close both fisheries for the rest of the season. If a future stock assessment determines that blacknose sharks are continuing to be overfished or that overfishing is still occurring NMFS could make regulatory changes as needed in future management actions. These changes may include, but are not limited to reducing the blacknose shark quota and/or the non-blacknose SCS quota, and implement daily blacknose catch limits. Alternative A6 would meet the rebuilding requirements of the Magnuson-Stevens Act by addressing the overfished status and overfishing of blacknose sharks by reducing the blacknose shark quota to 19.9 mt dw. While NMFS recognizes that there may be negative social and economic impacts on parts of the fishing community due to the reduced blacknose shark quota, in selecting the quota of 221.6 mt dw for the non-blacknose SCS fishery, NMFS is minimizing those negative socioeconomic impacts, especially since the bulk of the catch in the SCS fishery comes from shark species that have been determined to not be overfished or undergoing overfishing (i.e. finetooth, sharpnose, and bonnethead sharks). Therefore, NMFS prefers alternative A6 at this time..

Alternative A6 would result in positive ecological impacts to blacknose sharks by reducing mortality of this species below the commercial allowance of 7,094 blacknose sharks per year that is necessary for this stock to rebuild with a 70 percent probability by 2027 consistent with the rebuilding plan and the objectives of this amendment. Alternative A6 would also reduce effort and mortality in the non-blacknose SCS fishery, to a level that is equal to the average landings for these species for the years 2004 through 2008. Alternative A1 (No Action alternative) does not reduce effort or mortality in the commercial SCS fishery, so does not address the overfished status or overfishing of blacknose sharks. The scenarios under alternative A2 that eliminate gillnets as an authorized gear and those that eliminate retention of blacknose sharks altogether, fail to meet the goal of reducing blacknose shark mortality, due to the high number of discards

of blacknose sharks from those gears that would continue to operate in the fishery. For those scenarios under alternative A2 that would continue to allow gillnets to be retained as an authorized gear, the necessary reduction in blacknose sharks is met, but the quota is exceeded. Under alternative A3 the goal of reducing the blacknose shark mortality to necessary levels is obtained, but due to the significant reduction of the non-blacknose SCS quota, there would be a 67 percent increase in discard mortality of non-blacknose SCS. Both alternatives A4 and A5 would achieve the necessary blacknose shark mortality reduction, but the social and economic impacts on the commercial shark permit holders from the reduced quotas would be significant.

Compared to the other alternatives analyzed, alternative A6 would result in the least negative social and economic impacts on the participants of the SCS commercial fishery while still meeting the goal of reducing mortality and rebuilding blacknose sharks. Under alternative A6, the non-blacknose SCS quota of 221.6 mt dw would result in a loss of \$43,592 in average annual revenues for all permit holders. The reduced blacknose quota of 19.9 mt dw would result in a loss of \$116,833 for all permit holders. Under alternative A2, directed and incidental permit holders would lose \$138,499 in average annual revenue, from the blacknose quota of 12.1 mt dw. Under alternative A3 as in alternative A6, the blacknose quota of 19.9 mt dw would result in an anticipated loss in average annual revenues for directed and incidental permit holders. The non-blacknose quota of 110.8 mt dw, under alternative A3, would result in a loss of average annual revenues to all permit holders of \$275,103. Under alternative A4, the reduction in blacknose quota to 15.9 mt dw would result in an average annual loss of revenues for all permit holders of \$124,853. With the prohibition on gillnets in alternative A4, all permit holders would lose approximately \$287,524 from the reduced non-blacknose SCS quota and many would have to completely change the way they fished, or to leave the fishery entirely. Because alternative A5 would completely close the SCS fishery, those directed and incidental permit holders that land non-blacknose SCS and blacknose sharks would be forced to move into other fisheries and would likely create pressure on other commercial species. While alternative A1 the No Action alternative, would have the least negative social and economic impacts on the SCS commercial fishery participants, this alternative does not reduce mortality of blacknose sharks in order to meet the rebuilding goals of this amendment or stop overfishing of this stock.

8.5.1.2 SCS Commercial Gear Restrictions

Under alternative B1, the preferred No Action alternative, NMFS would maintain the current gear restrictions for rod and reel, gillnet, and BLL gear. Between the DEIS and the FEIS, NMFS switched to this alternative as the preferred alternative to minimize the economic impacts to fishermen and other participants in the fishery. The economic impacts of alternative B1 would be the same as the status quo, and no negative economic impacts would be anticipated under alternative B1. On average from 2004-2007, the directed and incidental shark permit holders earned average annual gross revenues from SCS landings of \$833,634, while the directed and incidental permit holders that landed LCS earned larger gross revenues of \$3,328,663. The smooth dogfish fishery is smaller than the other fisheries and only has average annual gross revenues of \$371,786 for state and federally permitted fishermen reporting to the ACCSP. Based on this alternative, the

average annual gross revenues of these fisheries would remain the same as the status quo. The average number of directed and incidental shark permit holders that reported SCS landings in the Coastal Fisheries logbook from 2004-2007 were 116 (85 directed and 31 incidental shark permit holders), and the LCS fishery had an annual average of 162 permit holders (129 directed and 33 incidental shark permit holders) reporting LCS landings in the Coastal Fisheries logbook from 2004-2007. The number of permit holders would not be impacted by the No Action alternative. NMFS prefers this least cost SCS commercial gear restriction alternative.

Under alternative B2, NMFS would remove gillnet gear as an authorized gear type for commercial shark fishing. This alternative would have significant negative economic impacts by potentially affecting 30 directed and 7 incidental shark permit holders. On average, directed shark permit holders landed 289,546 lb dw of SCS with gillnet gear. This is equivalent to \$365,955 in lost average annual gross revenues from SCS landings for directed shark permit holders. Based on average ex-vessel prices per pound from 2004-2007, directed shark permit holders made \$807,792 in average annual gross revenues from SCS landings. On average, incidental shark permit holders landed 9,465 lb dw of SCS with gillnet gear. This is equivalent to \$11,973 in lost average annual gross revenues from SCS landings for incidental shark fishermen due to the prohibition of gillnet gear. Based on average ex-vessel prices per pound from 2004-2007, incidental shark permit holders made \$25,843 from SCS landings under the status quo. This represents a 45 percent reduction in SCS revenues for directed shark permit holders and a 46 percent reduction in SCS revenues for incidental shark permit holders compared to the No Action alternative, alternative B1.

This alternative would have a minimal negative economic impact on the LCS fishery. Only 11 directed and 5 incidental shark permit holders out of the 162 total shark permit holders would be affected. On average, directed shark permit holders landed 102,171 lb dw of LCS with gillnet gear. This is equivalent to \$107,280 in lost average annual gross revenues from LCS landings (3 percent reduction). On average, incidental shark permit holders landed 1,961 lb dw of LCS with gillnet gear. This is equivalent to \$2,059 in lost average annual gross revenues from LCS landings for incidental shark permit holders due to the prohibition of gillnet gear. In total (\$109,339), this is approximately 3 percent of the gross revenues for the entire LCS fishery under the status quo (*i.e.*, \$3,328,663).

Gillnets are also the primary gear type used to catch smooth dogfish. Within the VTR data, a primarily Northeast U.S. reporting system, an average of 213 vessels reported smooth dogfish landings per year between 2004 and 2007. Within the Coastal Fisheries Logbooks data, a primarily Southeast U.S. reporting system, an average of 10 vessels reported smooth dogfish landings per year between 2004 and 2007. From these data, an estimate of 223 vessels would require a smooth dogfish permit; however, as fishermen are currently not required to have a permit to retain smooth dogfish, this could be an underestimate of the number of fishermen that would require a federal commercial permit for smooth dogfish in the future. The average total annual landings from 1998-2007 was 950,859 lb dw (by state and federally permitted fishermen reporting to the

ACCSP, however, since fishermen do not have to currently report smooth dogfish landings, this could be an underestimate of total landings, and thus, an underestimate of average annual gross revenues for this fishery). Based on average ex-vessel prices per pound from 2004-2007, average annual gross revenues for the entire smooth dogfish fishery totaled \$371,786 from smooth dogfish landings. Based on the preferred alternative F2, which would require fishermen who fish for smooth dogfish in federal waters to obtain a federal smooth dogfish permit, then under alternative B2, those fishermen would not be able to use gillnet gear to land smooth dogfish. This would have a negative economic impacts on fishermen who previously used gillnet gear in federal waters to land smooth dogfish. However, as fishermen do not have to have a federal permit currently to land smooth dogfish, NMFS is uncertain the universe of fishermen who might be affected by alternatives B2 and F2 at this time. However, given the potential large negative economic impacts of this alternative to the SCS, LCS, and smooth dogfish fisheries, NMFS does not prefer this alternative at this time.

Under alternative B3, NMFS would close the commercial gillnet fishery from South Carolina south, including the Gulf of Mexico and the Caribbean Sea. This would have a negative economic impact on federally permitted directed and incidental fishermen. In the SCS fishery, this alternative would affect an average of 27 directed and 5 incidental shark permit holders out of the average 116 total shark permit holders that landed SCS from 2004-2007. The SCS gillnet fishery from South Carolina south accounts for 44 percent of the total directed shark permit holder landings, and 26 percent of landings in the incidental fishery. On average, directed shark permit holders landed 283,462 lb dw (\$358,261) of SCS with the gillnet gear from South Carolina south. Thus, directed shark fishermen would lose \$358,261 in average annual gross revenues from SCS landings from the gillnet prohibition under alternative B3. Based on average ex-vessel prices from 2004-2007, directed shark permit holders made \$807,792 in average annual gross revenues from SCS landings. On average, incidental shark permit holders landed 5,381 lb dw (\$6,807) of SCS with gillnet gear from South Carolina south. Thus, incidental shark permit holders would lose \$6,807 in average annual gross revenues from non-blacknose SCS landings under alternative B3. The directed and incidental shark permit holders would lose average annual gross revenues of \$365,068 from their current gross revenues of \$833,634.

This alternative would have minor economic impacts on the LCS fishery. It would only affect 12 directed and incidental shark permit holders. The directed shark permit holders would lose \$106,189 in average annual gross revenues from lost LCS landings in gillnet gear from South Carolina south under alternative B3. Incidental shark permit holders would lose \$290 from lost LCS landings in gillnet gear from South Carolina south. In total (\$106,479), this is only 3 percent of the average annual gross revenues (*i.e.*, \$3,328,663) from LCS landings compared to the LCS fishery under the status quo.

Alternative B3, in combination with the preferred alternative F2, would not affect the economics impacts of the smooth dogfish fishery. Smooth dogfish are primarily caught from North Carolina north. The average total landings/year is 950,859 lb dw/year

(by state and federally permitted fishermen reporting to the ACCSP, however, since fishermen do not have to currently report smooth dogfish landings, this could be an underestimate of total landings, and thus, an underestimate of average annual gross revenues for this fishery), which translates into average annual gross revenues of \$371,786 lb dw/year from smooth dogfish landings. Given smooth dogfish are not typically landed with gillnet gear from South Carolina south, NMFS anticipates that this alternative, in combination with the preferred alternative F2, would not cause significant loss in average annual gross revenues from smooth dogfish landings.

8.5.1.3 Pelagic Shark Effort Controls

The No Action alternative, C1, would not modify or alter commercial fishing practices for shortfin mako sharks or other shark species. There would be no additional economic impacts to directed and incidental fishermen as the average annual gross revenues from shortfin mako sharks or other shark species would be the same as the status quo. On average, 72.5 mt dw of shortfin mako sharks were commercially landed between 2004 and 2007, which is equivalent to \$350,039 in annual revenues. On average between 2004 and 2007, approximately 90 vessels had shortfin mako shark landings. Directed shark permit holders made up 39 of these vessels. However, since shortfin mako is typically incidentally caught, the average landings value per vessel was estimated by dividing annual revenues amongst all the vessels that have landed shortfin mako. Therefore, the vessels that landed shortfin mako generated an average of \$3,889 in gross revenues per year from shortfin mako sharks. The No Action alternative would not allow NMFS to meet statutory requirements to take measures to end overfishing. Thus No Action was not identified as a preferred alternative.

Alternative C2 would implement a species-specific quota for shortfin mako at the level of the average annual commercial landings for this species. This alternative is expected to have neutral or slightly negative economic impacts. On average, 72.5 mt dw (159,834 lb dw) of shortfin mako sharks were commercially landed between 2004 and 2007, which is equivalent to \$350,039 in average annual gross revenues. Spread amongst the vessels that landed shortfin mako sharks, the average vessel earned \$3,889 in annual gross revenues from shortfin mako sharks. While fishermen would be able to maintain current fishing effort under this alternative, any increase in effort would be restricted by the species-specific quota of 72.5 mt dw. Under the No Action alternative, commercial fishermen currently have a 488 mt dw quota, which could potentially be filled entirely by shortfin mako landings. This could result in maximum annual revenues equal to \$2,356,106. Thus, there is the potential loss of the option to fish up to the maximum level under this alternative. This difference is \$2,006,067 in annual gross revenues from shortfin mako sharks. Spread amongst the 90 vessels that, on average, have landed shortfin mako sharks from 2004 to 2007, that difference would be \$22,289 annually per vessel. However, given shortfin mako sharks are incidentally caught in the PLL fishery, it is unlikely that the entire pelagic shark quota would be entirely filled with shortfin mako landings. NMFS does not prefer this alternative at this time because the United States contributes a small portion of shortfin mako mortality due the lack of a directed fishery compared to shortfin mako mortality resulting from the fishing of foreign vessels

outside of the U.S. EEZ. In addition, this alternative does not minimize the potential economic impacts on small entities.

Alternative C3 would remove shortfin mako sharks from the pelagic shark species complex and add them to the prohibited species list. This alternative is not expected to have negative economic impacts for commercial fishermen because it is not a species that is targeted by commercial fishermen. Shortfin mako sharks are predominately caught incidentally in the PLL fishery and, on average, the commercial landings for shortfin mako sharks, from 2004 to 2007 were 72.5 mt dw with an estimated gross ex-vessel value of \$350,039. However, since shortfin makos would be placed on the prohibited species list under alternative C3, there could be an estimated reduction in average annual gross revenues of \$350,039 to the commercial fishermen. Based on the average number of vessels that have landed shortfin mako from 2004 to 2007, the revenue reductions would be approximately \$3,889 per vessel annually. In addition, this alternative could lead to increased operation time if commercial fishermen have to release and discard all shortfin makos that are caught on the PLL gear. In addition, if the commercial PLL fleet expands in the future, placing shortfin mako sharks on the prohibited species list could result in a loss of future revenues for the commercial PLL fishery. Thus, NMFS does not prefer this alternative at this time.

Alternative C4a would establish a minimum size limit for shortfin makos that is based on the size at which 50 percent of female shortfin mako sharks reach sexual maturity or 32 inches IDL. The summed dressed weight of all shortfin mako sharks kept under the 32 inches IDL size limit made up 1.4 percent of total dressed weight landings of shortfin mako sharks based on POP data. NMFS estimated this would reduce shortfin mako harvests by 2,061.1 lb dw. The economic impacts of this restriction would be an average annual gross revenues loss of \$4,513 for this fishery. Spread amongst the 90 vessels that have landed shortfin mako sharks from 2004 to 2007, the per vessel losses would be approximately \$50 annually.

Alternative C4b would establish a minimum size limit for shortfin makos that is based on the size at which 50 percent of male shortfin mako sharks reach sexual maturity or 22 inches IDL. The summed dressed weight of all kept shortfin mako sharks under the 22 inches IDL size limit made up 0.02 percent of dressed weight landings of shortfin mako based on POP data. NMFS estimated this would reduce shortfin mako harvests by 34.3 lb dw. The economic impacts of this restriction would be an average annual gross revenues loss of \$75 for this fishery.

Alternatives C4a and C4b would have minimal economic impacts because only a small percentage of commercial landings would be affected by the size restrictions. Of the two alternatives, the negative economic impact of C4a would be greater, as commercial landings by weight are 2,026.8 lb dw greater than in alternative C4b. Despite these minimum economic impacts, since the size limits would not reduce fishing mortality of shortfin mako sharks in the commercial sector, NMFS does not prefer these alternatives at this time.

Under alternative C5, the preferred alternative, NMFS would, take action at the international level through international fishery management organizations to establish management measures to end overfishing of shortfin mako sharks. In the short term, this alternative would not result in any negative economic impacts on commercial fishermen as it would not restrict commercial harvest of shortfin mako sharks, nor alter the pelagic shark quota. Therefore, the near term economic impacts of alternative C5 would be the same as described in the No Action alternative C1. However, this alternative could have negative economic impacts in the long term if directed management measures were adopted at an appropriate international forum that would require the reduction of landings domestically for shortfin mako sharks. Recommended reductions in landings, if implemented by multiple nations, would ultimately end overfishing of shortfin mako. Therefore, NMFS prefers alternative C5 at this time. Note that with respect to all shortfin mako commercial measures, alternatives C5 and C6 would have the lowest short-term economic impacts on fishermen and participants in the fishery.

Alternative C6, the preferred alternative, would promote the release of shortfin mako sharks brought to fishing vessels alive. This alternative would likely not result in any negative economic impacts on commercial fishermen as it does not restrict commercial harvest of shortfin mako sharks that are alive at haulback, and quotas and retention limits would remain as described in the No Action alternative C1. However, as this alternative could result in the reduction of fishing mortality of shortfin mako sharks by encouraging fishermen to release shortfin mako sharks brought to the fishing vessel alive, NMFS prefers this alternative at this time.

8.5.2 Recreational Measures

8.5.2.1 *Small Coastal Sharks*

Under alternative D1, the preferred alternative, NMFS would maintain the current recreational management measures, including the current retention limits and size limits for SCS. Therefore, the economic impacts of alternative D1 would be the same as the status quo, and no negative economic impacts would be anticipated under alternative D1. Alternative D1 is the least costs alternative and NMFS prefers this alternative.

Alternative D2 would modify the minimum recreational size for blacknose sharks based on the biology of blacknose sharks. This would lower the current size limit from 54 inches FL to 36 inches FL, the size at which 50 percent of the female blacknose sharks reach sexual maturity. This could increase the landings of recreationally harvested blacknose sharks and, therefore, have positive economic impacts for small business entities supporting recreational fishermen. The potential for increased landings associated with the lower size limit could marginally increase demand for charter/headboat services and for products and service provided by shoreside businesses that support recreational fishermen. Since this alternative could result in the increase of blacknose shark recreational landings, and NMFS needs to reduce the number of blacknose shark landings in order to rebuild the stock, NMFS does not prefer this alternative at this time.

Alternative D3 would increase the retention limit for Atlantic sharpnose sharks based on their current catches and stock status. Any increase in the retention limit for Atlantic sharpnose sharks would provide positive economic impacts for recreational fishermen, especially if this resulted in more charter trips for charter/headboats. However, since the latest stock assessment suggests that increased fishing efforts could result in an overfished status and/or cause overfishing to occur in the future (NMFS, 2007), NMFS does not prefer this alternative at this time.

Under alternative D4, NMFS would prohibit the retention of blacknose sharks in the recreational fishery. While recreational fishermen could still catch blacknose sharks, they would not be permitted to retain blacknose sharks and would have to release them. This could have negative economic impacts on recreational fishermen, including tournaments and charter/headboats if the prohibition of blacknose sharks resulted in fewer charters and reduced tournament participation. However, since blacknose sharks are not one of the primary species targeted by recreational anglers, in tournaments, or on charters, NMFS does not anticipate large negative economic impacts from this alternative on tournaments or charter/headboat businesses.

8.5.2.2 *Pelagic Sharks*

Maintaining the current recreational measures for shortfin mako sharks under alternative E1 would likely not result in any adverse economic impacts on small entities since the No Action alternative would not modify or alter recreational fishing practices for shortfin mako sharks or other shark species. However, this alternative would not meet the objective of this rule in reducing overfishing of shortfin mako sharks, thus, NMFS does not prefer this alternative at this time.

Alternative E2a would set a minimum size limit for shortfin mako sharks of 108 inches FL in the recreational fishery. This would have the most severe economic impacts of all the alternatives considered, as almost all of the reported shortfin mako sharks landed (99.5 percent) were smaller than the proposed 108 inch FL size limit and would have to be released. This alternative would basically create a catch-and-release fishery for shortfin mako sharks. The impacts of alternative E2b would be less severe than alternative E2a, as it would set a minimum size limit for shortfin mako sharks of 73 inches FL in the recreational fishery. This would result in a 60.3 percent overall reduction in recreational shortfin mako shark landings. Under this alternative, economic impacts would be greater on the non-tournament recreational mako shark fishery, as 81 percent of those landings would fall below the 73 inch FL size limit. The percentage of recreational landings during tournaments that would be released under alternative E2b would be less than the non-tournament recreational landings (51.7 percent to 81 percent, respectively). According to LPS data, 41 percent of shortfin mako sharks caught are kept; therefore, size limits in alternatives E2 may have a substantial economic impact on the recreational fishery. Thus, NMFS does not prefer E2a or E2b at this time.

Under alternative E3, NMFS would take action at the international level to end overfishing of shortfin mako sharks through participation in international fisheries organizations such as ICCAT. This alternative would not result in any changes in the

current recreational regulations regarding bag or size limits for shortfin mako sharks. Therefore, this alternative would likely not result in any negative economic impacts for recreational fishermen and the small businesses that support those recreational fishing activities in the short term as compared to the No Action alternative, E1. In addition, this alternative could help end overfishing of shortfin mako sharks in the long term through an international plan to conserve shortfin mako sharks. Therefore, NMFS prefers this alternative at this time.

Under alternative E4, NMFS would promote the live release of shortfin mako sharks in the recreational shark fishery, but this alternative would not result in any changes in the current recreational regulations regarding bag or size limits for shortfin mako sharks. Therefore, this alternative would likely not result in any economic impacts compared to the No Action alternative, alternative E1. However, it would encourage the live release of shortfin mako sharks, and could help reduce fishing pressure on this species. Therefore, NMFS prefers this alternative at this time.

Under alternative E5, NMFS would remove shortfin mako sharks from the authorized species list and add them to the prohibited species list. Placing shortfin mako sharks on the prohibited species list would make the recreational fishery for shortfin mako sharks a catch-and-release fishery. Although a small number of shortfin mako sharks were landed in the recreational fishery from 2004 to 2007, it is also an important fishing tournament species. Fishing tournaments are an important component of HMS recreational fisheries. In 2008, there were 42 shark tournaments throughout the U.S. Atlantic Coast, including the Gulf of Mexico and the Caribbean Sea. Therefore, adding this species to the prohibited species list could lead to negative economic impacts for tournament operators since they may have to modify their tournament rules and could face reduced demand for participation, and thus reduce revenues from entry fees. A recreational catch-and-release fishery for shortfin mako may also reduce demand for CHB trips that target shortfin mako sharks. In addition, since the United States only contributes to a small portion of the overall mortality for shortfin mako sharks, prohibiting them in the recreational fishery would not end overfishing for this species. Given these reasons and the economic impacts of this alternative are estimated to be higher than that of the preferred alternatives, NMFS does not prefer this alternative at this time.

8.5.3 Smooth Dogfish

NMFS also considered alternatives regarding the potential inclusion of smooth dogfish under NMFS management. Smooth dogfish are currently not managed by NMFS, and stock data are sparse. Therefore, there is limited stock status information, participant information, and effort data for this fishery.

Under alternative F1, the no action alternative, NMFS estimates that there would not be any economic impacts to small entities beyond the status quo. This alternative would have the lowest costs alternative to small entities. However, applying the No Action alternative would not meet the objectives of this rule since it would preclude

gathering fishery participant information. Therefore, NMFS does not prefer this alternative at this time.

Implementing federal management of smooth dogfish through alternative F2 would focus on characterizing the fishery and stock status, but would not actively change catch levels or rates. Alternative F2 would require federal commercial and recreational fishing permits as well as require fishermen to land smooth dogfish with all of their fins naturally attached. These changes could result in short-term, direct significant adverse socioeconomic impacts on fishermen who are used to processing smooth dogfish at sea. Business entities that fish commercially for smooth dogfish would have to purchase an open access smooth dogfish commercial fishing permit, and dealers would have to report smooth dogfish landings. The costs to small entities would include the costs of obtaining the permit (approximately \$20 based on current permit fees), the time involved in completing the permit form, and the administrative costs associated with reporting landings. In addition, recreational anglers that would want to retain smooth dogfish in federal waters would need to purchase an HMS Angling category permit. While this alternative results in more costs to small entities than alternative F1, it helps meet the objectives of this rule of gathering more information on participation in this fishery, and therefore is preferred at this time. NMFS would delay the implementation of these requirements until the start of the 2012 fishing season to allow time for fishermen to adjust to the changes and to allow time for the development of a new commercial smooth dogfish permit. Thus, in the short-term, alternative F2 would result in significant but mitigated to be less than significant socioeconomic impacts due to the delay in implementation of these requirements. Once fishermen adjust to the new measures, NMFS anticipates that there would be no direct socioeconomic impacts to fishermen in the long-term.

Sub-alternatives F2 a1, which would establish a smooth dogfish quota that is equal to the average annual landings from 1998-2007, and F2 a2, which would establish a smooth dogfish quota equal to the maximum annual landing between 1998-2007, could potentially have negative economic impacts on fishermen if the associated quotas reflect a significantly underreported fishery. If the actual landings are higher than these two quotas, fishermen would be prevented from fishing at status quo levels, and thus experience negative economic impacts. Thus, NMFS does not prefer these two sub-alternatives at this time.

Alternative F2a3, which would establish a smooth dogfish quota above the maximum annual landings between 1998-2007, would have neutral to negative economic impacts. The quota of maximum historical annual landings plus one standard deviation between the years 1998 and 2007 could allow a buffer for potential unreported landings during that time. However, based on public comment, as detailed above, NMFS does not believe that this alternative would adequately account for underreporting.

Alternative F2a4, the preferred alternative, would establish a smooth dogfish quota above the maximum annual landings between 1998-2007 and would have neutral economic impacts. The quota of maximum historical annual landings plus two standard

deviations between the years 1998 and 2007 would allow a buffer for potential unreported landings during that time. This would allow the fishery to continue at the current rate and level into the future without having to be shut down prematurely. Thus, alternative F2a4 is NMFS' preferred alternative at this time.

There are no negative economic impacts anticipated with alternative F2 b1. There is no charge associated with fishermen and researchers obtaining an EFP, SRP, display permit, or LOA for research or the collection for public display. In addition, NMFS would establish a smooth dogfish set aside that would accommodate current and future research activities. Thus, NMFS does not anticipate any negative economic impacts associated with alternative F2 b1, and NMFS prefers sub-alternative F2 b1 at this time.

As with sub-alternative F2 b1, there are no negative economic impacts anticipated with sub-alternative F2 b2. There is no charge associated with fishermen and researchers obtaining an EFP, SRP, display permit, or LOA for research or for the collection for public display. In addition, NMFS would establish a smooth dogfish set-aside that would accommodate current and future research activities. Thus, NMFS does not anticipate any negative economic impacts associated with sub-alternative F2 b1.

Alternative F3, which would implement management measures for smooth dogfish that complement the ASMFC plan, would likely have neutral to slightly positive economic impacts. Most of the ASMFC regulations would not change the smooth dogfish fishery as it currently operates, fishermen would be required to leave the dorsal fin on the smooth dogfish through landing from July through February, which could change how the fishery operates, and therefore, have direct minor, adverse socioeconomic impacts in the short-term. The extent of these impacts will depend on how many smooth dogfish are landed between July and February of each year. Because this requirement began in state waters in January 2010, it could mitigate some of the economic impacts associated with alternative F2 with regard to the requirement of having all fins naturally attached under the federal plan. Thus, by the start of the fishing season in 2012, fishermen who have been fishing in state waters should have a better idea of how to keep all fins naturally attached.

Indirectly, in the short-term there are no indirect socioeconomic impacts expected for dealers and fish processors compared to the status quo as the fishery would continue to operate as it has been with the exception of the requirement to leave the dorsal fin on from July through February. However, if the requirement to have the dorsal fin attached during certain times of the year affects how dealers and processors process smooth dogfish, then there could be indirect, minor adverse economic impacts on smooth dogfish dealers until they learn how to process these sharks during July through February. However, since NMFS considers the requirements for gillnet checks and maintaining shark fins naturally attached through offloading necessary conservation tools for protected resources and to prevent shark finning, NMFS does not prefer this alternative at this time.

Chapter 8 References

NMFS. 2007. SEDAR 13 Stock Assessment Report: Small Coastal Sharks, Atlantic Sharpnose, Blacknose, Bonnethead, and Finetooth Shark. Highly Migratory Species Management Division, 1315 East West Highway, Silver Spring, MD 20910. 375 pp.

