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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.) and provides a description of the economic impacts of the various alternatives on small entities. Certain elements required in a FRFA are also required as part of an environmental impact statement (EIS). Therefore, the FRFA incorporates the economic impacts identified in the EIS. The Initial Regulatory Flexibility Analysis was included in the draft EIS and is also contained in the proposed rule.

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

Please see Chapter 1 for a description of the objective of the final rule.

### **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 D of this document and will be included in the final rule. The specific economic concerns raised in comments are also summarized here.

NMFS received a comment that the Agency should consider an alternative suite that incorporates a "phase out" of the commercial shark industry. NMFS did consider such an alternative in the Draft EIS that would have ended Atlantic commercial shark fishing, Alternative Suite 5. Under this proposed alternative, shark landings would have been limited to research and the collection for public display via the HMS Exempted Fishing Program. Recreational fisheries would have been catch and release only. However, after careful consideration of the other alternatives, this alternative suite was not preferred due to the economic costs associated with a complete closure as discussed in Chapter 6.

NMFS received several comments regarding an industry buyout/buyback. NMFS recognizes that some participants of the Atlantic shark fishery expressed interest in reducing fishing capacity for sharks via some form of buyout program. Buyouts can occur via one of three mechanisms, including: through an industry fee, via appropriations from the United States Congress, and/or provided from any State or other public sources or private or non-profit organizations. A buyout plan is not proposed in this rulemaking, despite requests for consideration from the HMS Advisory Panel and other affected constituents, because the Agency is unable to implement a buyout as a management option. Buyouts must be initiated via one of the aforementioned mechanisms. The shark fishery did develop an industry "business plan" that examined options for a buyout, which is further described in Chapter 1 of the Draft EIS.

NMFS received several comments concerning the potential for severe economic impacts associated with all of the alternatives considered (other than status quo). Comments indicated a concern that many fishermen may not be able to survive economically until the next stock assessment. NMFS has estimated that the alternatives considered, including the no action alternative, would result in economic consequences to the shark fishery. The severity of the economic consequences varies by alternative suite, with Alternative Suite 5, the complete closure of the Atlantic shark fishery, having the greatest economic impact.

It was also suggested that NMFS should include analysis of the negative economic impacts associated with prohibiting porbeagle sharks in shark tournaments, especially in New England. NMFS appreciates this additional information regarding the importance of porbeagle sharks in tournament fisheries. Additional information has been incorporated into the final EIS for Amendment 2 to further address the potential economic impacts that a prohibition of porbeagle landings. However, based on strong support from the public not to prohibit retention of porbeagle sharks and NMFS' recognition of the negative impacts of such a prohibition, NMFS is choosing to not prohibit the recreational retention of porbeagle sharks.

Comments indicated recreational impacts would be significant if sandbar, bull, and blacktip sharks were prohibited in the recreational fishery. Comments indicated that the negative economic impacts resulting from the reduced number of sharks that could be legally landed by recreational anglers would be particularly pronounced in areas where blacktip sharks are frequently encountered. In addition, tournaments offering prize categories for sharks could also experience negative economic impacts as a result of not allowing six additional species to be retained in recreational fisheries. Due to a lack of information regarding the relative preferences of shark fishermen to retain shark species over practicing catch-and-release shark fishing, the Agency was unable to quantitatively estimate the economic impacts of the proposed recreational measures restricting the authorized list of species that could be retained. In part to mitigate these impacts, the final preferred alternative suite would allow recreational anglers to retain blacktip, finetooth, blacknose, bull, spinner, and porbeagle sharks.

Comments also indicated a concern that dealers will not likely be interested in continuing to buy shark products when the proposed measures go into place. NMFS acknowledges that some dealers may opt to no longer participate in the shark fishery due to the decrease in volume of shark product that is anticipated under the reduced quotas. The handling of low volumes of shark product may not be profitable for some dealers. However, the information available to the Agency indicates that several shark dealers already handle small quantities of shark products, and therefore, changes in the shark fishery are unlikely to cause them to change their business practices. Reduced domestic harvest of sandbar sharks could potentially increase the value of shark product in the future due to reduced supplies. Furthermore, having the season open for a longer period of time each year, subject to reduced retention limits, may enhance the domestic shark meat market and increase prices.

Several comments suggested NMFS should implement a retraining program for fishermen and families that are displaced by this action. Others suggested fishermen reconfigure their businesses towards providing tourism services. NMFS has worked with a number of other agencies/departments to explore programs that are available to fishermen and other businesses affected by fishery management measures. Some of these include retraining programs and financial assistance and would mitigate some of the economic impacts of this rule. These programs are further discussed in Appendix D.

Commenters also suggested that NMFS consider giving shark fishermen swordfish handgear permits in order to help offset negative economic impacts, while also increasing swordfish landings. NMFS did not propose changes to the permit system, however, the Agency will take this suggestion under consideration for future actions. The Agency notes that the swordfish handgear permit is a limited access permit. Therefore, issuing new swordfish handgear permits may result in negative economic impacts to current holders of swordfish handgear permits. In addition, NMFS recently issued new regulations to revitalize the swordfish fishery and may consider additional measures in the future depending on the outcome of the current regulatory changes.

NMFS received a comment questioning whether shark permits will still be worth anything after the proposed management changes take place. It is difficult to predict the value of shark directed and incidental permits before management measures associated with this Amendment are implemented. It is likely that the value of shark permits may be decreased as a result of quota reductions and reduced retention limits. However, there will still be some demand for shark permits by new entrants into the commercial swordfish and tuna fisheries that require all three HMS permits to go fishing.

NMFS received comments indicating that requiring fishermen to land sharks with fins on will change the entire pricing of shark product. NMFS could be changing the whole valuation process here by requiring that sharks have their fins on. The requirement to land sharks with their fins attached would allow fishermen to leave the fins attached by just a small piece of skin so that the shark could be packed efficiently on ice at sea efficiently. Shark fins could then be quickly removed at the dock without having to thaw the shark. Sharks may be eviscerated, bled and the head removed from the carcass at sea. These measures should prevent any excessive amounts of waste at the dock, since dressing (except removing the fins) the shark can be performed while at sea. While this will result in some changes to the way fishermen process sharks at sea, the transfer of shark product to dealers could remain relatively unchanged because the fins can be removed quickly once the shark has been offloaded. NMFS expects that the market will continue to receive sharks in their log form. While there may be some changes in the way sharks are marketed and priced, it is unlikely that the total ex-vessel value of sharks will change significantly due to the requirement to land sharks with their fins attached.

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

NMFS considers all HMS commercial 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 boats, 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 proposed rule would apply to the 527 commercial shark permit holders in the Atlantic shark fishery based on an analysis of permit holders on October 1, 2007. Of these permit holders, 231 have directed shark permits and 296 hold incidental shark permits. Not all permit holders are active in the fishery in any given year. NMFS estimates that there are 143 vessels with directed shark permits and 155 vessels with shark incidental permits that could be considered actively engaged in fishing, since they reported landing at least one shark in the Coastal Fisheries Logbook from 2003 to 2005. A further breakdown of these permit holders is provided in Table 3.32.

In addition, the reporting requirements in the proposed alternatives would also apply to Federal shark dealers. As of October 1, 2007, there were a total of 269 Atlantic shark dealer permit holders. Based on NMFS understanding of HMS dealers, the Agency assumes that each of these dealers would be considered a small business with 100 or fewer employees.

The proposed measures being considered may also impact the types of services HMS CHB permit holders may provide. As of October 1, 2007, there were 4,899 HMS CHB permit holders. It is unknown what portion of these permit holders actively participate in shark fishing or market shark fishing services for recreational anglers.

In addition, some businesses, such as marinas or specialized tournament organizers that hold tournaments may be considered small entities. HMS tournaments are required to register with NMFS. As such, NMFS has estimates on the number of HMS tournaments. However, NMFS may not necessarily know the number of businesses behind the tournament name and contact. Tournaments offering prize categories for sharks may also experience negative economic impacts as a result of prohibiting two additional species of sharks for retention in recreational fisheries in alternatives suites 2 through 4, as well as alternative suite 5 which would allow no possession of any sharks and only allow catch and release fishing. The majority of tournaments specializing in sharks are in the North Atlantic region, specifically Rhode Island, New York, and Massachusetts. In 2007, there were 59 tournaments with prize categories for pelagic sharks and 42 (combined) tournaments for LCS and SCS.

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 Final Rule, Including an Estimate of the Classes of Small Entities Which Would Be Subject to the Requirements of the Report or Record**

The preferred alternative would require modifying existing reporting and record-keeping requirements. The research program component in this proposed rule would require modifications to the existing Exempted Fishing Permit (EFP) program and dealer reporting requirements.

The final rule would modify the reporting frequency for dealers. The current requirement for dealer reports to be post-marked within 10 days after each reporting period (1st through 15th and 16th through last day of month), would be modified to state that dealer reports must be received by NMFS not later than 10 days after each reporting period (*i.e.*, 25th and 10th of each month). Shark, swordfish, and tuna dealers would have to submit these reports in advance of the 10th and 25th of each month to ensure adequate time for delivery, depending on the means employed for report submission. Requiring that all dealer reports are actually received by the Agency in a more timely fashion would provide more frequent reports of shark landings in order to better assess quantities of sharks landed and whether or not a closure or other management measures are warranted to prevent overfishing. Dealers would still be required to submit reports indicating that no sharks were purchased during inactive periods. Requirements for vessel logbooks and observer coverage would remain unchanged. Additional burden is not expected as a result of modifying the regulations to ensure that dealer reports are actually received within 10 days.

The final rule would also create a limited shark research program that would result in changes to existing reporting requirements. Entry into the shark research program would require vessels to submit an application, which would add to the reporting burden for those vessels wishing to apply. Applicants selected to participate in the shark research program under this alternative would also be subject to 100 percent observer coverage as a requirement for eligibility to participate in the program. In addition, selected vessels would continue to report in their normal logbook in addition to the observer program. Vessels in the shark research program, however, would not need to report in a similar way as the other holders of EFPs even though they are being issued permits under the EFP program. For example, vessels in the research fishery would not be required to submit interim or annual reports describing their fishing activities. Rather, they would only be required to submit logbook per current regulations. Vessels outside the shark research program would still be required to carry an observer if selected and all vessels would still be required complete logbooks within 48 hours of fishing activity and then submit the logbooks to NMFS within seven days.

## **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 the Endangered Species Act (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 seven different alternatives in this proposed rulemaking and provides justification for selection of the preferred alternative to achieve the desired objective.

The alternatives considered and analyzed have been grouped into five alternative suites. Alternative suite 1 would maintain the current Atlantic shark fishery (no action). Alternative suite 2 would allow only directed shark permit holders to land sharks. Alternative suite 3 would allow directed and incidental shark permit holders to land sandbar and non-sandbar LCS as well as SCS and pelagic sharks. Alternative suite 4 would establish a program where vessels with directed or incidental shark permits could participate in a research fishery for sandbar sharks. Only vessels participating in this program could land sandbar sharks. Vessels not participating in the research program could land non-sandbar LCS, SCS, and pelagic sharks. Finally, alternative suite 5 would shut down the commercial Atlantic shark fishery and only allow a catch and release recreational shark fishery. The preferred alternative is suite 4, which would establish a program where a limited number of vessels with directed or incidental shark permits could participate in a research fishery for sharks dependent on the research needs of NMFS.

### **8.5.1 Alternative Suite 1**

Alternative suite 1, the status quo alternative, would not likely result in any significant new economic impacts to small businesses in the HMS Atlantic shark fishery if the current LCS quota of 1,017 mt dw, in conjunction with the 4,000 lb LCS directed shark permit trip limit, is maintained. Under this alternative, the current fishing effort would not likely change which could lead to economic benefits from reduced market uncertainty for fishermen and related businesses in the short term. If gross revenues for directed and incidental permit holders is averaged across the approximately 298 active directed and incidental shark permit holders, then the average annual gross revenues per shark fishing vessel is just over \$20,000. However, long term, negative economic impacts could occur if current fishing mortality of sandbar sharks, an economically important species, is not decreased as recommended by the LCS stock assessment, and this species continues to be overfished.

The status quo alternative would maintain the existing closures and would not add any new closures. The three management regions would also remain unchanged. There would also be no additional reporting requirements. Alternative suite 1 would also maintain the trimester seasons, which provides fishermen and dealers with more open seasons. With an annual LCS quota of 1,017 mt dw, spreading the seasons out over the calendar year could potentially result in greater economic stability for fishermen and associated communities. However, if quotas are reduced to comply with the recommendations from the LCS stock assessment, trimester seasons could become less economically stable for fishermen and dealers because of the reduced amount of quota and fishing effort during the calendar year. Maintaining existing closures, reporting requirements, and management regions would likely have little to no economic impacts on effected small businesses.

Alternative suite 1 would also maintain the current bag limit for HMS Angling permit holders at one shark greater than 54 inches per vessel per trip as well as one sharpnose and one bonnethead shark(both of which are in the SCS complex) per person per trip. This would likely result in no new economic impacts for businesses operating recreational fishing charter trips targeting sharks and shark fishing tournaments in the short term.

Overall, alternative suite 1 would likely have the lowest economic impact on small businesses. However, this alternative would likely not meet the objectives of this action. Maintaining the LCS quota of 1,017 mt dw, would be inconsistent with the Magnuson-Stevens Act and the recent LCS stock assessment that recommended a TAC of 158.3 mt dw for sandbar sharks for this species to rebuild by 2070. Current fishing effort, under the status quo alternative, could lead to continued overfishing of sandbar, porbeagle and dusky sharks, which could potentially prevent these species from rebuilding in the recommended timeframe. As a result, this alternative was not selected.

### 8.5.2 Alternative Suite 2

Alternative suite 2 would allow only directed shark permit holders to land sharks. In addition, this alternative would remove sandbar sharks from the LCS complex and establish a separate category for sandbar sharks from the LCS complex. Incidental shark permit holders would be most affected by alternative suite 2. As of 2007, there were 231 shark directed; 296 shark incidental; 269 shark dealers permit holders. One hundred forty-three vessels with directed shark permits and 155 vessels with shark incidental permits reported landing at least one shark in the Coastal Fisheries Logbook from 2003 to 2005 and could be considered active.

On average, directed permit holders landed 1,286,447 lb dw of sandbar sharks and 1,498,111 of non-sandbar LCS from 2003 to 2005 based on Federal and state shark dealer reports (landings by permit type were based on percentage of total landings by permit type in the Coastal Fisheries and HMS logbooks). In 2006 ex-vessel prices, this is equivalent to gross revenues of \$4,702,031 (assuming 5 percent of the landings are fins and 95 percent of the landings are carcass weight) (Table 4.9). If gross revenues for directed permit holders are averaged across the approximately 143 active directed shark permit holders, then the average annual gross revenues per shark fishing vessel is just under \$33,000 from shark revenues. Under alternative suite 2, gross revenues for directed permit holders would be estimated to be \$1,333,417 (Table 4.10). This is a 72-percent overall reduction in gross revenues compared to 2003 to 2005 (Table 4.10). These reduced gross revenues averaged across the 143 active directed permit holders are just over \$9,000 per directed shark fishing vessel. This estimated reduction in revenue from shark landings could affect the profitability and even viability of some marginal operations. Operations that have permits in other fisheries and can easily diversify are less likely to be as affected as those marginal operations. Nevertheless, the profitability of all directed shark fishing vessels would likely be reduced. Because the states of Florida, New Jersey, and North Carolina have the most directed shark permits (Table 3.32), these states would be most negatively impacted by alternative suite 2.

In addition, retention of sandbar sharks on pelagic longline (PLL) gear would be prohibited under alternative suite 2. On average, 80,825 lb dw of sandbar sharks were reported landed on PLL gear by directed shark permit holders from 2003 to 2005 (HMS logbook data). In 2006 ex-vessel prices, this is equivalent to \$117,510 in gross revenues. Given an average of 16.7 vessels landed sandbar sharks with PLL gear from 2003 to 2005, prohibition of sandbar sharks on PLL gear could result in a loss of gross revenues of \$7,037 per vessel.

Gross revenues under the status quo alternative were based on a 4,000 lb dw LCS trip limit for directed shark permit holders. The average number of sandbars and non-sandbar LCS landed per trip was 35 sandbars and 32 non-sandbar LCS for all gear types reported in the Coastal Fisheries and HMS Logbooks. Based on 2006 ex-vessel prices, this is equivalent to \$4,101 per trip (Table 4.11). Revenue estimates on a regional trip basis were also based on species composition data attained from the BLL observer program data (Hale and Carlson, 2007). Observer data indicate that between 2005 and 2006, 69 sandbar sharks and 35 non-sandbar LCS were caught per trip in the South

Atlantic region, and 30 sandbar sharks and 83 non-sandbar LCS were caught per trip in the Gulf of Mexico region (Hale and Carlson, 2007). Based on these numbers and 2006 ex-vessel prices, South Atlantic trips averaged \$4,743/trip and Gulf of Mexico trips averaged \$4,101 per trip (Table 4.11).

Under alternative suite 2, the retention limits would be 8 sandbars/trip and 21 non-sandbar LCS/trip. Non-sandbar LCS retention limits are based on the average ratio of sandbars to non-sandbar LCS caught in the South Atlantic and Gulf of Mexico regions to limit sandbar shark discards by fishermen deploying non-selective gear (Hale and Carlson, 2007). In the Gulf of Mexico, the ratio of sandbars to other LCS caught is 1:4, which based on an 8 sandbar/trip retention limit, would equal 32 non-sandbar LCS/trip. However, such a high non-sandbar LCS retention limit would result in a sandbar discards in the South Atlantic (~65.3 mt dw). Therefore, a 21 non-sandbar LCS/trip retention limit was set to balance discards versus catch in the two regions (see Table A.4). This results in approximately 5 sandbar sharks being caught in the Gulf of Mexico region when the non-sandbar LCS retention limit/trip is filled (and therefore, only 86.1 mt dw of the sandbar quota would be filled). Therefore, gross revenues on a trip basis are estimated to be \$1,262 of gross revenue per trip in the South Atlantic and \$1,333 of gross revenue per trip in the Gulf of Mexico (Table 4.12). From 2003 to 2005, there were 124 vessels that averaged more than 324 lb dw (or 8 sandbar sharks) of sandbar/trip (Figure A.3). Therefore, these vessels would be most negatively affected by retention limits under alternative suite 2.

On average, 66 incidental permit holders landed 12,994 lb dw per year of sandbar sharks and 46,333 lb dw per year of non-sandbar LCS from 2003 to 2005 based Federal and state shark dealer reports and Coastal Fisheries and HMS logbook data. Using 2006 ex-vessel prices, this is equivalent to gross revenues of \$106,491 (assuming 5 percent of the landings are fins and 95 percent of the landings are carcass weight) (Table 4.9). Gross revenues averaged across the 66 vessels with incidental permits landing sharks were \$1,614 per vessel. Since incidental permit holders would not be able to land any sharks under alternative suite 2, the 66 active vessels would be most negatively affected by this alternative suite. The states of Florida, Louisiana, New Jersey, and North Carolina had the most incidental shark permit holders as of 2007 (144, 37, 20, and 16, respectively; Table 3.32); therefore, these states would be most negatively impacted by alternative suite 2.

Alternative suite 2 would also require dealers to submit reports within 24 hours of shark products being purchased. There could be negative economic impacts to Atlantic shark dealers as a result of the increased reporting requirement associated with this alternative. Currently, shark dealer reports are required to submit bimonthly reports, regardless of whether the dealer actually purchased any shark products. Reporting frequency would be increased to 24 hours of when shark products were purchased. While the increased reporting burden would not result in direct costs to the shark dealer, it would result in additional time spent submitting dealer reports. This represents an opportunity cost for dealers since that time could have been spent conducting other activities related to their business. Furthermore, since submitting the reports via regular

mail would no longer be feasible, in order to comply with the requirement that dealer reports must be *received* by the Agency within 24 hours, it is assumed that dealers would have to submit dealer reports electronically or via facsimile. Dealers that do not currently possess a computer or fax machine would have to purchase one of these items. The increased reporting burden implemented in this alternative suite would be subject to approval under the Paperwork Reduction Act. Reporting requirements for shark vessel permit holders, including the need to carry an observer if selected and the need to submit vessel logbooks within seven days of completing a fishing trip would not be modified, resulting in neutral economic impacts.

The other provisions of alternative suite 2 are the same as in alternative suite 4, which is the preferred alternative for this proposed rule. These provisions include: maintaining the 60 mt shark display and research quota; placement of porbeagle sharks on the prohibited list; quota carryover limited to 50 percent of base quota for species not overfished; no carryover for overfished, overfishing or unknown species; sharks fins must remain on the shark; removal of regions and seasons; and limiting the shark species that can be landed recreationally.

This alternative suite was not selected for two primary reasons. First, this alternative does not address the impacts of continuing to catch sandbar sharks incidentally. These vessels will likely continue to incidentally catch sandbar sharks, but then under this alternative those sharks would be required to be discarded. These discards would reduce potential revenues and possibly operating efficiency of vessels possessing incidental shark permits. Regulatory discards would likely lead to increases in mortality and slow efforts to end overfishing. Second, the 24 hour dealer reporting that would be required to effectively manage quotas would result in a significant increase in reporting burden for dealers. This alternative would therefore not minimize the economic cost to dealers in comparison to the preferred alternative.

### **8.5.3 Alternative Suite 3**

Alternative suite 3 would allow directed and incidental shark permit holders to land sandbar and non-sandbar LCS as well as SCS and pelagic sharks. Therefore, the available sandbar and non-sandbar LCS quota would be spread over a larger universe of commercial permit holders. However, unlike the status quo or alternative suite 2, the retention limits for sandbar sharks and non-sandbar LCS would be the same for both directed and incidental permit holders. Since directed permit holders presumably make a greater percentage of their gross revenues from shark landings, they are expected to have larger negative socioeconomic impacts compared to incidental permit holders. Since the states of Florida, New Jersey, and North Carolina have the most directed permit holders, NMFS anticipates that these states would have the largest negative socioeconomic impacts under alternative suite 3 (Table 3.32). As with alternative suite 2, shark dealers could also experience negative impacts due to the reduction in the sandbar and other LCS quotas and retention limits, which would reduce the overall amount of sharks being landed.

As stated under alternative suite 2, on average, directed permit holders landed 1,286,447 lb dw of sandbar sharks per year and 1,498,111 of non-sandbar LCS per year from 2003 to 2005 based on Federal and state shark dealer reports and logbook data. In 2006 ex-vessel prices, this is equivalent to gross revenues of \$4,702,031 (assuming 5 percent of the landings are fins and 95 percent of the landings are carcass weight) (Table 4.9). However, under alternative 3, the available sandbar and non-sandbar LCS quota would be spread over directed and incidental permit holders. Based on past effort, it was assumed 1,108 trips could be made by directed permit holders (Table 4.14). This is 78 percent of the total expected fishing effort (Table 4.14). Therefore, given 105.9 mt dw (233,467 lb dw) of the sandbar quota and 229.2 mt dw (505,294 lb dw) of the non-sandbar LCS quota that could be landed under alternative suite 3, approximately 83 mt dw (183,073 lb dw) of sandbar quota and 180 mt dw (396,225 lb dw) of the non-sandbar LCS quota are anticipated to be landed by directed permit holders (Table 4.14). Based on 2006 ex-vessel prices, this is equivalent to \$1,015,162 gross revenues for directed permit holders. These gross revenues indicate a 78 percent overall reduction compared to 2003 to 2005 (gross revenues based on current directed permit holders' landings were \$4,702,031; Table 4.9). Again, since the states of Florida, New Jersey, and North Carolina have the most directed permit holders, NMFS anticipates that these states would experience the largest negative socioeconomic impacts under alternative suite 3 (Table 3.32).

As stated in alternative 2, the status quo revenue was based on a 4,000 lb dw LCS trip limit for directed shark permit holders with average South Atlantic trips at \$4,743 per trip and average Gulf of Mexico trips at \$5,853 per trip (Table 4.11). Under alternative suite 3, the retention limits would be 4 sandbars per trip and 10 non-sandbar LCS per trip. However, since the ratio of sandbars to non-sandbar LCS caught in the Gulf of Mexico is 1:4, NMFS estimates that approximately 3 sandbar sharks would be caught in the Gulf of Mexico region when the 10 non-sandbar LCS retention limit/trip is filled (10 non-sandbar LCS / 4 = 2.5 sandbar sharks). Therefore, gross revenues on a trip basis are estimated to be \$610 per trip in the South Atlantic and \$670 per trip in the Gulf of Mexico (Table 4.15). From 2003 to 2005, there were 128 vessels that averaged more than 163 lb dw (or 4 sandbar sharks) of sandbar/trip (Figure A.3). Therefore, these vessels would be most negatively affected by retention limits under alternative suite 3.

On average, incidental permit holders landed 12,994 lb dw of sandbar sharks and 46,333 lb dw of non-sandbar LCS based on Federal and state shark dealer reports and logbook data. In 2006 ex-vessel prices, this is equivalent to gross revenues of \$106,491 (assuming 5 percent of the landings are fins and 95 percent of the landings are carcass weight) (Table 4.9). The available sandbar and non-sandbar LCS quotas would be averaged over directed and incidental permit holders under alternative suite 3. Based on past effort, it was assumed 305 trips could be made by incidental permit holders (Table 4.14). This is 22 percent of the expected fishing effort (Table 4.14). Therefore, given the 105.9 mt dw (233,467 lb dw) of the sandbar quota and 229.2 mt dw (505,294 lb dw) of the non-sandbar LCS quota that could be landed under alternative suite 3, approximately 23 mt dw (50,395 lb dw) of sandbar quota and 50 mt dw (109,069 lb dw) of the non-sandbar LCS quota are anticipated to be landed by incidental permit holders (Table 4.14).

Based on 2006 ex-vessel prices, this is equivalent to \$279,441 gross revenues for incidental permit holders (Table 4.14). This would result in gross revenues that are 2.7 times higher compared to 2003 to 2005 (gross revenues based on current incidental permit holders' landings were \$106,491; Table 4.9).

This increase in gross revenues is due to the increase in retention limits for incidental permit holders. Under the status quo, incidental permit holders can retain 5 sharks from the LCS complex. However, under alternative suite 3, incidental permit holders would be able to retain 4 sandbars and 10 non-sandbar LCS or 14 LCS total. This retention limit is almost 3 times higher than what is currently allowed under the status quo. On average, incidental permit holders have been landing 2 sandbar sharks and 3 non-sandbar LCS per trip. Based on 2006 ex-vessel prices, this is equivalent to \$307 per trip (Table 4.11). However, under alternative suite 3, incidental permit holders would make equivalent gross revenues per trip as directed permit holders: \$610 per trip in the South Atlantic and \$670 per trip in the Gulf of Mexico (Table 4.15). This would result in gross revenues for incidental permit holders that are 2 to 3 times higher than gross revenues in 2003 to 2005 depending on future fishing effort and catch composition. Therefore, there would be positive economic impacts for incidental permit holders under alternative suite 3. Since approximately 66 vessels with incidental permit holders landed sandbar sharks or non-sandbar LCS in 2003 to 2005 in the Coastal Fisheries and HMS Logbooks, these 66 vessels would have the largest economic benefits under alternative suite 3. However, if sharks become profitable for incidental permit holders under alternative suite 3, then more vessels with incidental permits may actively land sandbars and non-sandbar LCS in the future. Finally, the states of Florida, Louisiana, New Jersey, and North Carolina had the most incidental shark permit holders in 2007 (Table 3.32). Therefore, these states would see the largest socioeconomic benefits for incidental permit holders under alternative suite 3.

The other provisions of alternative suite 3 are the same as alternative suite 4, which is the preferred alternative for this proposed rule. These provisions include maintaining the 60 mt shark display and research quote; placement of porbeagle sharks on the prohibited list; quota carryover limited to 50 percent of base quota for species not overfished; no carryover for overfished, overfishing or unknown species; sharks fins must remain on the shark; dealer reports received within 10 days of purchase; removal of regions and seasons; and limiting the shark species that can be landed recreationally.

This alternative suite was not selected as the preferred alternative primarily based on the economic impacts and because it does not meet the ecological objectives of this rule. Despite the time/area closures, alternative suite 3 would have a smaller reduction in dead discards of dusky sharks compared to alternative suite 2 since sandbar sharks would be allowed to be retained on PLL gear under alternative suite 3.

Negative economic impacts under alternative suite 3 are expected for directed permit holders (78-percent reduction in gross revenues compared to the status quo) as a result of the four sandbar per vessel per trip retention limits. Given the retention limits for sandbar and non-sandbar LCS are significantly lower than the limit under the status

quo (91 and 69-percent reduction in sandbar and non-sandbar LCS retention limits, respectively for directed permit holders), it is anticipated that there would be no directed shark fishery as a result of alternative suite 3. While an observer program would still operate under alternative suite 3, without a directed shark fishery, it is anticipated that the fishery dependent data collection would be limited, which could compromise data collection for future stock assessments. Alternative suite 4 would likely accomplish the necessary reductions in quota, retention limits, and fishing effort to prevent overfishing and allow stocks to rebuild while collecting valuable scientific data for the Agency. Therefore, due to concerns over dusky discards, quota monitoring, and data collection, NMFS is not preferring alternative suite 3 at this time.

#### **8.5.4 Alternative Suite 4**

Alternative suite 4, the preferred alternative, would establish a program where vessels with directed or incidental shark permits could participate in a small research fishery for sandbar sharks that would harvest the entire 116.6 mt dw sandbar quota. There would be 100 percent observer coverage on each research vessel, and only vessels participating in this program could land sandbar sharks. Vessels not participating in the research program could land non-sandbar LCS, SCS, and pelagic sharks.

Alternative suite 4 was selected as the preferred alternative because it meets the objectives of this proposed rule while minimizing some of the economic impacts. Those objectives include: implement rebuilding plans for sandbar, dusky, and porbeagle sharks; provide an opportunity for the sustainable harvest of blacktip sharks and other sharks, as appropriate; prevent overfishing of Atlantic sharks; analyze bottom longline time/area closures and take necessary action, as appropriate; and improve, to the extent practicable, data collections or data collection programs. As detailed in the economic analysis in chapters 4 and 6, it is estimated that vessel in the shark research fishery could make \$437,963 in gross revenues of sandbar and non-sandbar LCS landings under the adjusted quota. Since 5 to 10 vessels are anticipated to participate in the research fishery, NMFS estimates that an individual vessel could make between \$87,593 (*i.e.*, 5 boats) to \$43,796 (*i.e.*, 10 boats) in gross revenues on sandbar shark and non-sandbar LCS landings. However, the vessels operating outside of the research fishery would have an adjusted regional non-sandbar LCS base quota of 187.8 mt dw in the Atlantic region and 390.5 mt dw in the Gulf of Mexico region. In 2006 ex-vessel prices, this is equivalent to \$516,285 in the Atlantic region and \$1,273,269 in gross revenues in the Gulf of Mexico region. Divided by the remaining vessels it is estimated that the average gross revenues from shark per vessel would be just over \$2,000 per trip.

In addition, under the preferred alternative suite 4, porbeagle sharks would be authorized in recreational and commercial fisheries, but under a reduced TAC of 11.3 mt dw. Of the TAC, 1.7 mt dw would be available for harvest in commercial fisheries. Currently the commercial quota for porbeagle sharks is 92 mt dw per year, however, this commercial quota has never been met. NMFS set new TAC and commercial quotas for porbeagle sharks based on present effort levels. Based on quota monitoring (which includes vessel trip reports) from 2003 to 2006, on average, 3,867 lb dw of porbeagle sharks were landed per year. Based on 2006 ex-vessel prices, this is equivalent to a

\$7,378 gross revenues. Since commercial fishermen would be allowed to continue to land porbeagle sharks at this level, there are no anticipated economic impacts of implementing the TAC. In addition, recreational anglers would still be allowed to land porbeagle sharks. Therefore, there are no negative economic impacts for recreational fishermen associated with the TAC.

In the no action alternative, it was estimated that if gross revenues for directed and incidental permit holders is averaged across the approximately 296 active directed and incidental shark permit holders, then the average annual gross revenues per shark fishing vessel is just over \$20,000. Using the average landing for directed permit holder from 2003 to 2005, it is estimated that the 143 active directed permit holders generated average annual gross shark revenues of just under \$33,000 from sharks. Under alternative 2, the reduced gross revenues averaged across the 143 active directed permit holders are estimated to be just over \$9,000 per directed shark fishing vessel and just \$1,221 per vessel per year for incidental permit holders that land sharks. Under alternative 3 this is reduced further to approximately \$7,000 (\$1,015,162 gross revenues/143 vessel) per directed shark fishing vessel per year.

Comparing these revenues to those in alternative 4 indicates that the preferred alternative maintains the annual gross revenues per vessel for vessels operating in the research fishery, while allowing other vessels outside of the research fishery to generate revenues at reduced levels. Alternative suite 4 has less economic impact on shark fishermen than alternative 5, but has greater impacts in the short-run than the status quo alternative. By allowing a limited number of historical participants to continue to harvest sharks under the research fishery, the Agency ensures that data for stock assessments and life history samples would continue to be collected. Alternative suite 4 also has a lower reporting burden for dealers than alternative suite 2. Alternative suite 4 is the alternative that best meets the objectives of this rule while minimizing the economic impacts to shark permit holders.

### **8.5.5 Alternative Suite 5**

Alternative Suite 5 would have significant economic and social impacts on a variety of small entities, including: commercial shark permit holders, shark dealers, gear manufacturers, bait and ice suppliers, and other secondary industries dependent on the shark fishery. The level of economic impact would be directly proportional to the amount of revenues that each entity has realized from past participation in the shark fishery. Permit holders would be impacted differently depending on the quantity of sharks landed in the past. Vessels targeting sharks (directed permit holders) landed an annual average of 1,263 mt dw of LCS, 223 mt dw SCS, and 173 mt dw pelagic sharks per year between 2003 to 2005 based on shark dealer landings and effort data from the Coastal Fisheries and HMS logbooks. The gross revenues based on 2006 ex-vessel prices of these landings are estimated at \$4,702,031, \$681,880, and \$764,512 for LCS, SCS, and pelagic sharks, respectively, based on price information provided in Table 3.42. While it is assumed that few directed shark permit holders subsist entirely on revenues attained from the shark fishery, impacts would still be severe for those participants that depend on any income from participating in the directed shark fishery at certain times of the year.

Because of the extensive economic impacts to shark directed permit holders as a result of this alternative suite, it is assumed that directed permit holders would likely pursue one of the following options as a result of closing the Atlantic shark fishery: (1) transfer fishing effort to other fisheries for which they are already permitted (snapper grouper, king and Spanish mackerel, tilefish, lobster, dolphin/wahoo, *etc.*), (2) acquire the necessary permits to participate in other fisheries (both open access and/or limited access fisheries), or (3) relinquish all permits and leave the fishing industry. Table 3.32 displays the other permits held by directed shark permit holders as of May 2007.

Incidental permit holders would face negative economic and social impacts as a result of closing the Atlantic shark fishery; however, these impacts would not be as severe as those experienced by directed permit holders. It is assumed that incidental permit holders receive the majority of their fishing income from participating in other fisheries depending on the region and the type of gear predominantly fished (*i.e.*, swordfish, tunas, snapper grouper, tilefish, dolphin/wahoo, lobster, *etc.*). NMFS estimates that, on average, between 2003 to 2005 incidental permit holders landed 26.9 mt dw LCS, 17.3 mt dw SCS, and 45.5 mt dw pelagics per year based on shark dealer landings and effort data from the Coastal Fisheries and HMS logbooks. This equates in gross revenues based on 2006 ex-vessel prices for these landings of \$106,491, \$52,882, and \$201,061 for the respective species complexes. Incidental permit holders would likely have to increase effort in these other fisheries to replace lost revenues from landing sharks. Furthermore, these vessels may seek other permits (open access or limited access transferred from another vessel) or leave the fishing industry entirely.

This alternative suite could also have negative economic and social impacts for shark dealers as they would no longer be authorized to purchase shark products from Federally permitted shark fishermen. Shark dealers also maintain permits to purchase other regionally caught fish products. Due to the brevity of the LCS shark fishing season, which is the shark fishery that accounts for the majority of the shark product revenue due to the fin value, many dealers also get revenue from purchasing fish products other than sharks. The majority of shark dealer permit holders hold permits to purchase other fish products, including swordfish, tunas, snapper grouper, tilefish, mackerel, lobster, and dolphin/wahoo among others. It is difficult to assume, on an individual dealer basis, the quantity of revenues received exclusively from shark products.

Shark fin dealers, specializing in the purchase of shark fins from Federal and state permitted dealers, would also experience negative social and economic impacts as a result of closing the shark fishery. These dealers receive virtually all of their income from purchasing shark fins and shipping them to exporters. Exporters then transport the fins to global and domestic markets. This alternative suite would likely force shark fin dealers to leave the industry or focus on purchasing other fishery products, resulting in significant economic impacts to the individuals involved in this trade.

It is difficult to estimate the economic and social impacts that would be experienced by various small entities that support the shark fishery, *e.g.*, purveyors of bait, ice, fishing gear, and fishing gear manufactures. However, these impacts would

likely be negative. It is difficult to estimate these impacts as it is uncertain to what extent vessels that were fishing for sharks would redistribute their fishing effort to other fisheries, or simply cease fishing operations. If the majority of vessels affected by a shark fishery closure simply displace effort to other fisheries, it is assumed that they would still be dependant on small entities for their bait, ice, and gear as these are products essential for fishing excursions targeting any species. Redistributing effort to other fisheries would mitigate negative economic impacts. However, if a significant number of vessels simply cease fishing operations or scale back considerably, then severe economic consequences would be imparted on these support industries as a result.

This alternative suite would increase the proportion of fishermen completing the Coastal Fisheries Logbook who are then selected to report information on fish that are discarded. Currently, 20 percent of the fishermen completing this logbook are selected. This percentage would be increased to facilitate improved data available for shark interactions with longline and gillnet gear. This information would be especially useful because sharks could no longer be landed and the existing logbook only requires fishermen to provide data on landed fish. Increasing the number of fishermen who are selected to provide this data would result in negative economic and social impacts because it would require additional paperwork to be filled out. Increased reporting burden would be subject to approval under the Paperwork Reduction Act. Vessels would no longer be required to take an observer. Shark dealers would no longer be required to submit dealer reports regarding sharks purchased.

Seasons and regions for the commercial Atlantic shark fishery would no longer apply as this alternative suite would close the fishery.

Closing the Atlantic recreational shark fishery would have negative economic and social impacts. These impacts would be most pronounced for Charter/Headboat operators who specialize in landing sharks and operators of shark tournaments that have prize categories for landing sharks. It is difficult to estimate the number of Charter/Headboat operators that specialize in shark charters as the permit covers any participant targeting swordfish, sharks, tunas, and billfish. Many Charter/Headboat operators target a variety of species depending on client interests, weather, time of year, and oceanographic conditions. Charter/Headboat operators specializing in shark fishing charters would have to target other HMS or non HMS species to replace revenues lost as a result of customers not being able to land sharks. However, not all customers necessarily want to land sharks. Charter/Headboat operators would still be able to catch sharks, however, all sharks regardless of species would need to be released in a manner that maximizes their chances of survival. Catering business operations to clientele interested in catch and release fishing for sharks might mitigate some of the negative economic impacts. Shark tournaments that reward prizes for landing sharks would be negatively impacted as a result of this alternative suite. In 2007, there were 59 tournaments with prize categories for pelagic sharks and 42 (combined) tournaments for LCS and SCS. The majority of these tournaments target pelagic sharks and are held in the North Atlantic and Gulf of Mexico regions. These tournaments would either modify their rules to only allow points/prizes for released sharks or these tournaments would

cease to exist. Economic impacts on small entities such as restaurants, hotels, gear manufacturers, retail stores selling fishing supplies, and marinas in the vicinity of where these tournaments are held would also experience negative economic impacts.

HMS Angling permit holders would also experience negative impacts, despite the fact that they would still be able to catch and release sharks. Landings would not be permitted by any recreational anglers as a result of this alternative suite.

Closing the Atlantic shark fishery would have negative economic impacts on global shark fin markets. As a result of this alternative suite, U.S. flagged vessels would no longer be able to contribute to the global demand for shark fins. This would disadvantage U.S. shark fishermen as global markets would likely need to purchase their shark fins from other markets. However, the United States is not a significant producer of shark products globally. Based on data from the United Nations Food and Agriculture Organization (FAO), less than one percent of global shark landings occur in the U.S. Atlantic Ocean.

While alternative suite 5 would meet the objectives of this rule, it would have the highest negative economic impacts of the alternatives considered. There would be significant reductions in revenues for shark dealers and fishing vessels involved with the shark fishery. Some small businesses dependent on commercial shark fishing may cease operating as a result of prohibiting the commercial harvest of shark species. Therefore, this alternative was not selected.