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## 5.0 MITIGATION AND UNAVOIDABLE IMPACTS

### *Ecological Impacts Summary of the Preferred Alternatives*

The preferred alternative for the SCS effort controls, alternative A4, would create a blacknose shark-specific quota and a separate “non-blacknose SCS” quota equal to 56.9 mt dw. Alternative A4 is anticipated to have positive ecological impacts for blacknose, Atlantic sharpnose, bonnethead, and finetooth sharks as it would reduce landings by 76 percent for blacknose sharks and 76 percent for non-blacknose SCS based on current landings. In addition, it would reduce discards by 81 percent for blacknose sharks and 2 percent for non-blacknose SCS based on current discards if gillnets are prohibited in the Atlantic, GOM, and the Caribbean Sea under the gear restriction alternative, B2, and 3 percent for non-blacknose SCS if gillnets are prohibited from South Carolina south, including the GOM and the Caribbean Sea, under the preferred gear restriction alternative, B3. NMFS prefers alternative A4 at this time because 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 TAC needed to rebuild the stock.

The preferred alternative for the commercial gear restrictions, alternative B3, would close the gillnet fishery to commercial shark fishing from South Carolina south, including the Gulf of Mexico and the Caribbean Sea. This would have positive ecological impacts in the SCS fishery by reducing landings from the predominate gear used to target SCS, including blacknose sharks. In addition, blacknose sharks are typically caught from South Carolina south, however, blacknose sharks are not reported as landed with gillnet gear north of South Carolina. Therefore, prohibiting gillnets from South Carolina south would remove the predominate gear type for blacknose sharks, but allow gillnet gear for sharks to continue in areas north of the blacknose shark distribution, mitigating impacts to the northeastern shark gillnet fishery. LCS are also caught in gillnet gear; however, the ecological impacts would be minimal for the LCS fishery since longlines are the primary gear type used in the LCS fishery. Also, the removal of gillnets would lower the bycatch associated with this gear type and decrease the interaction with protected species.

The preferred alternatives for the pelagic shark effort controls, alternatives C5 and C6, would promote measures to end overfishing of shortfin mako sharks at the international level and promote the release of shortfin mako sharks that are brought to the vessel alive. Because of the small U.S. contribution to Atlantic shortfin mako shark mortality, domestic reductions on shortfin mako shark mortality would not end overfishing of the entire stock. Therefore, NMFS believes that ending overfishing and preventing an overfished status would be better accomplished through international efforts where other countries that have large takes of shortfin mako sharks could participate in shortfin mako shark mortality reductions. While this alternative would have neutral ecological impacts for the portion of the shortfin mako shark stock that is fished by U.S. fishermen in the short term, any management recommendations adopted to end overfishing of shortfin mako sharks at the international level could be implemented domestically and could have positive ecological impacts on shortfin mako sharks in the long term. In addition, NMFS would promote the live release of shortfin mako sharks in the commercial shark fishery, but this alternative would not result in any changes in the current commercial regulations

regarding shortfin mako sharks. This alternative is expected to have slightly positive or neutral ecological benefits for shortfin mako sharks because in the commercial fishery 68.9 percent of shortfin makos are brought to the vessel alive and could be released; however, 61.4 percent of shortfin mako sharks that are caught are kept. While this action would not restrict commercial harvest and landing of shortfin mako sharks, it would encourage the live release of shortfin mako sharks in the commercial sector.

The preferred alternative for the SCS recreational measures, alternative D4, would prohibit the retention of blacknose sharks in the recreational fishery. This would have positive ecological impacts for the stock as it could reduce recreational landings of blacknose sharks in federal waters. However, complementary measures in state waters would be important for reducing mortality of blacknose sharks in the recreational sector. The preferred alternatives for the pelagic shark recreational measures, alternatives E3 and E4, would promote conservation and management measures to end overfishing at the international level and promote the release of shortfin mako sharks that are brought to the vessels alive. While alternative E3 would have neutral ecological impacts for the portion of the shortfin mako shark stock that is fished by U.S. fishermen in the short term, any conservation and management recommendations adopted through international efforts to help end overfishing of shortfin mako sharks could have positive ecological impacts on shortfin mako sharks in the long term. 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 shortfin mako sharks. Recreational shark fishermen would still be able to retain one authorized shark species greater than 54 inches FL per vessel per trip, and one Atlantic sharpnose and one bonnethead shark per person per trip. While this alternative is expected to have neutral ecological impacts to the shortfin mako shark stock in the short term, NMFS would encourage the catch and release of live shortfin mako sharks.

The preferred alternative for the additional species measures would add smooth dogfish to the Atlantic HMS management unit and develop management measures, such as a federal permit requirement and a commercial quota. Smooth dogfish are currently not managed by NMFS and there is a lack of stock status information, participant information, and effort data. Management measures implemented under the preferred alternative would focus on characterizing the fishery and stock status and would not actively change catch levels or rates. Therefore, this alternative would likely not have large positive or negative ecological impacts.

#### *Social and Economic Impacts Summary of the Preferred Alternatives*

The preferred alternative for the SCS effort controls, alternative A4, would have negative socioeconomic impacts on SCS and blacknose shark fishermen. Under alternative A4, blacknose shark landings would decrease by 76 percent and discards would decrease by 81 percent. Landings for non-blacknose SCS would also decrease by 76 percent and discards could decrease by 2 to 3 percent, depending on the gear restriction alternative (see Table 4.4 in Chapter 4). This could translate into total annual gross revenues losses of \$644,073. In addition, alternative A4 in combination with alternatives B2 or B3, which would eliminate gillnet gear, could decrease landings of LCS by only three percent, but could decrease discards of LCS by up to 15 percent, depending on the gear restriction alternative (see Table 4.4 in Chapter 4). This could translate into total annual gross revenue losses of \$109,339 in combination with alternative B2 and

\$106,479 under alternative B3 from lost LCS landings. These reductions in landings of non-blacknose SCS and blacknose sharks would result in a 76-percent reduction in annual gross revenues from non-blacknose SCS and blacknose shark landings overall; however, such a reduction is needed to lower the overall mortality on blacknose sharks. Gillnet fishermen would be impacted the most by alternative A4 in combination with alternative B2 or B3, with estimated annual gross revenue losses between \$377,928 and \$365,067 from the reduced non-blacknose SCS and blacknose landings. However, alternative A4 would allow for a higher non-blacknose SCS quota (56.9 mt dw) compared to alternative A3 (42.7 mt dw). This higher quota would benefit the larger SCS fishery, while the prohibition of gillnet would affect a small number of directed gillnet fishermen.

The preferred alternative for commercial gear restrictions reduces fishing effort on blacknose sharks by removing gillnet gear from the areas where blacknose sharks are most commonly caught with gillnet gear. However, it would not prohibit gillnet gear in the areas where the majority of the smooth dogfish are landed, given that gillnet gear is the predominate gear used to harvest smooth dogfish. By prohibiting gillnet gear from South Carolina south, NMFS would be mitigating impacts in the smooth dogfish fishery while allowing blacknose sharks to rebuild. This would have significant social and economic impacts by affecting approximately 31 directed and incidental shark permit holders that land SCS and 12 directed and incidental shark permit holders that land LCS. It would also reduce SCS and LCS revenues for directed permit holders that use gillnet gear to catch sharks by \$464,450 and SCS and LCS revenues for incidental permit holders by \$7,097. However, given the need to reduce blacknose shark mortality, and the fact that gillnet gear is the predominate gear used to harvest blacknose sharks, NMFS believes that the removal of gillnet gear in the areas that interact with blacknose sharks is warranted at this time to rebuild blacknose sharks.

The preferred alternatives for the pelagic shark effort controls, alternatives C5 and C6, would not result in any negative economic or social impacts on commercial fishermen in the short term, as it would not restrict commercial harvest of shortfin mako sharks, nor alter the pelagic shark quota. However, any management recommendations adopted through international agreements to help protect shortfin mako sharks could be implemented domestically and could have slightly negative socioeconomic impacts on fishery participants in the long term if the measures implemented are more restrictive than current regulations.

The preferred alternative for the SCS recreational measures, alternative D4, which would prohibit the retention of blacknose sharks in the recreational shark fishery, could have negative social and economic impacts on recreational fishermen, including tournaments and charter/headboats if the prohibition of blacknose sharks results in fewer charters and fewer recreational fishing trips. However, since blacknose sharks are not one of the primary species targeted by recreational anglers in tournaments or on charters and the minimum size in recent years has already prevented most legal landings, NMFS does not anticipate large negative social and economic impacts from this preferred alternative in tournaments or in the charter/headboat sector. The preferred alternatives for the pelagic shark recreational measures, alternatives E3 and E4, 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 social or economic impacts for recreational fishermen.

The preferred alternative under the additional species considerations, alternative F2, would focus on characterizing the smooth dogfish fishery and stock status by implementing federal management of smooth dogfish and would not actively change catch levels or rates. Therefore, this alternative would likely not have significant positive or negative social or economic impacts.

## **5.1 Mitigation Measures**

The alternatives were specifically selected to mitigate potential adverse impacts on the environment. As a result, mitigation was explicitly addressed in the analyses conducted for selecting the preferred alternatives in other sections of this DEIS including Chapters 4, 6, 7, 8, and 9. At this time, NMFS has not identified other mitigation measures to offset adverse impacts beyond those built into the alternatives analyzed in this document. NMFS would monitor the impacts of the management measures in the preferred alternatives and would consider other mitigation measures in the future as necessary. Should the preferred alternatives change in response to public comment or other considerations, the mitigating aspects of any revised alternatives would similarly be addressed within the prior chapters of the EIS as part of NMFS assessment of alternatives.

As stated above, mitigation measures were explicitly addressed in the analyses conducted for selecting the management measures in the preferred alternatives. For example, in analyzing possible quotas and retention limits for SCS and blacknose sharks, the preferred alternative was selected because it balances the need to end overfishing based on recent assessments, while allowing for the non-blacknose SCS and limited blacknose shark fisheries to continue. For pelagic sharks, the preferred alternatives were chosen to address mortality of shortfin mako sharks, which were domestically determined to be experiencing overfishing. NMFS would address overfishing at the international level and promote the release of shortfin mako sharks that are brought to the vessels alive. This would help address the majority of shortfin mako mortality that occurs outside of the United States. With regard to commercial gear restrictions, eliminating gillnet gear in certain areas would reduce mortality of blacknose sharks, allowing them to rebuild, but would also allow the use of gillnet gear for targeting other sharks species, such as smooth dogfish, whose fishery occurs outside the range of blacknose sharks. To mitigate some of the potential impacts as a result of the preferred alternatives, directed and incidental permit holders would still be allowed to land non-sandbar LCS, sandbar sharks (in the shark research fishery), non-blacknose SCS, blacknose sharks and pelagic sharks, as established in Amendment 2 and in this amendment. The quotas and retention limits in the preferred alternatives comply with the mandate to end overfishing, while still providing a reasonable opportunity to target sharks and harvest the allocated quota.

In summary, while many of the actions taken in this amendment impose additional restrictions on the shark fishery, NMFS specifically selected preferred alternatives that minimize economic impacts while accomplishing the mandate to end overfishing and implement a rebuilding plan for overfished shark stocks.

## **5.2 Unavoidable Adverse Impacts**

In general, there are no unavoidable adverse impacts expected as a result of the preferred alternatives and corresponding management measures considered in the DEIS. NMFS would continue to monitor the impact of the management measures in the preferred alternatives and would propose additional management measures, as necessary, to avoid any unanticipated adverse impacts.

However, there are unavoidable adverse socioeconomic impacts as a result of the preferred alternatives and corresponding SCS Effort Controls and Commercial Gear Restriction management measures. NMFS must administer and operate under the National Standards of the Magnuson-Stevens Act, which includes a mandate to prevent overfishing and rebuild overfished stocks. In trying to rebuild shark stocks and meet the Magnuson-Stevens Act mandate of ending overfishing, NMFS would reduce fishing effort under the preferred SCS Effort Controls and Commercial Gear Restrictions alternatives. This might result in directed and incidental shark permit holders and dealers redirecting to other fisheries and/or leaving the fishing industry due to lowered quotas and the prohibition of gillnet gear, which could decrease overall effort and landings. Participants in recreational shark fisheries may experience minor negative socioeconomic impacts as a result of prohibiting the landing of blacknose sharks. As with SCS Effort Controls and Commercial Gear Restriction alternatives, such a measure is needed to comply with the National Standards of the Magnuson-Stevens Act. In the analyses for selecting the preferred alternatives, NMFS determined that the management measures are necessary in order to comply with the Magnuson-Stevens Act mandate to end overfishing of blacknose sharks. In addition, the preferred alternatives have been determined to be the most feasible alternatives to rebuild shark stocks according to the most recent assessments.

As described above, the preferred alternatives and the corresponding management measures are expected to have positive or neutral conservation benefits for shark species, bycatch species, and protected resources. This is because the preferred alternatives were specifically selected to mitigate any potential adverse impacts. Any resulting economic or social impacts, beyond those described above, are unavoidable.

## **5.3 Irreversible and Irrecoverable Commitment of Resources**

The management measures in the preferred alternatives would not result in any irreversible and irretrievable commitment of resources. Positive ecological impacts are expected due to reduction of quotas, retention limits and commercial gear restrictions for the Atlantic shark fishery. Because of this, the Agency expects fishing effort and bycatch of non-target species and protected resources levels to decrease.