

equipment (line cutters, dipnets, and, when approved, dehooking devices), and a requirement that vessels move 1 nautical mile after an interaction with a marine mammal or a sea turtle. If used correctly, the hook and release equipment requirements could be effective in reducing post-release mortality of sea turtles, marine mammals, sharks, and other species. The cost for this equipment should be minimal and would be a one-time expense.

Moving after an interaction with a marine mammal or sea turtle could help prevent additional interactions with protected species. This management measure could result in additional cost per trip for fishermen including the cost of fuel; however, because few sea turtles or marine mammals have been observed caught in the bottom longline fishery, NMFS does not expect this requirement to affect more than a few trips for all vessels combined, each year.

In addition to the preferred alternatives outlined in sections i, ii, and iii, NMFS also considered (1) prohibiting the use of gillnet; (2) limiting the length of bottom longline gear; (3) limiting the soak time for bottom longline gear; (4) requiring the use of circle hooks; (5) requiring the retention of all sharks (i.e., no discards allowed); and (6) requiring recreational and commercial fishermen to attend bycatch reduction workshops. The first alternative would have larger social and economic impacts and would not be much more beneficial in reducing bycatch than the preferred alternative of strikenet only. The second and third alternatives could have positive ecological benefits. However, it would be difficult to ensure compliance and these alternatives could cause fishermen to fish in an unsafe manner. The fourth alternative might have positive ecological benefits but NMFS is not sure of what the impacts of circle hooks would be on the shark fishery or how many vessels already use circle hooks. While the fifth alternative would eliminate regulatory discards in the shark fishery, it could result in fishermen targeting species of sharks on the prohibited species list that cannot withstand fishing pressure. The sixth alternative could have ecological benefits but could also have economic impacts on fishermen.

B. Time/Area Closure

In the HMS FMP, NMFS did not finalize any time/area closures to protect juvenile sharks because most shark nursery or pupping grounds are within state waters (outside of NMFS' jurisdiction). Also, the State of North

Carolina had recently closed state waters, which, at the time of developing the HMS FMP, was estimated to be sufficient to reduce juvenile sandbar and dusky shark mortality. In addition, the commercial minimum size finalized in the HMS FMP was considered to be as effective as a time/area closure.

In this action, NMFS proposes to close an area approximately 38,200 nmi² off the coasts of Virginia, North Carolina, and South Carolina to vessels issued directed shark LAPs with bottom longline gear on board from January 1 through July 31. This area encompasses areas that have been identified in the HMS FMP and Amendment 1 as EFH for sandbar and dusky sharks and as an habitat area of particular concern for sandbar sharks.

Observer data from 1994 through 2003 for the bottom longline fishery indicates that 85 percent of all dusky sharks observed have been caught in this area and 92 percent of those were juvenile or neonate sharks. Additionally, 66 percent of all sandbar sharks observed have been caught in this area and 54 percent of those were juvenile or neonate sharks. In areas outside the proposed time/area closure, only 7 percent of sandbar sharks were juveniles, and no neonates were observed caught.

If effort is redistributed to other open areas in the Atlantic, analyses using the full observer database indicate that 79 percent fewer dusky sharks would be caught and 48 percent fewer sandbar sharks would be caught. In total, using all observer data from 1994 through 2003, the analyses indicate that 27 percent fewer LCS could be caught as a result of the closure. The estimated reductions change if a more recent timeframe (i.e., 2000 through 2003) is used. However, due to the uncertain regulations in the shark fishery from 1999 through the present as a result of ongoing litigation, NMFS believes that a longer time period is more indicative of what could happen as a result of the time/area closure. Given the historically short seasons, it is likely that shark fishermen would still catch the full quota even with the closed area. Thus, NMFS expects that the closure would protect dusky and juvenile sharks in the area but would not reduce the overall LCS landed.

This closure would likely have large negative economic and social impacts on the communities, fishermen, and dealers who live near the closed area. Fishermen who have traditionally fished the proposed closed area could go out of business or leave the fishery from January through July of each year, relocate to a different homeport during the closure, relocate permanently to

another homeport, or continue to fish from their current homeport and transit the closed area. Currently, there are approximately 34 directed shark LAPs (14 percent of all directed shark LAPs) issued to fishermen in Virginia, North Carolina, and South Carolina. These 34 fishermen and their dealers would be directly affected by the closure. The fishermen who remain in the fishery would experience additional fishing costs including the cost of fuel, potentially longer trips, and potentially the need to find a new dealer. VMS might help minimize the economic and social impacts because fishermen could transit the area to offload fish. In other words, they could continue to use their traditional dealers and would not have to be away from their families or communities for as long as they would if they could not transit the closed area.

Fishermen and dealers outside the area could experience some benefits because more of the quota would be caught outside the closed area. However, there could also be some negative impacts if relocating fishermen add more pressure to a community that already has many fishermen.

NMFS also considered other closures including closing all EFH for neonate and juvenile sharks during pupping season and a closure for finetooth EFH in St. Andrews Bay area, Florida. The first alternative was not preferred because it could close large portions of the Economic Exclusive Zone (EEZ) for large periods of time and therefore could put many shark fishermen out of business. The second alternative was not preferred because finetooth EFH is located almost exclusively in state waters, over which NMFS would not have jurisdiction.

5. Other Proposed Management Measures

The measures analyzed in this category include the following issues: deepwater and other sharks, prohibited species, and exempted fishing permits (EFPs). The alternatives for these issues are described below.

A. Deepwater and Other Sharks

In the 1993 Shark FMP, NMFS decided that some species of sharks did not need management at that time but that data should be collected on these species. These species are currently in the group called "Deepwater and Other Sharks" and include species such as smooth dogfish, the catsharks, the lanternsharks, and the gulper sharks.

In the 1999 HMS FMP, NMFS added those species to the management unit with the express purpose of bringing them under the regulations to protect