

CHAPTER 2 TABLE OF CONTENTS

Chapter 2 Table of Contents	2-i
Chapter 2 List of Tables	2-ii
Chapter 2 list of figures	2-iii
2.0 Summary of the Alternatives	2-1
2.1 Commercial Measures	2-3
2.1.1 SCS Commercial Quotas	2-3
2.1.2 Commercial Gear Restrictions.....	2-5
2.1.3 Pelagic Shark Effort Controls.....	2-6
2.2 Recreational Measures.....	2-8
2.2.1 Small Coastal Sharks	2-8
2.2.2 Pelagic Sharks.....	2-9
2.3 Smooth Dogfish	2-11
2.4 Alternatives Considered But Not Further Analyzed.....	2-16

CHAPTER 2 LIST OF TABLES

Table 2.1	An overview of all the alternatives considered in draft Amendment 3 to the 2006 Consolidated HMS FMP.....	2-1
Table 2.2	Total Annual Landings by Year and Summary Data spanning 1998-2007.....	2-13

CHAPTER 2 LIST OF FIGURES

Figure 2.1	Neonate blacknose shark interactions.....	2-17
Figure 2.2	Juvenile blacknose shark interactions.....	2-18
Figure 2.3	Neonate and juvenile blacknose interactions relative to the 20 fathom line.....	2-19
Figure 2.4	Observed BLL sets from 1994-2007 relative to the 20 fathom line.	2-20
Figure 2.5	Observed BLL sets from 1994-2007 relative to the 50 fathom line.	2-21

2.0 SUMMARY OF THE ALTERNATIVES

As described in Chapter 1, NMFS is considering various shark management measures to meet the objectives of the Magnuson-Stevens Act and the 2006 Consolidated HMS FMP based on the 2007 stock assessments for SCS, and the 2008 ICCAT pelagic shark stock assessment. NMFS conducted scoping, including five public hearings (73 FR 37932, July 2, 2008; 73 FR 53407, September 13, 2008), from July to September 2008. NMFS received a number of comments in regard to the assessment and potential management measures. Based in part on these comments, NMFS produced a Predraft of Amendment 3 to the Consolidated HMS FMP (Predraft), which was presented to the HMS AP in early February 2009, and asked for written comments on the Predraft by March 16, 2009. A summary and transcript of the February 2009 AP meeting, including copies of the written comments received on the Predraft, are available from the HMS Management Division. While some of the alternatives considered in the Predraft were modified in the draft stage of Amendment 3 to the 2006 Consolidated HMS FMP, the overall list of issues to be addressed has not changed. This document includes a full range of reasonable alternatives designed to meet the purpose and need for action described in Chapter 1 and address public comments received during the scoping process. Table 2.1 gives an overview of all the alternatives considered. The preferred alternatives in this document considered all of the comments received from the general public during the scoping and Predraft stages. The environmental, economic, and social and socio-economic impacts of these alternatives are discussed in later chapters.

Table 2.1 An overview of all the alternatives considered in draft Amendment 3 to the 2006 Consolidated HMS FMP

Issue	Alternative	Alternative Description
SCS Commercial Quotas	Alternative A1	No Action. Maintain the existing SCS quota and species complex
	Alternative A2	Establish a new SCS complex quota of 392.5 mt dw and a blacknose commercial quota of 13.5 mt dw
	Alternative A3	Establish a new SCS complex quota of 42.7 mt dw and a blacknose commercial quota of 16.6 mt dw; allow all current authorized gears for sharks
	Alternative A4	<i>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 – Preferred Alternative</i>
	Alternative A5	Close the SCS fishery
Commercial Gear Restrictions	Alternative B1	No Action. Maintain current authorized gears for commercial shark fishing
	Alternative B2	Close shark gillnet fishery; remove gillnet gear as an authorized gear type for commercial shark fishing
	Alternative B3	<i>Close the gillnet fishery to commercial shark fishing from South Carolina south, including the Gulf of Mexico and the Caribbean Sea – Preferred Alternative</i>
Commercial Pelagic Shark Effort Controls	Alternative C1	No Action. Keep shortfin mako sharks in the pelagic shark species complex and do not change the quota
	Alternative C2	Remove shortfin mako sharks from pelagic shark species quota and establish a shortfin mako quota

Issue	Alternative	Alternative Description
	Alternative C3	Remove shortfin mako sharks from pelagic shark species complex and place this species on the prohibited shark species list
	Alternative C4	Establish a commercial size limit for shortfin mako sharks
	Alternative 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 sexual maturity or 32 inches interdorsal length (IDL)
	Alternative C4b	Establish a minimum size limit for shortfin mako sharks that is based on the size at which 50 percent of male shortfin mako sharks reach sexual maturity or 22 inches IDL
	Alternative C5	<i>Take action at the international level to end overfishing of shortfin mako – Preferred Alternative</i>
	Alternative C6	<i>Promote the release of shortfin mako sharks brought to fishing vessels alive – Preferred Alternative</i>
Recreational Measures for SCS	Alternative D1	No Action. Maintain the current recreational retention and size limit for SCS
	Alternative D2	Modify the minimum recreational size limit for blacknose sharks based on their biology
	Alternative D3	Increase the retention limit for Atlantic sharpnose sharks based on current catches
	Alternative D4	<i>Prohibit retention of blacknose sharks in recreational fisheries - Preferred Alternative</i>
Recreational Measures for Pelagic Sharks	Alternative E1	No Action. Maintain the current recreational retention and size limits for shortfin mako sharks
	Alternative E2	Increase the recreational minimum size limit of shortfin mako sharks
	Alternative E2a	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 sexual maturity or 108 in FL
	Alternative E2b	Establish a minimum size limit for shortfin mako sharks that is based on the size at which 50 percent of male shortfin mako sharks reach sexual maturity or 73 inches FL
	Alternative E3	<i>Take action at the international level to end overfishing of shortfin mako sharks– Preferred Alternative</i>
	Alternative E4	<i>Promote the release of shortfin mako sharks brought to fishing vessels alive – Preferred Alternative</i>
	Alternative E5	Prohibit landing of shortfin mako sharks in recreational fisheries (catch and release only)
Smooth Dogfish	Alternative F1	No Action. Do not add smooth dogfish under NMFS management
	Alternative F2	<i>Add smooth dogfish under NMFS Management and develop management measures, such as a federal permit requirement - Preferred Alternative</i>
	Alternative F2 a1	Establish a smooth dogfish quota that is equal to the average annual landings from 1998-2007 (950,859 lb dw)
	Alternative F2 a2	Establish a smooth dogfish quota equal to the maximum annual landings from 1998-2007 (1,270,137 lb dw)
	Alternative F2 a3	<i>Establish a smooth dogfish quota equal to the maximum annual landings from 1998-2007 plus one standard deviation (1,423,727 lb dw) – Preferred Alternative</i>
	Alternative F2 b1	<i>Establish a separate smooth dogfish set-aside quota for the exempted fishing program of 6 mt ww– Preferred Alternative</i>

Issue	Alternative	Alternative Description
	Alternative 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
	Alternative F3	Add smooth dogfish under NMFS management and mirror management measures implemented in the ASMFC Interstate Shark FMP
Alternatives Considered But Not Further Analyzed	Alternative G1	Establish species-specific quotas for all species in the SCS complex based on average landings; close each quota individually, as needed
	Alternative G2	Establish new time/area closures in blacknose shark nursery areas for all HMS gears
	Alternative G3	Close waters inshore of 20 fathoms in the Gulf of Mexico to shark bottom longline gear
	Alternative G4	Close waters inshore of 50 fathoms in the Gulf of Mexico to shark bottom longline gear
	Alternative G5	Add deepwater sharks to the management unit and place these species on the prohibited list
	Alternative G6	Establish catch shares in the Atlantic shark fisheries

2.1 Commercial Measures

2.1.1 SCS Commercial Quotas

The 2007 blacknose shark stock assessment estimated that blacknose sharks would have a 70-percent probability of rebuilding by 2027 with a TAC of 19,200 individuals per year. To achieve this TAC, NMFS would need to reduce overall blacknose mortality by at least 78 percent. NMFS determined the amount of blacknose sharks that could be taken in the Atlantic commercial shark fishery to reduce mortality by at least 78 percent. This results in a commercial allowance of 44,853.8 lb dw or 7,094 blacknose sharks that could be taken (landed and discarded) within the Atlantic commercial shark fishery in order to allow the blacknose shark to rebuild as outlined in Chapter 1.

Alternative A1 No Action. Maintain the existing SCS quota and species complex

Under alternative A1, the No Action alternative, NMFS would maintain the existing commercial quota for SCS of 454 mt dw. This quota would be used to account for landings of any of the four species in the SCS complex, finetooth, Atlantic sharpnose, bonnethead and blacknose sharks. Regulations regarding quota over and underharvests adjustments would not change under this alternative.

Alternative A2 Establish a new SCS quota of 392.5 mt dw and a blacknose commercial quota of 13.5 mt dw

Alternative A2 would remove blacknose sharks from the SCS quota and create a blacknose shark-specific quota and a separate “non-blacknose SCS” quota. The non-blacknose SCS would apply to finetooth, Atlantic sharpnose, and bonnethead sharks. Currently, the SCS quota is 454 mt dw, and the current annual average landings of blacknose sharks is 61.5 mt dw. This alternative would subtract the current annual average landings of blacknose sharks, 61.5 mt dw, from the overall SCS quota, which would result

in a new non-blacknose SCS complex quota of 392.5 mt dw. This alternative would also reduce the average annual landings of blacknose sharks by 78 percent, resulting in a blacknose shark specific annual commercial quota of 13.5 mt dw ($61.5 \text{ mt dw} \times .78 = 47.9$; $61.5 \text{ mt dw} - 47.9 \text{ mt dw} = 13.5 \text{ mt dw}$). The 78 percent reduction to current landings is based on the need to reduce blacknose shark mortality by 78 percent in order to rebuild the stock.

NMFS also considered various commercial retention limits corresponding with the blacknose quota of 13.5 mt dw. However, under all retention limit scenarios, the total mortality would be above the necessary allowance of 7,094 blacknose or 44,853.8 lb dw (see Appendix A). Mortality reductions would also be needed in non-HMS fisheries to achieve the overall TAC of 19,200 blacknose sharks/year that would allow this species to fully rebuild. Regulations regarding quota over and underharvest adjustments would not change under this alternative.

Alternative 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

Similar to alternative A2, alternative A3 would remove blacknose sharks from the SCS quota and create a blacknose shark-specific quota and a separate “non-blacknose SCS” quota. For alternative A3, the non-blacknose SCS would apply to finetooth, Atlantic sharpnose, and bonnethead sharks and would equal 42.7 mt dw (94,115 lb dw). The non-blacknose SCS quota would be an 82 percent reduction from the average current landings of finetooth, Atlantic sharpnose, and bonnethead sharks from 2004 through 2007. NMFS estimates that reducing the overall quota for the SCS fishery reduces the level of blacknose shark discards such that the total blacknose shark mortality would stay below the allowance for the commercial fishery (see Appendix A). Under this alternative, the blacknose shark quota would be 16.6 mt dw (36,526 lb dw), which is the amount of blacknose sharks that would be harvested while the non-blacknose SCS quota is harvested (see Appendix A); however, incidental fishermen would not be allowed to retain any blacknose sharks under alternative A3. This alternative assumes that directed fishermen with a directed shark LAP would fish for SCS in a directed fashion until the non-blacknose SCS quota and/or blacknose quota reached 80 percent. At that time, both the non-blacknose SCS fishery and the blacknose shark fishery would close, fishermen would fish for other fish species, and all SCS, including blacknose sharks, would be discarded. Fishermen with an incidental shark LAP would not be allowed to retain any blacknose sharks but could still retain non-blacknose SCS. The regulations regarding over and underharvest quota adjustments would not change under this alternative.

Alternative 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 – Preferred Alternative

Alternative A4 would also remove blacknose sharks from the SCS quota and create a blacknose shark-specific quota and a separate “non-blacknose SCS” quota. Under this alternative, the non-blacknose SCS quota would be 56.9 mt dw (125,487 lb dw). This

quota results in a 76-percent reduction from the average current landings of finetooth, Atlantic sharpnose, and bonnethead sharks from 2004 through 2007. As with alternative A3, NMFS determined that by reducing the overall quota for the SCS fishery, NMFS could reduce the level of blacknose shark discards such that the total blacknose shark mortality would stay below the allowance for the commercial fishery (see Appendix A). Under this alternative, NMFS would establish a blacknose-specific quota of 14.9 mt dw (32,753 lb dw), which is the amount of blacknose sharks that would be harvested while the non-blacknose SCS quota is harvested (see Appendix A). As with alternative A3, under this alternative, fishermen with an incidental LAP would not be allowed to retain any blacknose sharks but could still retain non-blacknose SCS. In addition, this alternative assumes that gillnet gear would not be used to harvest sharks under either alternative B2 or B3, and that fishermen would fish for SCS in a directed fashion until the non-blacknose SCS quota and/or blacknose quota reached 80 percent (see Appendix A). At that time, both the non-blacknose SCS fishery and the blacknose shark fishery would close, fishermen would fish for other species, and all SCS, including blacknose sharks, would be discarded. The regulations regarding over and underharvest quota adjustments would not change under this alternative.

Alternative A5 Close the SCS fishery

Alternative A5 would close the SCS fishery in the Atlantic, Gulf of Mexico, and Caribbean Sea for all fishermen until reopening was warranted based on new stock assessments. Shark landings would be limited to pelagic sharks, non-sandbar LCS, sandbar sharks within the shark research fishery, and research and collection for public display within the HMS Exempted Fishing Permit Program. Under this alternative, if alternative F2 or F3 were implemented, shark landings could also include smooth dogfish.

2.1.2 Commercial Gear Restrictions

Alternative B1 No Action. Maintain current authorized gears for commercial shark fishing

Under alternative B1, NMFS would maintain the current authorized gears for the commercial shark fishery. These gears are BLL, gillnet, rod and reel, handline, and bandit gear. This alternative would also maintain all the restrictions for the various gear types. For example, BLL vessels must carry corrodible hooks and the required safe handling, release and disentanglement equipment, and sea turtle technical memorandum. In the shark gillnet fishery, gillnets must be less than 2.5 km and must remain attached to at least one vessel at one end. Net checks must be performed every 0.5 to 2 hours to look for and remove any entangled protected species. There are additional gillnet gear deployment restrictions for the southeast U.S. shark gillnet fishery in order to implement various Take Reduction Plan implemented consistent with the Marine Mammal Protection Act (MMPA).

Alternative B2 Close shark gillnet fishery; remove gillnet gear as an authorized gear type for commercial shark fishing

Under alternative B2, NMFS would remove gillnet gear as an authorized gear type for commercial shark fishing. As such, this alternative would close the shark gillnet fishery in the Atlantic, Gulf of Mexico, and Caribbean Sea. NMFS is considering this alternative because gillnet gear, and in particular, drift gillnet gear, is the predominant gear used to fish for the blacknose sharks in the South Atlantic region and removing this gear could reduce the mortality of blacknose sharks significantly. This alternative would allow shark directed and incidental permit holders to continue to use other commercially authorized gears, such as BLL, rod and reel, handline or bandit gear, to harvest sharks.

Alternative B3 Close the gillnet fishery to commercial shark fishing from South Carolina south, including the Gulf of Mexico and the Caribbean Sea – Preferred Alternative

Under alternative B3, NMFS would close the gillnet fishery to commercial shark fishing from South Carolina south, including the Gulf of Mexico and Caribbean Sea. This alternative would eliminate the predominant gear type used to harvest blacknose sharks in the South Atlantic region, and would help rebuild the blacknose shark stock by reducing gillnet mortality throughout their habitat range. Blacknose sharks are commonly found from North Carolina to Brazil, including the Gulf of Mexico and Caribbean Sea. This alternative would also help mitigate impacts of adding the smooth dogfish fishery (see alternatives F2 and F3), which uses gillnet gear predominately from North Carolina north. Under this alternative, NMFS would allow directed and incidental permit holders to use other authorized gear types besides gillnets to target sharks in the commercial shark fishery from South Carolina south.

2.1.3 Pelagic Shark Effort Controls

Alternative C1 No Action. Keep shortfin mako sharks in the pelagic shark species complex and maintain the quota.

Under Alternative C1, the No Action alternative, NMFS would maintain the current commercial shark fishing regulations that pertain to shortfin mako sharks established in the 2006 Consolidated HMS FMP. Shortfin mako sharks would remain in the pelagic shark species complex, which includes blue, common thresher, oceanic whitetip, and porbeagle sharks. The quota for pelagic sharks would remain the same, with 488 mt dw allocated for common thresher, oceanic whitetip, and shortfin mako sharks, 273 mt dw allocated for blue sharks, and 1.7 mt dw allocated for porbeagle sharks. Regulations regarding overharvest and underharvest of pelagic shark quota, and retention limits for pelagic sharks would remain the same.

Alternative C2 Remove shortfin mako sharks from pelagic shark species quota and establish a shortfin mako quota

Alternative C2 would remove shortfin mako sharks from the pelagic shark quota and would establish a species-specific quota for shortfin mako sharks based on current

landings. Currently, the annual quota for common thresher, oceanic whitetip, and shortfin mako is 488 mt dw. Based on the average commercial landings of shortfin mako sharks from 2004-2007, the species-specific quota for shortfin mako sharks would be 72.5 mt dw (NMFS, 2008). The common thresher and oceanic whitetip sharks would be allocated a quota of 415.5 mt dw after removal of the shortfin mako quota of 72.5 mt dw (488 mt dw – 72.5 mt dw = 415.5 mt dw). The quotas for blue and porbeagle sharks would not change under this alternative and would be 273 mt dw and 1.7 mt dw, respectively. Regulations regarding overharvest and underharvest of pelagic shark quota, and retention limits for pelagic sharks would remain the same.

Alternative C3 Remove shortfin mako sharks from pelagic shark species complex and place this species on the prohibited shark species list

Alternative C3 would remove shortfin mako sharks from the pelagic shark species complex and add them to the prohibited species list. Under the regulations, shark species can be added to the prohibited species list if two of the following four criteria are met: 1) There is sufficient biological information to indicate the stock warrants protection, such as indications of depletion or low reproductive potential or the species is on the ESA candidate list; 2) the species is rarely encountered or observed caught in HMS fisheries; 3) the species is not commonly encountered or observed caught as bycatch in fishing operations; or 4) the species is difficult to distinguish from other prohibited species (*i.e.*, look-alike issue). Adding shortfin mako sharks to the prohibited species list would make it illegal to retain or land shortfin mako shark commercially or recreationally. If the shortfin mako shark is placed on the prohibited species list, the average annual landings of shortfin mako sharks from 2004-2007 (72.5 mt dw) would be subtracted from the current annual quota for the pelagic shark quota group (488 mt dw), creating a quota of 415.5 mt dw for common thresher and oceanic whitetip sharks. Regulations regarding overharvest and underharvest of pelagic shark quota, and retention limits for pelagic sharks would remain the same.

Alternative C4 Establish a commercial size limit for shortfin mako sharks

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 sexual maturity or 32 inches interdorsal length (IDL)

Currently, there are no minimum size limits for sharks caught in the commercial fishery. Under alternative C4a, a commercial minimum size limit would be established for shortfin mako sharks to correspond with the size at which 50 percent of female shortfin mako sharks reach sexual maturity, calculated from Natanson *et al.* (2006) as 32 inches IDL, which is the straight line measurement from the base of the trailing edge of the first dorsal fin to the base of the leading edge of the second dorsal fin. Shortfin mako sharks less than 32 inches IDL could not be retained and would have to be discarded. Shortfin mako sharks greater than the 32 inch IDL size limit would be able to be retained and all landings would be counted against the appropriate quota for common thresher, oceanic whitetip, and shortfin mako sharks.

- C4b) Establish a minimum size limit for shortfin mako sharks that is based on the size at which 50 percent of male shortfin mako sharks reach sexual maturity or 22 inches IDL

Under alternative C4b, a commercial minimum size limit would be established for shortfin mako sharks to correspond with the size at which 50 percent of male shortfin mako sharks reach sexual maturity, calculated from Natanson *et al.* (2006) as 22 inches IDL. Currently, there are no minimum size limits for sharks caught in the commercial fishery. Shortfin mako sharks less than 22 inches IDL would be prohibited and could not be retained. All shortfin mako sharks greater than the 22 inch IDL limit would be available for commercial harvest and all landings would be counted against the appropriate quota.

Alternative C5 Take action at the international level to end overfishing of shortfin mako sharks– Preferred Alternative

Under alternative C5, NMFS would take action at an international level through international fishery management organizations to end overfishing of shortfin mako sharks. This plan would encompass the commercial fishery. ICCAT assumes there are three shortfin mako shark stocks for assessment purposes: northern and southern Atlantic stocks, separated at 5°N latitude and a Mediterranean stock. Based on the 2008 SCRS stock assessment on the North Atlantic shortfin mako population, NMFS independently determined that the North Atlantic stock of shortfin mako sharks is experiencing overfishing and approaching an overfished status.

Alternative C6 Promote the release of shortfin mako sharks brought to fishing vessels alive – Preferred Alternative

Under this alternative, NMFS would actively engage in an outreach program with PLL fishermen and request that they release all shortfin mako sharks that come to the vessel alive in order to help maintain the sustainability of the shortfin mako shark population. This action would 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, alternative C1.

2.2 Recreational Measures

2.2.1 Small Coastal Sharks

Alternative D1 No Action. Maintain the current recreational retention and size limit for SCS

Under alternative D1, NMFS would maintain the existing recreational retention limits for SCS. Recreational anglers are currently allowed one authorized shark species, including SCS, per vessel per trip. This shark must have a fork length (FL) of at least 54 inches. Recreational fishermen are also able to retain one bonnethead shark and one Atlantic sharpnose shark per person per trip. There is no minimum size requirement for bonnethead and Atlantic sharpnose sharks.

Alternative D2 Modify the minimum recreational size limit for blacknose sharks based on their biology

Under alternative D2, NMFS would modify the minimum recreational size for blacknose sharks based on their biology. The current minimum retention size is 54 inches and is based on the biology of the sandbar shark. However, most blacknose sharks do not reach a maximum size of 54 inches FL. Under alternative D2, NMFS would reduce the minimum size limit for blacknose sharks to a minimum size of 36 inches FL, which is the size at which 50 percent of the female blacknose sharks reach sexual maturity.

Alternative D3 Increase the retention limit for Atlantic sharpnose sharks based on current catches

Under alternative D3, NMFS would increase the retention limit for Atlantic sharpnose sharks based on their current catches and stock status. Currently, recreational anglers are allowed to retain one Atlantic sharpnose shark per person per trip. Under alternative D3, NMFS would consider increasing this retention limit based on the stock status of the species and current catches.

Alternative D4 *Prohibit retention of blacknose sharks in recreational fisheries – Preferred Alternative*

Under the preferred alternative D4, NMFS would prohibit the retention of blacknose sharks in the recreational fishery. While recreational fishermen may still catch blacknose sharks when fishing for other species, they would not be permitted to retain blacknose sharks and would have to release them. Based on the latest stock assessment, this alternative would help rebuild blacknose sharks stock by reducing recreational landings in federal waters. However, since most blacknose sharks do not reach the current federal minimum size of 54 inches FL, presumably most recreational blacknose shark landings occur in state waters. Complementary measures in states waters would be important for reducing mortality of blacknose shark in recreational fisheries and ensuring the rebuilding plan is met for blacknose sharks.

2.2.2 Pelagic Sharks

Alternative E1 No Action. Maintain the current recreational retention and size limits for shortfin mako sharks.

Under the No Action alternative, NMFS would maintain the current recreational retention and size limits for shortfin mako sharks. Shortfin mako sharks would remain in the pelagic shark species complex, which includes blue, common thresher, oceanic whitetip, and porbeagle sharks. Recreational fishermen would continue to be limited to one authorized shark species, which include shortfin mako sharks, greater than 54 inches FL per vessel per trip, and one Atlantic sharpnose and one bonnethead shark per person per trip with no minimum size.

Alternative E2 Increase the recreational minimum size limit of shortfin mako

- E2a) 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 sexual maturity or 108 inches FL

Under Alternative E2a, NMFS would increase the recreational minimum size limit for shortfin mako sharks to correspond with the size at which 50 percent of female shortfin mako sharks reach sexual maturity, identified in Natanson *et al.* (2006) as 108 inches FL. Currently, the minimum size limit for all pelagic sharks caught in the recreational fishery is 54 inches FL. Under this alternative, the shortfin mako shark recreational minimum size would be increased to 108 inches FL to end overfishing of the stock. Shortfin mako sharks below this minimum size limit would be prohibited and could not be retained. Under this alternative, all shortfin mako sharks greater than the 108 inch FL minimum size limit would be authorized for retention. The 108 inch FL measurement is equivalent to the 32 inch IDL measurement used for implementing a commercial size limit in Alternative C4a, but the different measurements are used to accommodate the different fisheries. Recreational anglers would be limited to one shark greater than 54 inches FL or one shortfin mako greater than 108 inches FL per vessel per trip, and one Atlantic sharpnose and one bonnethead shark per person per trip.

- E2b) Establish a minimum size limit for shortfin mako sharks that is based on the size at which 50 percent of male shortfin mako sharks reach sexual maturity or 73 inches FL

The recreational minimum size limit would be increased for shortfin mako sharks under Alternative E2b to correspond with the size at which 50 percent of male shortfin mako sharks reach sexual maturity, identified in Natanson *et al.* (2006) as 73 inches FL. Currently, the minimum size limits for all pelagic sharks caught in the recreational fishery is 54 inches FL. The shortfin mako shark recreational minimum size would be increased to 73 inches FL to end overfishing of the stock. Shortfin mako sharks caught below this size limit would be prohibited and could not be retained. The 73 inch FL measurement is equivalent to the 22 inch IDL measurement used for implementing a commercial size limit in Alternative C4b, but the different measurements are used to accommodate the different fisheries. All shortfin mako sharks greater than 73 inches FL and all other pelagic sharks greater than 54 inches FL limit would be available for recreational harvest. Recreational anglers would be limited to one shark greater than 54 inches FL or one shortfin mako greater than 73 inches FL per vessel per trip, and one Atlantic sharpnose and one bonnethead shark per person per trip.

Alternative E3 Take action at the international level to end overfishing of shortfin mako sharks– Preferred Alternative

Under alternative E3, NMFS would take action at an international level through international fishery management organizations to end overfishing of shortfin mako sharks. As discussed under alternative C5, ICCAT assumes there are three shortfin mako shark

stocks for assessment purposes: northern and southern Atlantic stocks, separated at 5°N latitude and a Mediterranean stock.

Alternative E4 Promote the release of shortfin mako sharks brought to fishing vessels alive – Preferred Alternative

The promotion of the live release of shortfin mako sharks in the recreational shark fishery, as considered in alternative C6, would not result in any changes to the current recreational regulations regarding shortfin mako sharks. Under this alternative, NMFS would actively engage in an outreach program with recreational fishermen and request that they release all shortfin mako sharks that come to the boat alive in order to help maintain the sustainability of the shortfin mako shark population. This action does not restrict recreational harvest of shortfin mako sharks that are alive at haulback, and bag limits would remain as described in the No Action alternative, alternative E1.

Alternative E5 Prohibit retention of shortfin mako sharks in recreational fisheries (catch and release only)

Under alternative E5, NMFS would prohibit the retention of shortfin mako sharks in the recreational fishery by placing it on the prohibited species list. Under the regulations, shark species can be added to the prohibited species list if two of the following four criteria are met: 1) There is sufficient biological information to indicate the stock warrants protection, such as indications of depletion or low reproductive potential or the species is on the ESA candidate list; 2) the species is rarely encountered or observed caught in HMS fisheries; 3) the species is not commonly encountered or observed caught as bycatch in fishing operations; or 4) the species is difficult to distinguish from other prohibited species (*i.e.*, look-alike issue). Adding shortfin mako sharks to the prohibited species list would make it illegal to land shortfin mako sharks recreationally or commercially and recreational fishermen would only be authorized to catch and release shortfin mako sharks.

2.3 Smooth Dogfish

NMFS currently manages sharks in four management units (small coastal sharks, pelagic sharks, large coastal sharks, and prohibited species). There are additional species of sharks that are HMS that fall outside of the current management units but remain under Secretarial authority should the Secretary determine the species is in need of conservation and management. One of these species, smooth dogfish, is not currently managed at the federal level. Although smooth dogfish were previously included in a fishery management unit (FMU) that included deepwater and other sharks, these species were removed from the FMU in the 2003 Amendment 1 to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks since they were protected under the Shark Finning Prohibition Act (67 FR 6124, February 11, 2002). The Magnuson-Stevens Act grants authority to manage oceanic shark species within the U.S. EEZ to the Secretary. NMFS has determined that smooth dogfish is an oceanic shark species. The Magnuson-Stevens Act further defines Secretarial authority for HMS that crosses the jurisdiction of more than one of the following five Councils: NEFMC, MAFMC, SAFMC, GMFMC, and CFMC. Smooth

dogfish range crosses the jurisdiction of all five of eastern United States Councils. Based on public comments and its independent review of the species, NMFS has determined that smooth dogfish are in need of conservation and management under NMFS authority. However, limited data regarding landings, effort, or participants in the fishery complicates new regulations. As noted in Section 1.2, all smooth dogfish management measures would also apply to Florida smoothhounds (*Mustelus norrisi*).

The following alternatives consider a range of possible management measures for smooth dogfish:

Alternative F1 No Action. Do not add smooth dogfish under NMFS management

Smooth dogfish are not currently managed at the federal level, and under Alternative F1, the No Action alternative, NMFS would not add smooth dogfish under NMFS management and would not implement management measures for smooth dogfish. Furthermore, essential fish habitat (EFH) for smooth dogfish would not be designated under the No Action alternative. While no federal action would be taken by NMFS, this alternative would not preclude state or interstate marine fisheries commission management measures.

Alternative F2 Add smooth dogfish under NMFS management and establish a federal permit requirement-Preferred Alternative

Alternative F2, the preferred alternative, would implement federal management of smooth dogfish and establish a permit requirement for commercial and recreational retention of smooth dogfish in federal waters. A federal permit requirement would allow NMFS to collect data regarding participants in the fishery. Placing smooth dogfish under NMFS management would require that fishermen fishing for smooth dogfish comply with current federal guidelines in the Atlantic, Gulf of Mexico, and Caribbean Sea, including the requirement that sharks be offloaded with their fins naturally attached. This alternative would also provide NMFS the ability to select vessels to carry an observer. This alternative would not require fishermen to attend the protected species release, disentanglement, and identification workshops. As NMFS gathers information about the fishery and the fishermen, NMFS may decide to require fishermen attend these workshops as is required in other HMS longline and gillnet fisheries. Over time, NMFS would likely implement logbook or other reporting for smooth dogfish fishermen. NMFS would not do this, however, until the universe of fishermen is known and until NMFS can determine the appropriate mechanism of reporting without duplicating current reporting requirements. Dealers would be required to report smooth dogfish on HMS dealer reports or through the Standard Atlantic Fisheries Information System (SAFIS). Recreational fishermen would need to obtain either an HMS Angling or Charter/Headboat permit. Gillnets are the primary gear type used in the smooth dogfish fishery and fishermen using gillnets to target smooth dogfish would be required to comply with federal marine mammal take regulations at 50 CFR 229.32 mandated by the Marine Mammal Protection Act including frequent net-checks (every 0.5-2 hours) and the requirement for gillnets to remain attached to the vessel. In the Northeast United States, trawl gear is occasionally used in the smooth dogfish fishery. This gear type, however, is currently not an authorized gear under federal shark

management regulations. NMFS is currently considering whether to incorporate trawl gear as an authorized gear within the smooth dogfish fishery.

As a statutory condition of establishing federal management of smooth dogfish, EFH for the species must be designated. Amendment 1 to the 2006 Consolidated HMS FMP extensively analyzed methods for determining EFH, and NMFS considers the conclusions in Amendment 1 to the 2006 Consolidated HMS FMP to be the best available science. As such, no alternatives were considered for designating EFH other than the No Action alternative and the method used in Amendment 1 to the 2006 Consolidated HMS FMP. Chapter 11 of this document summarizes this methodology used to designate smooth dogfish EFH and includes a map of the proposed smooth dogfish EFH boundaries.

On January 16, 2009, NMFS published the final rule for implementing the ACL and AM requirements of the Magnuson-Stevens Act (74 FR 3178). Per the January 2009 final rule, ACLs and AMs apply “unless otherwise provided for under an international agreement in which the United States participates.” Given smooth dogfish are not managed under any international agreements, NMFS must follow National Standard 1 guidelines for smooth dogfish. The landings component of the sector-ACL, or commercial quota, would be based on historic landings data spanning 1998-2007 (the last 10 years with complete landings data). Table 2.2 shows the total annual landings by year as well as summary data spanning 1998-2007. The average annual landings during this time period was 950,859 lb dw and the following three alternatives consider a range of quotas based on this number. The landings data does not show any obvious trends and are likely an underestimate due to underreporting. Due to the lack of a stock assessment, there is no information regarding the stock status of smooth dogfish. Since reliable catch and stock status data is not available, NMFS would establish a quota that would not change current landings. NMFS would account for underharvest and overharvest of smooth dogfish as it does for other shark species and would close the smooth dogfish shark quota with five days notice upon filing in the Federal Register when the smooth dogfish shark quota reaches or is projected to reach 80 percent. This would help prevent overharvest from occurring while still giving the public 5 days notice that the fishery would close. The three following alternatives consider a range of quota options based on the current level of harvest.

Table 2.2 Total Annual Landings by Year and Summary Data spanning 1998-2007.
Source: ACCSP

Year	Total Annual Landings (lb dw)	Landings Summary	lb dw
1998	785,700	Average Annual Landings	950,859
1999	954,606	Maximum Landings	1,270,137
2000	776,449	One Standard Deviation	153,591
2001	880,425	Maximum Landings + One Standard Deviation	1,423,727
2002	1,037,440		
2003	1,068,279		
2004	1,270,137		
2005	888,017		

2006	821,300
2007	1,026,243

Alternative F2a1) Establish a smooth dogfish quota that is equal to the average annual landings from 1998-2007 (950,859 lb dw)

This alternative would set the annual quota equal to the historical average reported annual landings of 950,859 lb dw. Total reported annual catches between 1997 and 2007 had low variability, with a minimum of 776,448 lb dw in 2000 and a maximum of 1,270,137 lb dw in 2004. Assuming that the reported landings are accurate, this alternative should allow the fishery to operate at or near its current level of utilization.

Alternative F2a2) Establish a smooth dogfish quota equal to the maximum annual landings from 1998-2007 (1,270,137 lb dw)

This alternative would set the annual quota at the maximum historical reported annual landing of 1,270,137 lb dw. Assuming that the reported landings are accurate, this alternative would allow the fishery to operate at its current level, and accommodate for the fluctuation of landings. Any levels of utilization at or near the peak landing in 2004 would be permissible under this quota alternative.

Alternative F2a3) Establish a smooth dogfish quota equal to the maximum annual landings from 1998-2007 plus one standard deviation (1,423,727 lb dw) – Preferred Alternative

Alternative F2a3, the preferred alternative, would set the smooth dogfish quota equal to the maximum annual landings between 1998-2007 plus one standard deviation during the same time period (1,270,137 lb dw + 153,590 lb dw), for a total of 1,423,727 lb dw. Similar to alternative F2a2, this alternative would allow the fishery to continue to operate up to the maximum level of utilization between 1998-2007. However, this alternative also incorporates an added buffer of one standard deviation to account for under-reporting in the fishery. Since the fishery has not been previously managed, there have been no reporting requirements in the past. While the data from ACCSP used in this analysis likely included the vast majority of landings, the possibility exists of remaining unreported landings. Alternative F2a3 is preferred at this time because it would allow the fishery to continue to operate even if sources of dogfish mortality that were previously unknown start to be reported.

Within the quota established under this alternative, a set-aside quota must be considered for activities that collect dogfish for research or for public display. The current set-aside for all shark species under NMFS' jurisdiction is 60 mt ww. The two alternatives below consider a range of options for establishing a smooth dogfish set-aside quota for research and public display:

Alternative F2b1) Establish a separate smooth dogfish set-aside quota for the exempted fishing program – Preferred Alternative

Alternative F2b1 would establish a separate smooth dogfish set-aside quota for the exempted fishing program. Currently, there is a 60 mt ww set-aside quota for sharks for the exempted fishing program. However, as smooth dogfish have not been federally managed in the past, smooth dogfish were not included in this 60 mt ww set-aside. Thus, to allow fishermen to take smooth dogfish for research purposes and outside of any established regulations for smooth dogfish, NMFS would establish a separate set-aside for smooth dogfish based on the maximum yearly smooth dogfish takes during research over the past 10 years or 6 mt ww.

Alternative F2b2) 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

Under alternative F2b2, NMFS would 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. As explained under alternative F2b1, smooth dogfish are not included in the current 60 mt ww set-aside quota for sharks for the exempted fishing program. Thus, the inclusion of smooth dogfish under the exempted fishing program shark quota set-aside would allow fishermen to take smooth dogfish for research purposes and outside of any established regulations for smooth dogfish. NMFS would establish a set-aside for smooth dogfish based on the maximum yearly smooth dogfish takes during research over the past 10 years or 6 mt ww, and add it to the existing 60 mt ww research set-aside for a total quota for the exempted fishing program of 66 mt ww.

Alternative F3 Add smooth dogfish under NMFS management and mirror management measures implemented in the Atlantic States Marine Fisheries Commission (ASMFC) Interstate Shark FMP

This alternative would implement federal management of smooth dogfish and use the same methods and management tools implemented by the ASMFC Interstate Shark FMP. NMFS is cognizant of differences in mandates and missions between NMFS and ASMFC and would ensure that any federal measures would comply with federal standards.

Current ASMFC regulations in the Interstate Fishery Management Plan for Atlantic Coastal Sharks (August 2008) include smooth dogfish commercial measures. There are no minimum size limits and no commercial possession limits in the fishery, but recreational fishermen are limited to a maximum of two smooth dogfish per day (one federally permitted shark species or smooth dogfish plus one additional Atlantic sharpnose, one additional bonnethead, and one additional smooth dogfish). Smooth dogfish must have tails and fins naturally attached through offloading, and gillnet gear must be checked at least every two hours to minimize protected species impacts.

On May 6, 2009, the ASMFC approved a smooth dogfish Addendum to the Atlantic Coastal Sharks FMP for public comment. Included within this Addendum is an

exception for smooth dogfish to allow at-sea processing (*i.e.*, removal of shark fins while still onboard a fishing vessel), removal of recreational retention limits for smooth dogfish, and removal of the two hour net-check requirement for shark gillnets. The at-sea processing would require a 5 percent fins-to-carcass ratio and allow for the removal of fins. The allowance for the removal of shark fins while still onboard a fishing vessel and removal of the two hour net-check requirement differs from current federal regulations.

2.4 Alternatives Considered But Not Further Analyzed

Alternative G1 Establish species-specific quotas for all species in the SCS complex based on average landings; close each quota individually, as needed

While NMFS has been working towards species-specific management for many sharks, species-specific quotas for sharks in the small coastal shark complex could be challenging due to the small size of the individual quotas. Establishing species-specific SCS quotas would result in four small quotas, which could be difficult to monitor and effectively manage. These quotas would be based on average landings resulting in the following quotas: bonnethead = 21 mt; finetooth = 81.6 mt; Atlantic sharpnose = 124.4 mt; blacknose = 13.5 mt (78 percent reduction of average landings). Individual quotas based on average landings would result in a much lower overall SCS quota, which could have large, negative socioeconomic impacts on shark fishermen. In addition, small quotas would require accurate and timely reporting of landings data to ensure that overharvests do not occur. Given the current reporting frequency of bi-monthly reports from HMS dealers, and the ability to implement larger SCS quotas through other alternatives, NMFS does not believe implementing small species-specific quotas is feasible at this time. Therefore, alternative G1 was considered but not further analyzed at this time.

Alternative G2 Establish new time/area closures in blacknose shark nursery areas for all HMS gears

Time/area closures in blacknose shark nursery areas could potentially enhance recruitment of individuals to the stock by protecting neonates and juveniles from high fishing mortality. Identification of discrete nursery areas is essential to avoid non-specific, large closures. Identification of such areas requires catch and/or high catch-per-unit-effort data of neonate and/or juvenile animals within a distinct geographic area. However, catch data of neonate and juvenile blacknose sharks do not identify distinct geographic areas that can be identified as nursery areas for blacknose sharks (Figure 2.1 and Figure 2.2). Thus, time/area closures in areas where blacknose interactions have occurred could result in large closures in order to be effective. Large closure would likely also have large, negative socioeconomic impacts on shark fishermen as well as fishermen for other species that catch blacknose sharks as bycatch. Given these potentially large, negative impacts and the ability to rebuild blacknose sharks through other alternatives, alternative G2 was considered but not further analyzed at this time.

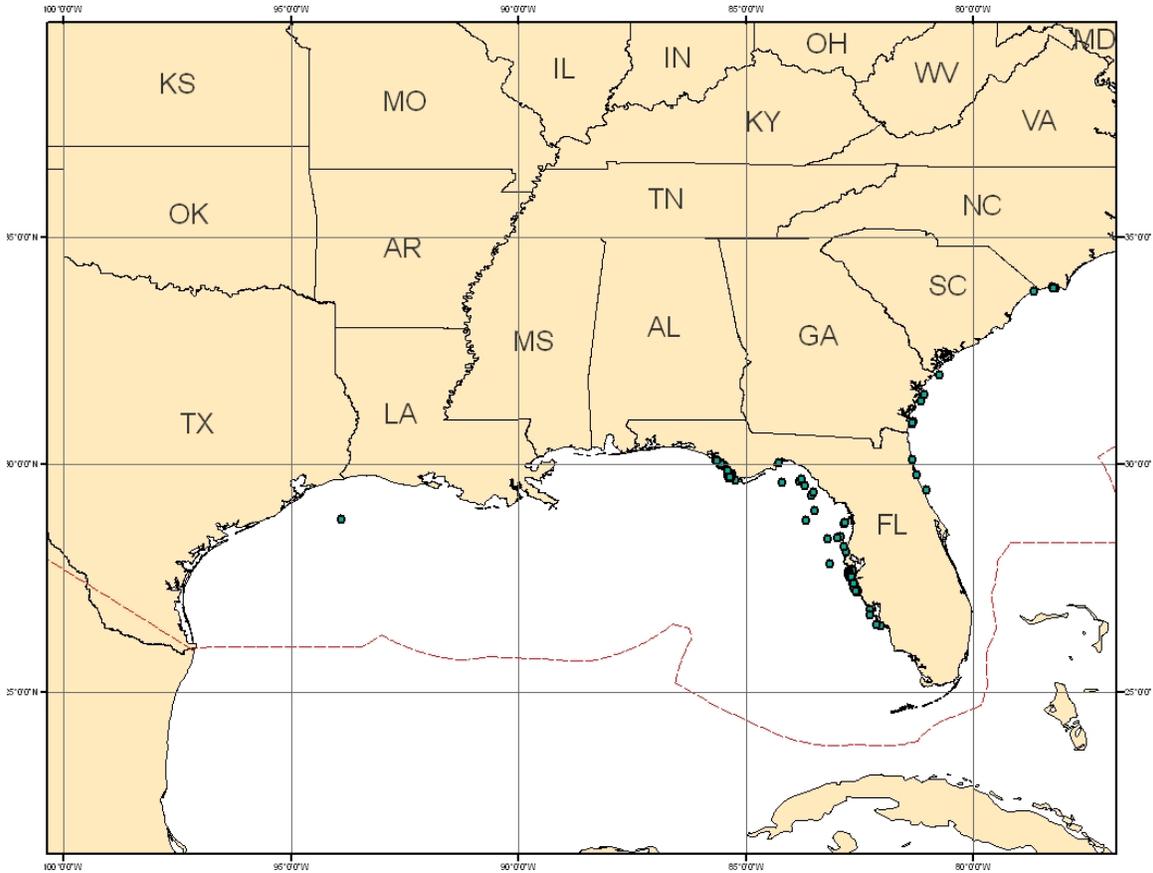


Figure 2.1 Neonate blacknose shark interactions.
The dotted line indicates the EEZ. Data sources are from Carlson, 2002; Cooperative Atlantic States Shark Pupping and Nursery Area Program (COASTSPAN); Cooperative Shark Tagging Program (CSTP); Mote Marine Laboratory (MOTE); SEAMAP; Southeast Gillnet Survey (SEGN); Southeast Longline Survey (SELL); and the Shark Observer Program (SOP).

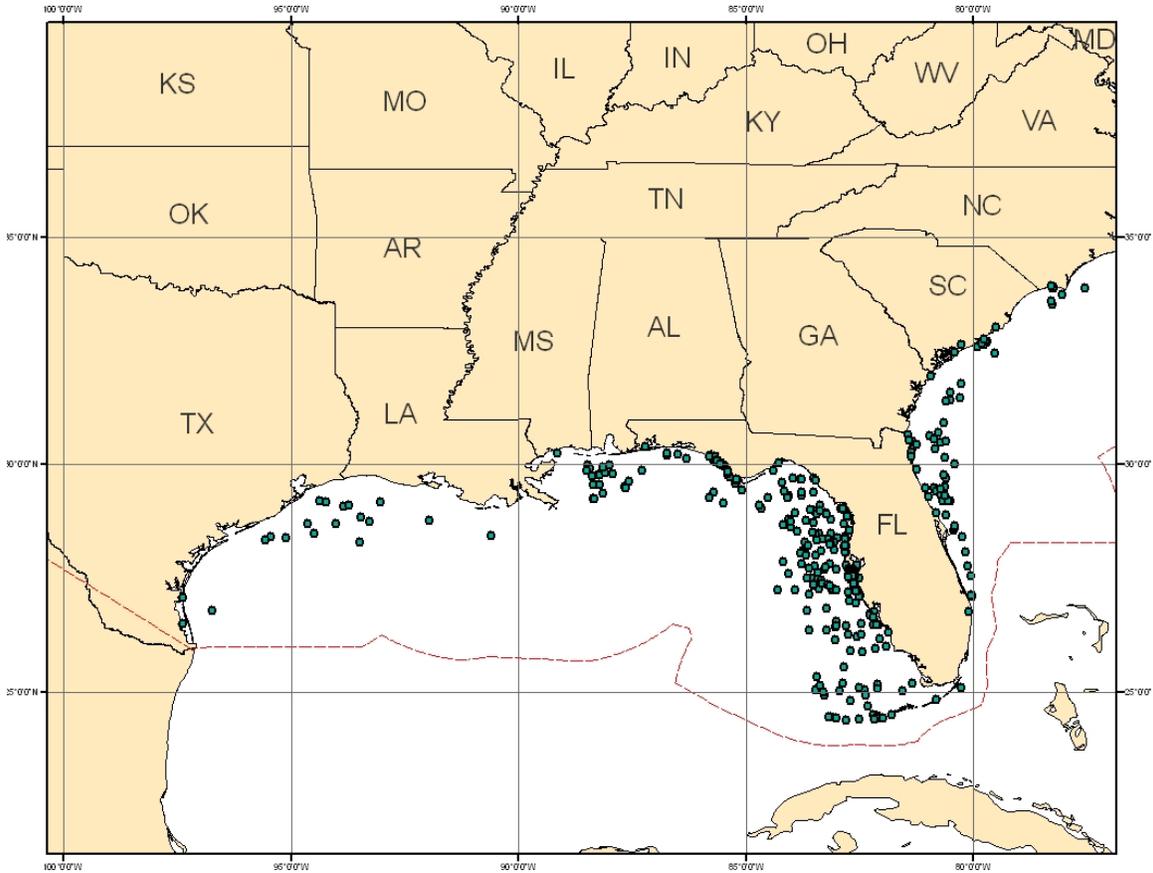


Figure 2.2 Juvenile blacknose shark interactions.
The dotted line indicates the EEZ. Data sources are from Carlson, 2002; Cooperative Atlantic States Shark Pupping and Nursery Area Program (COASTSPAN); Cooperative Shark Tagging Program (CSTP); Mote Marine Laboratory (MOTE); SEAMAP; Southeast Gillnet Survey (SEGN); Southeast Longline Survey (SELL); the Shark Observer Program (SOP); Jones and Grace, 2002; and Parsons, 2002.

Alternative G3 Close waters inshore of 20 fathoms in the Gulf of Mexico to shark bottom longline gear

NMFS considered closing waters inshore of 20 fathoms in the Gulf of Mexico to shark bottom longline gear as a way to reduce fishing pressure on young blacknose sharks. The majority of the recorded interactions with neonate and juvenile blacknose sharks have been recorded in waters inshore of 20 fathoms (Figure 2.3). Therefore, by closing waters inshore of 20 fathoms, NMFS would relieve fishing pressure on neonate and juvenile blacknose sharks. However, closing waters inshore of 20 fathoms could have a large, negative socioeconomic impact on the shark BLL fishery in the Gulf of Mexico, as the majority of the sharks sets from the observer program from 1994-2007 occurred inshore of 20 fathoms (Figure 2.4). Given these potentially large, negative impacts and the ability to rebuild blacknose sharks through other alternatives, alternative G3 was considered but not further analyzed at this time.

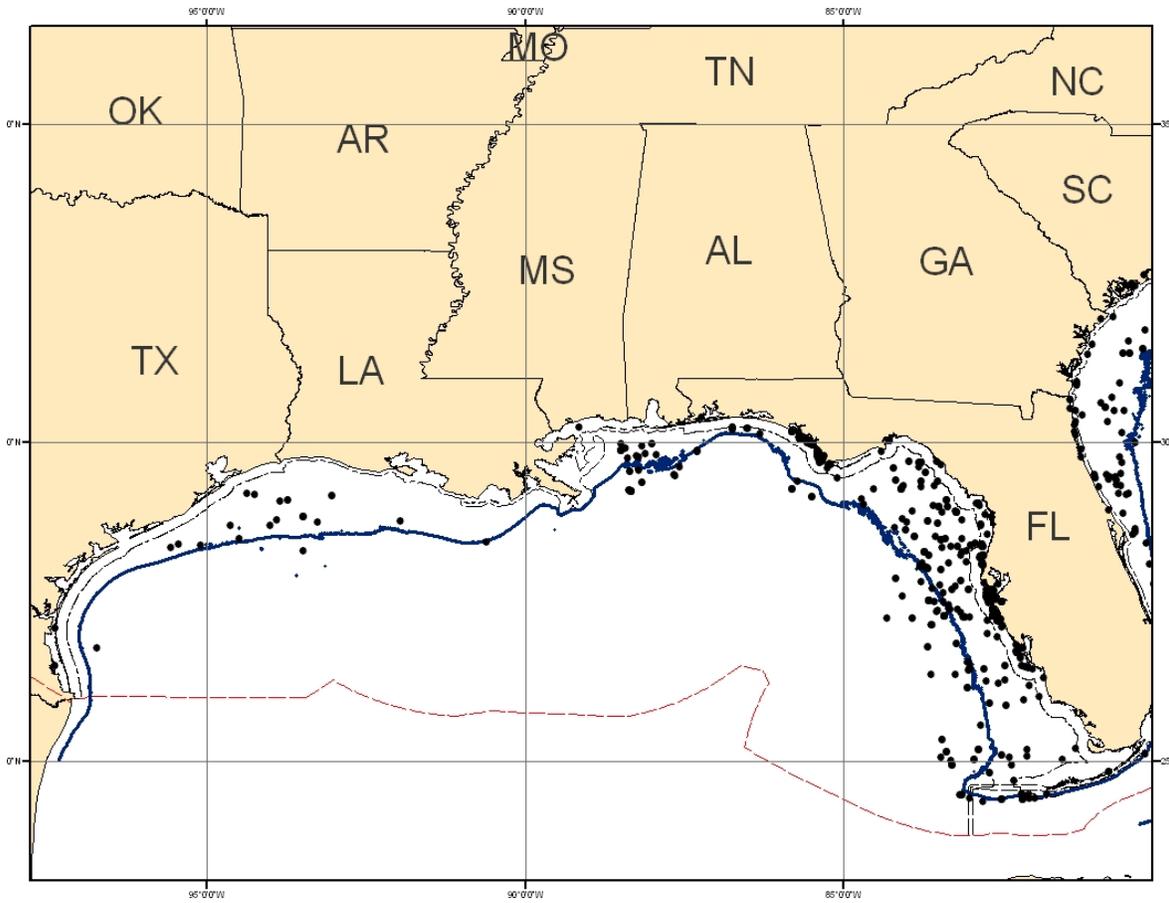


Figure 2.3 Neonate and juvenile blacknose interactions relative to the 20 fathom line. The solid line indicates the 20 fathom line. The dotted line indicates the EEZ. The double dashed line off the tip of Florida is the Gulf of Mexico/South Atlantic Fishery Management Council boundary delineation.

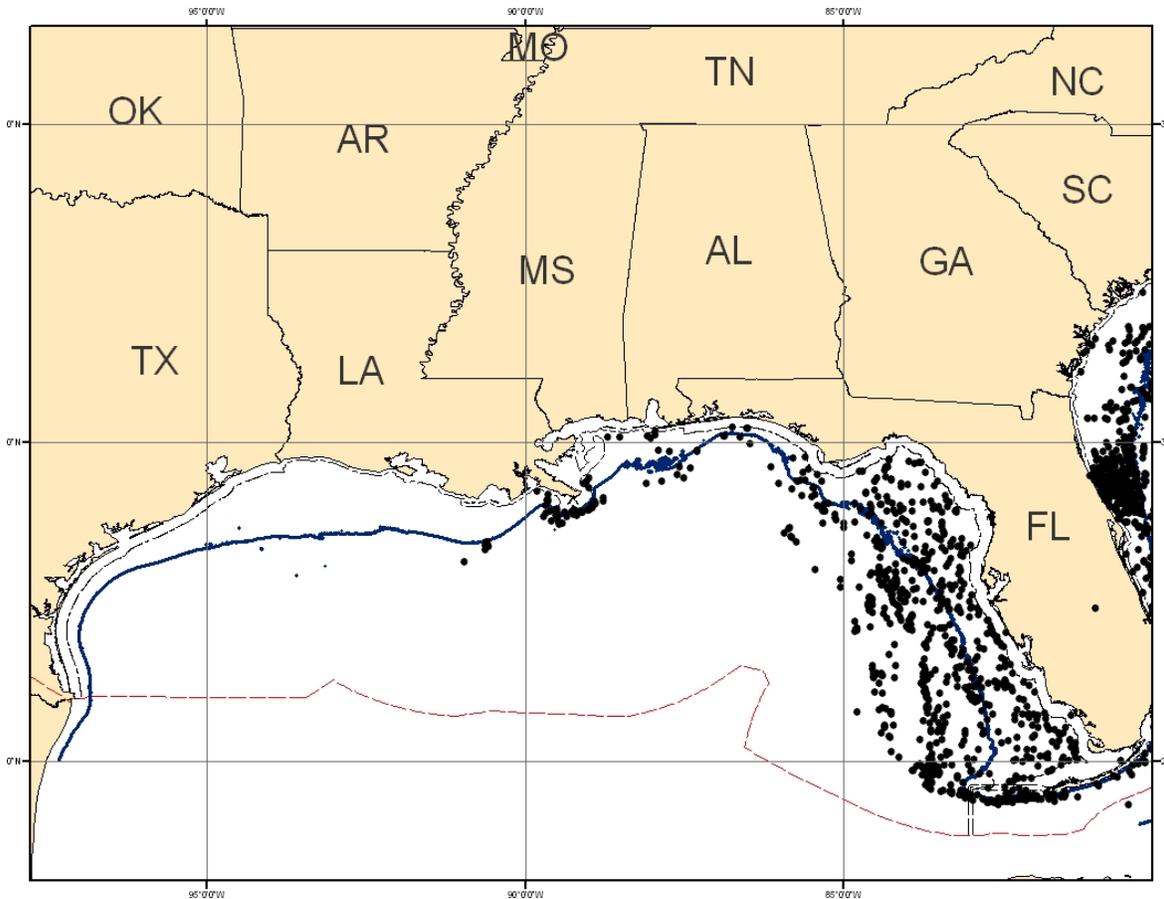


Figure 2.4 Observed BLL sets from 1994-2007 relative to the 20 fathom line. The solid line indicates the 20 fathom line, and the dashed line is the EEZ. The double dashed line off the tip of Florida is the Gulf of Mexico/South Atlantic Fishery Management Council boundary delineation. Source: Shark Observer BLL Program.

Alternative G4 Close waters inshore of 50 fathoms in the Gulf of Mexico to shark bottom longline gear

NMFS considered closing waters inshore of 50 fathoms in the Gulf of Mexico to shark BLL gear as a way to reduce fishing pressure on young blacknose sharks and to complement the Gulf of Mexico Fishery Management Council's emergency rule in the Gulf of Mexico region for reef fish BLL gear (74 FR 20229; May 1, 2009). The emergency rule prohibits the use of BLL gear for reef fish in waters less than 50 fathoms for the entire eastern Gulf of Mexico in order to reduce sea turtle interactions. However, closing waters inshore of 50 fathoms would have a large, negative socioeconomic impact on the shark BLL fishery in the Gulf of Mexico, as the majority of the sharks sets from the observer program from 1994-2007 occur inshore of 20 fathoms (Figure 2.5). Given these potentially large, negative impacts and the ability to rebuild blacknose sharks through other alternatives, alternative G3 was considered by not further analyzed at this time.

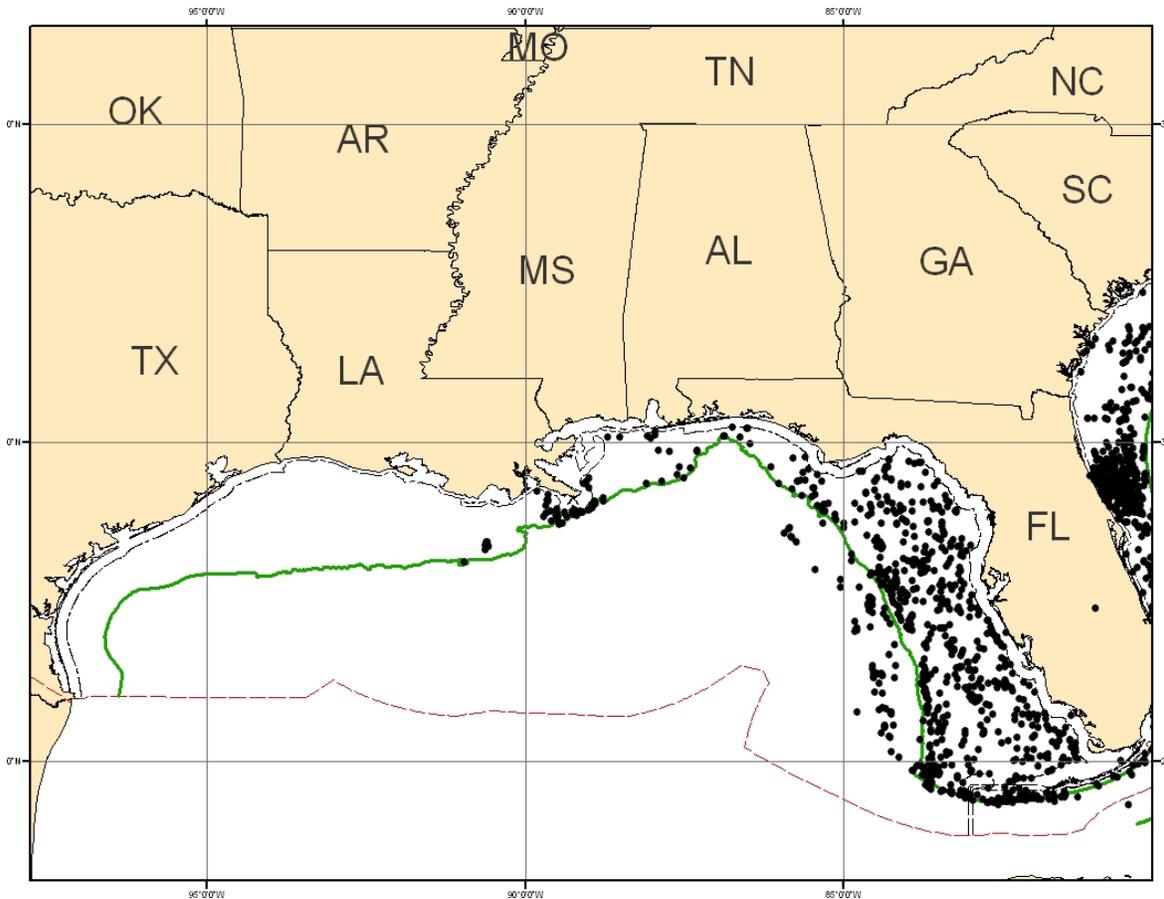


Figure 2.5 Observed BLL sets from 1994-2007 relative to the 50 fathom line. The solid line indicates the 50 fathom line, and the dashed line is the EEZ. The double dashed line off the tip of Florida is the Gulf of Mexico/South Atlantic Fishery Management Council boundary delineation. Source: Shark Observer BLL Program.

Alternative G5 Add deepwater sharks to the management unit and place these species on the prohibited list

This alternative would implement federal management of deepwater sharks by placing them on the prohibited list. This action, however, is not likely to have significant ecological benefits since deepwater sharks are not currently targeted in any fishery and are only caught as bycatch. Placing this group on the prohibited list would not prevent bycatch.

Additionally, prohibiting the landing of deepwater sharks would limit data gained from incidental catches. If prohibited, these rarely encountered species would have to be released and could not be landed and submitted for subsequent analysis. Therefore, alternative G5 was considered but not further analyzed at this time

Alternative G6 Establish catch shares in the Atlantic shark fisheries

A catch share is the allocation of the available fishery quota among participants within the fishery. LAPPs are one type of catch share program. These programs may be

implemented to address numerous issues, including but not limited to: ending the race for fish, reducing overcapitalization, and improving efficiency and safety, while still addressing the biological needs of a stock. These programs can be designed specifically to meet the needs of a fishery for which they are designed, provided they meet the requirements outlined in the Magnuson-Stevens Act. Catch shares were not considered for the shark fishery in this amendment because of the ramifications this type of program would have for the existing permit structure and the time required for implementing these programs.

To properly design a catch share program that appropriately considers the views and interests of all stakeholders and then implements such a system would have take NMFS several years, and therefore, catch shares were not considered a reasonable alternative for this action given the mandate in § 304(e) of the Magnuson-Stevens Act to have ACLs in place for stocks experiencing overfishing by 2010. However, NMFS is considering revisions to the existing permit structure within HMS fisheries. This could include a catch share program for sharks as well as other HMS as was discussed during the September/October 2008 HMS Advisory Panel. NMFS published an ANPR on June 1, 2009 (74 FR 26174), to initiate broad public participation in considering catch shares for HMS fisheries.