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A.0 APPENDIX: QUOTAS AND RETENTION LIMIT CALCULATIONS

For alternatives A2, A3, A4, and A6, NMFS calculated quotas and retention limits for blacknose sharks based on the blacknose shark TAC recommended in the 2007 SCS stock assessment. Fishing effort from 2004 to 2008 in the Coastal Fisheries Logbook, discards from the BLL and gillnet observer reports from 2005 – 2008, and landings reported through HMS shark dealer reports (*i.e.*, southeast and northeast general canvass and SEFSC quota monitoring databases) were used for all the quota calculations and the retention limit analyses. In all cases, NMFS accounted for total mortality from all fishing sectors (*e.g.*, commercial and recreational) within the Atlantic shark fishery, including landings and discards. As explained in Chapter 4, NMFS is working with the GMFMC and SAFMC to reduce blacknose shark discards in the shrimp trawl fisheries (Appendix E). Thus, for the alternatives considered below, NMFS assumes that bycatch of blacknose sharks in shrimp trawl fisheries is being reduced via Council action. The management measures analyzed in this document focus on the shark fisheries. By reducing the blacknose shark commercial quota below the blacknose commercial allowance for the Atlantic shark commercial fishery of 7,094 blacknose/year, NMFS would reduce fishing mortality below the level that would cause overfishing and allow blacknose sharks to rebuild with a 70 percent probability by 2027. The quotas and retention limits in this rulemaking are specific to the 2007 blacknose shark stock assessment, but based on the results of future stock assessments and/or estimates of landings, discards, and effort in the fisheries that interact with the blacknose shark, NMFS anticipates changing these quotas and retention limits via framework actions in the future, as necessary.

A.1 Background

The 2007 SCS stock assessment recommended a blacknose-specific TAC of 19,200 blacknose sharks per year across all fisheries that interact with blacknose sharks. The assessment stated that this TAC would provide a 70 percent chance of rebuilding blacknose sharks by the year 2027. Based on this recommendation, NMFS considered several alternatives that establish a blacknose shark specific quota and a separate non-blacknose SCS quota. Establishing a separate blacknose shark quota would allow blacknose sharks to be managed separately from the other SCS and would give NMFS the ability to track this separate quota more efficiently, which is critical given the overfished and overfishing status of blacknose sharks.

To determine the proportion of the 19,200 blacknose shark TAC that would be available to the Atlantic shark commercial fishery, NMFS accounted for mortality of blacknose sharks in all sectors of recreational and commercial fisheries. First, the TAC of 19,200 blacknose sharks is a 78 percent reduction in harvest compared to the average annual harvest blacknose sharks experienced from 1999 – 2005 (86,381 blacknose sharks/year; Table 4.1 in Chapter 4). In order to attain the needed mortality reductions within the Atlantic shark commercial fisheries, NMFS would establish an Atlantic shark commercial fishery allowance. This commercial allowance would be a 78 percent reduction in blacknose shark mortality in the Atlantic shark commercial fishery.

The average annual landings of blacknose sharks within the Atlantic shark commercial fishery was 27,484 blacknose sharks from 1999 – 2005, and average annual discards were 5,007

blacknose sharks over that same time period. A 78 percent reduction in blacknose shark landings (6,046 blacknose sharks/year) and discards (1,102 blacknose sharks/year) in the Atlantic shark fisheries would be a total of 7,148 blacknose sharks per year ($6,046 + 1,102 = 7,148$). However, blacknose sharks are also taken in the exempted fishing program. Therefore, to determine the commercial allowance for the Atlantic shark commercial fishery, NMFS subtracted the amount of blacknose sharks that are caught in the exempted fishing program. On average, 54 blacknose sharks are taken (*i.e.*, kept or discarded dead) under the exempted fishing program. Thus, the commercial allowance available to Atlantic shark commercial fishermen would be 7,094 blacknose sharks ($7,148$ blacknose sharks – 54 blacknose sharks taken in the EFP program = 7,094 blacknose sharks) (Table A.3). This number of blacknose sharks needs to be converted to weight since that is how the quota is monitored.

In this document NMFS revised the quotas in alternatives A2 – A4 from those described in the DEIS. The revised quotas would still establish a non-blacknose SCS quota for finetooth, Atlantic sharpnose, and bonnethead sharks. However, rather than subtracting the average blacknose shark landings from the SCS quota, as was done in the DEIS, the revised non-blacknose SCS quota would be based on the average landings of finetooth, Atlantic sharpnose, and bonnethead sharks from 2004 – 2008, or 221.6 mt dw. This change in approach is due, in part, to be consistent with the 2007 SCS stock assessment that indicated that, while none of those three species are currently overfished, or undergoing overfishing, fishing mortality should not be increased. With regards to blacknose sharks, the quotas for alternatives A2 – A4 in the DEIS was based on average landings from 2004 – 2007. The revised blacknose quota was calculated as it was in the DEIS but is based on the average landings of blacknose sharks of 55 mt dw for that same time period, 2004 – 2008.

For the FEIS, NMFS calculated the number of discards associated with each trip using the discard mortality rate based on the 2005 through 2008 Shark Gillnet Observer Data. A total of 165 gillnet trips were observed. In the observer data, sharks caught in gillnets were recorded as number landed, number discarded dead, and number discarded alive. Mortality rates were determined by gear type (surround, stake, and drift) observed in the gillnet fishery. Mortality rates by gear were 81 percent for the drift gillnet (65 released alive, 269 released dead), 97 percent for surround gillnets (29 released alive, 1044 released dead), and 60 percent for stake gillnets (433 released alive, 654 released dead) (Table A.1). Using this information, and counting all the sharks that were released alive as likely survivors, a mortality rate of 80 percent was determined. This mortality rate differs from the rate used in the DEIS, where every shark discarded was treated as a mortality (100 percent). Because of this change to the projected mortality rate, and because of the change to the average size of blacknose shark caught in gillnets described later, the average number of blacknose caught in directed shark trips was modified from the numbers used in the DEIS.

Table A.1 Number of blacknose sharks discarded alive, dead, and mortality rate for all gillnet gears based on 165 observed trips through the Gillnet Observer Program from 2005-2008.

Gear Type	No. Blacknose Discarded Alive	No. Blacknose Discarded Dead	Discard Mortality Rate
Drift Gillnet	65	269	0.81
Strike Gillnet	29	1044	0.97
Sink Gillnet	433	654	0.60

Analysis of the 2005 – 2008 Shark Gillnet Observer Data also showed that blacknose shark catch rates varies among the intended target of the trip. Trips were observed that reported the intended target species as blacknose sharks, blacktip sharks, Atlantic sharpnose sharks, bonnethead sharks, smooth dogfish, or as unspecified shark trips. The data covered 110 directed shark trips in which a total of 264 sets with various gillnet gears were made. In three observed trips that specifically targeted blacknose sharks (totaling 15 sets), 169 blacknose sharks were caught, compared to 94 non-blacknose sharks that were landed. This gives a blacknose shark catch rate of 63.7 percent for those trips that specifically targeted that species (Table A.2).

However, in directed shark trips using gillnets, the blacknose shark catch rates were relatively low for those trips that targeted non-blacknose sharks, or were generic shark trips. For trips targeting blacktip sharks, a total of 17 blacknose sharks were caught in sixteen sets, compared to 623 non-blacknose sharks. This represents a catch rate of 2.6 percent for blacknose sharks in trips targeting blacktip sharks. From sixteen sets that specifically targeted Atlantic sharpnose, a total of 4,671 non-blacknose sharks were caught compared to 65 blacknose sharks, or a catch rate of 1.4 percent for blacknose sharks. In twenty-two sets from trips targeting bonnethead sharks, there were 142 blacknose sharks (8.3 percent) caught compared to 1,566 non-blacknose sharks. There were 29,670 non-blacknose sharks caught from 182 sets in trips recorded as unspecified shark trips. The number of blacknose sharks caught in these unspecified shark trips were 1,201, or 3.9 percent. From thirteen sets targeting smooth dogfish there were no blacknose sharks caught (Table A.2).

Table A.2 Percentages of shark species (individuals) caught in shark trips that directed on specific species based on 2005-2008 Shark Observer Program data.

	Blacknose Shark Trip	Blacktip Shark Trip	Atlantic Sharpnose Shark Trip	Bonnethead Shark Trips	Unspecified Shark Trip
Blacknose	64.3 % (169)	2.6 % (17)	1.4 % (65)	8.3 % (142)	3.9 % (1,201)
Blacktip	7.6 % (20)	35.1 % (225)	0.4% (15)	0.2 % (3)	41.4 % (12,787)
Atlantic sharpnose	17.1 % (45)	0.6 % (4)	92.8 % (4,393)	14.8 % (252)	36.9 % (11,377)
Bonnethead	3.8 % (10)	0.5% (3)	1.8 % (87)	72.7 % (1,242)	4.6 % (1,431)
Spinner	4.6 % (12)	47.3% (303)	2.6 % (121)	1.6 % (28)	4.3% (1,315)

	Blacknose Shark Trip	Blacktip Shark Trip	Atlantic Sharpnose Shark Trip	Bonnethead Shark Trips	Unspecified Shark Trip
Finetooth	0.4 % (1)	12.8% (82)			8.4 % (2,584)
Scalloped Hammerhead	2.3 % (6)	1.0% (6)	0.6 % (29)	2.2 % (38)	0.4 % (122)
Others			0.5 % (26)	0.2 % (3)	0.1 % (54)

Based on this revised mortality estimate, the average number of blacknose sharks caught per trip for all directed shark vessels that landed blacknose sharks changed from 64.3 to 44.1. For those directed shark vessels that did not use gillnet gear, the average number of blacknose sharks caught per trip changed from 84.5 to 78.0. The calculation for the number of blacknose sharks caught in the DEIS was based on the total landings (in numbers) by gear for each region, divided by the total number of trips by gear for each region. In the FEIS, the total number of blacknose sharks caught by region was multiplied by the weighted average of each gear (the total number of trips of each gear for each region divided by the total number of trips for all gears). Based on this method, the gillnet average blacknose catch/trip in the GOM changed from 60.6 to 9.8 on 43 trips, while the average/trip in the SAT dropped from 29.6 to 8.3 on 429 trips. These changes led to the revised average number of blacknose sharks landed by directed shark vessels described above. With regards to incidental shark vessels, on average, those vessels that use gillnet gear that landed blacknose sharks caught 0.6 blacknose sharks per trip, whereas incidental vessels that did not use gillnet gear caught, on average, 1.2 blacknose sharks per trip. Based on these different catch rates for directed and incidental permitted vessels, NMFS determined the number of blacknose sharks that would be discarded dead for each trip under the different alternatives.

In order to achieve the 78 percent reduction in harvest as required from the 2007 SCS stock assessment, the commercial quota was determined by multiplying the expected landings by the average weight for blacknose sharks caught in the various gears in the fishery. For instance, in the bottom longline fishery, the annual blacknose shark landings from 1999 to 2005 were 8,091 blacknose sharks/year (Table 4.1). Multiplied by 22 percent (a 78 percent reduction), the total estimated landings from the bottom longline fishery would be 1,780 blacknose sharks. Multiplying that number by the average weight of blacknose shark caught in that fishery (5.4 lb dw) results in an estimated landings weight of 9,612 lb dw (8,091 blacknose sharks/year x 0.22 reduction in landings x 5.4 lb dw / avg blacknose shark = 9,612 lb dw). The process was repeated for each commercial category shown in Table 4.1. A major change from the DEIS to the FEIS was the average weight of the blacknose sharks caught in the gillnet fisheries. In the DEIS, the average weight used for blacknose sharks caught in gillnet gear was 14.4 lb dw, but revised data from the SEFSC indicates that the average weight for blacknose sharks caught in gillnet gear is actually 18.7 lb dw. Therefore, this weight was used in the FEIS in all analyses that calculate retention limits and quotas.

For those alternatives that allow all currently authorized gears (*e.g.*, alternative A3), the total mortality allowance (landings and discards) for blacknose sharks would be 94,313 lb dw (42.8 mt dw) (9,612 lb dw BLL estimated landings + 78,335 lb dw GN estimated landings + 418 lb dw HL estimated landings + 5, 948 lb dw BLL Discards = 94,313 lb dw blacknose shark

mortality allowance). However, after subtracting the sharks taken in the exempted fishing program (178 lb dw), the total commercial mortality allowance is actually 94,135 lb dw (94,313 lb dw – 178 lb dw = 94,135 lb dw), or 42.7 mt dw (Table A.3).

For those alternatives that would eliminate gillnets as an authorized gear (*e.g.*, alternative A4), the total mortality allowance (landings and discards) for blacknose sharks would be 38,599 lb dw (17.5 mt dw) (9,612 lb dw BLL estimated landings + 22,621 lb dw GN estimated catch + 418 lb dw HL estimated landings + 5,948 lb dw BLL Discards = 38,599 lb dw blacknose shark mortality allowance) after a 78 percent reduction in harvest as required from the 2007 SCS stock assessment. Again, after subtracting the sharks taken in the exempted fishing program (178 lb dw), the total commercial mortality allowance is actually 38,421 lb dw (38,599 lb dw – 178 lb dw = 38,421 lb dw), or 17.4 mt dw (Table A.4).

The alternatives described below consider reducing blacknose shark harvest through various gear and landings restrictions. The overall goal is to reduce the total number of blacknose shark landings and discards to 7,094 blacknose sharks/year. Since the average size of blacknose sharks caught differs among the various gears used in the shark fisheries, the quota (in lb dw) for each alternative varies depending on the gears that are included in that alternative. In each alternative, various methods are explored to reduce the blacknose sharks harvest below the commercial allowance, while maximizing the allowable non-blacknose SCS quota.

A.2 Alternative A2

Under alternative A2 NMFS would set the non-blacknose SCS quota at 221.6 mt dw (488,539 lb dw), and the blacknose shark quota at 12.1 mt dw (26,676 lb dw). The non-blacknose quota would apply to finetooth, Atlantic sharpnose, and bonnethead sharks, and would be equal to the average landings for those species from 2004 through 2008. The blacknose quota of 12.1 mt dw would be a 78 percent reduction in average landings for the years 2004 through 2008. The quotas reflect changes from those considered in the DEIS, which used an average weight of 10.5 lb dw of blacknose sharks for the combined BLL and gillnet fisheries, and an average weight for blacknose sharks caught in the gillnet fisheries of 14.4 lb. dw. As described above, revised data indicates that the average weight for blacknose sharks caught in the gillnet fishery is actually larger (18.7 lb dw) than that used in the DEIS. Using this revised average weight and the weighted averages for the number of trips per gear, an updated average weight for blacknose sharks of 6.4 lb dw was used for the combined BLL and gillnet fisheries in the FEIS scenarios. For those scenarios that exclude gillnet gear, in both the DEIS and FEIS, an average weight for blacknose sharks of 5.4 lb dw was used. This average weight was based on the 2004 through 2008 landings for each gear type (excluding gillnets), multiplied by the weighted trip average of each gear.

In considering this alternative, NMFS used several scenarios to analyze the impact of the different retention limits for directed and incidental shark permit holders, and the inclusion and exclusion of certain gear types on the amount of blacknose sharks landed and discarded. By doing this, NMFS was able to evaluate whether or not a particular retention limit/gear type combination would result in total mortality above or below the commercial shark fishery allowance (7,094 blacknose sharks/year). Refer to Table A.5 for the following discussions.

In the first scenario under alternative A2, directed shark permit holders only would be allowed to retain blacknose sharks. These permit holders could retain blacknose sharks up to the established retention limit. Gillnets would be retained as an authorized gear. All blacknose sharks caught under incidental shark permits would have to be discarded. In scenario 2, both directed and incidental shark permit holders would be allowed to retain blacknose sharks. For both directed and incidental shark permit holders, all blacknose sharks caught in excess of their respective retention limit would have to be discarded. Gillnets would remain an authorized gear in the shark fishery. Under scenarios 3 and 4, gillnets would be removed as an authorized gear in the shark fishery. Scenario 3 would allow the retention of blacknose sharks by directed shark permit holders only. All incidental shark permit holders would have to discard any blacknose sharks. Scenario 4 would allow retention of blacknose sharks by directed and incidental shark permit holders. For scenarios 5 and 6, the retention of blacknose sharks would be prohibited by all directed and incidental shark permit holders. Gillnets would be retained as an authorized gear under scenario 5, while gillnets would be prohibited by scenario 6.

To determine the maximum retention limit under each scenario, NMFS first divided the number of blacknose sharks available to the commercial shark fishery (7,094 sharks) by the average number of historical trips taken per year estimated from the Coastal Fisheries Logbook from 2004 – 2007 for directed and incidental permit holders (251.3 trips with gillnet gear and 129 trips without gillnet gear). This level of effort may have changed with the implementation of Amendment 2 to the 2006 Consolidated HMS FMP. However, at the time of these analyses NMFS only had additional data for 2008 (complete and reviewed annual data is not available until late Spring or early Summer of the following year) and any changes as a result of Amendment 2 would only be reflected in part of 2008 given the fact that Amendment 2 was not implemented until July 15, 2008. Therefore, NMFS relied on Coastal Fisheries logbook data from 2004 – 2007 to calculate the number of trips taken by directed and incidental shark fishermen for this rulemaking. Starting from this maximum retention limit, NMFS proceeded to reduce the retention limits for each scenario until the total landings in the species specific blacknose shark weight were less than or equal to the quota considered in this alternative (12.1 mt dw).

For scenario 1, which would allow gillnets to remain an authorized shark fishing gear, NMFS divided 4,272 blacknose sharks, which would be the number of sharks landed by the average number of directed trips that landed blacknose sharks in the past (*i.e.*, 251.3 trips), with a directed trip limit of 17 blacknose sharks per trip ($4,272 \text{ blacknose sharks} / 251.3 \text{ trips} = 17 \text{ blacknose sharks/trip}$) (Table A.5). However, on average historically, these trips caught 44.1 blacknose sharks per trip. Therefore, under this scenario directed shark permit holders would discard 27.1 blacknose sharks per trip ($44.1 - 17 \text{ blacknose sharks/trip} = 27 \text{ blacknose sharks/trip}$). NMFS then multiplied the number of discards per trip by the average number of trips by directed permit holders that landed blacknose sharks per year in the past (251.3 trips/year) to get the total number of directed discards or 6,810.2 blacknose sharks ($27.1 \text{ blacknose sharks/trip} \times 251.3 \text{ directed trips} = 6,810.2 \text{ blacknose shark discards}$). Multiplying the number of discards by the mortality rate of 80 percent, the total number of dead discards for the directed shark fishery would be 5,448.2 ($6,810.2 \text{ discards/year} \times 0.8 \text{ mortality rate} = 5,448.2 \text{ dead discards/year}$) (Table A.5).

For incidental permit holders, multiplying the average number of blacknose sharks per year by the percentage of trips for each gear resulted in a weighted average of 0.54 blacknose sharks/trip. This number is the average number of blacknose sharks that would be expected to be discarded dead per trip by incidental permit holders with a zero retention limit under scenario 1. Thus, under scenario 1, NMFS would expect approximately 119 blacknose sharks (0.54 blacknose sharks/trip x 222 incidental trips = 119 blacknose shark discards) to be discarded per year by incidental permit holders. NMFS used the same approach to determine the number of directed and incidental discards per trip under the remaining scenarios in Table A.5.

For scenario 2, incidental shark permit holders would be allowed to retain what they currently catch, or an average one blacknose shark per trip. Directed shark permit holders would also be allowed to retain blacknose sharks. Therefore, NMFS subtracted the number of blacknose sharks caught by incidental shark permit holders (0.54 blacknose sharks/trip x 222 incidental trips = 119 blacknose shark landings) from the total blacknose sharks available to commercial shark fishermen (*i.e.*, 4,272 blacknose sharks), which resulted in 4,153 blacknose sharks available to directed shark permit holders (4,272 blacknose sharks – 119 blacknose sharks = 4,153 blacknose sharks). NMFS then divided the 4,153 blacknose sharks available to directed shark permit holders by the number of average directed shark trips that landed blacknose sharks in the past (*i.e.*, 251.3 trips), which would result in a retention limit of 16 blacknose sharks per trip for directed permit holders (Table A.5). NMFS used the same approach for scenario 3 and 4, making changes in number of trips and in retention limits for the exclusion of gillnets (Table A.5). Scenarios 5 and 6 assumed no retention of blacknose sharks by all permit holders.

Finally, NMFS determined the total mortality anticipated under each scenario. NMFS added the estimated number of directed and incidental dead discards/year as well as the estimated number of sharks harvested/year to estimate total mortality/year in numbers. Total mortality was also calculated in weight by multiplying the estimated number of sharks killed under each scenario by the average blacknose weight for all gears combined (Table A.5). For example, the estimated total blacknose shark mortality in numbers for scenario 1 would be 9,838. This was calculated by adding 5,448 (the estimated number of dead discards by directed permit holders), plus 119 (the estimated number of dead discards by incidental permit holders), and the 4,272 landed blacknose sharks. The estimated total mortality in weight for scenario 1 is 63,260 lb dw. Based on this, NMFS was able to compare the estimated total mortality per year in terms of the number of blacknose sharks and weight of blacknose sharks under the different scenarios to the commercial allowance for the commercial shark fishery.

For those scenarios (1, 2, and 5) that allow all gear types to continue fishing, the projected landings (in weight) would fall below the available commercial allowance for blacknose sharks of 94,135 lb dw (Table A.5). This is due primarily to the higher per shark average weight of blacknose sharks caught in gillnets (18.7 lb dw), which results in that higher commercial quota. Because of the smaller average blacknose shark weight caught in BLL gear and the higher discard rate, those scenarios (3, 4, and 6) that exclude gillnets would exceed the annual blacknose shark commercial allowance of 38,421 lb dw (Table A.5). Even though several of the scenarios would meet the commercial weight quota for blacknose sharks based on the recommended restrictions in terms of weight, none of them would meet the commercial allowance of 7,094 blacknose sharks per year. This is due in part to the large number of juvenile blacknose sharks discarded by some gears in the commercial shark fisheries.

Table A.3 Average landings from 1999 – 2005 and available commercial landings for blacknose sharks based on a 78 % reduction for all gear types.

Gear	Avg No. Blacknose Landed	Avg wt/Gear (lb dw)	Average Landings (lbs dw)	78% Reduction in No. Landed	78% Weight Reduction (lbs dw)	78% Weight Reduction (mt dw)
BLL	8,091	5.4	43,691.4	1,780	9,612.1	4.4
GN	19,041	18.7	356,066.7	4,189	78,334.7	35.5
Handline	352	5.4	1,900.8	77	418.2	0.2
BLL discards	5,007	5.4	27,037.8	1,102	5,948.3	2.7
EFP program (avg/year)	54	3.3	178.2	54	178.2	0.1
Total	32,545		428,518.5	7,094	94,135.1	42.7

Table A.4 Average landings from 1999 – 2005 and available commercial landings for blacknose sharks based on a 78 % reduction for all gears with no landings for gillnets.

Note: The gillnet numbers below represent the expected mortality from blacknose sharks being caught in other gillnet fisheries

Gear	Avg No. Blacknose Landed	Avg wt/Gear (lb dw)	Total Landings (lbs. dw)	78% Reduction in No. Landed	78% Weight Reduction (lbs dw)	78% Weight Reduction (mt dw)
BLL	8,091	5.4	43,691.4	1,780	9,612.1	4.4
GN	19,041	5.4	102,821.4	4,189	22,620.7	10.3
Handline	352	5.4	1,900.8	77	418.2	0.2
BLL discards	5,007	5.4	27,037.8	1,102	5,948.3	2.7
EFP program (avg/year)	54	3.3	178.2	54	178.2	0.1
Total	32,545		175,273.2	7,094	38,421.1	17.4

Table A.5 Retention limits, discards, and total mortality of blacknose sharks per year under different scenarios for alternative A2.

Note: commercial blacknose shark mortality allowance for Atlantic shark commercial fishery = 7,094.

	Gillnets Included		Gillnets Excluded		No Retention of Blacknose	
	Scenario 1: Directed Permit Holders Only	Scenario 2: Directed & Incidental Permit Holders	Scenario 3: Directed Permit Holders Only	Scenario 4: Directed & Incidental Permit Holders	Scenario 5: Gillnets Included	Scenario 6: Gillnets Excluded
Retention Limit/Trip	17	16	30	31	0	0
Avg. No. Trips/year by Directed Permit Holders	251.3	251.3	129.3	129.3	251.3	129.3
Dead Discards/day by Directed Permit Holders	27.1	28.1	48	48	44.1	78
Dead Discards/year by Directed Permit Holders	5,448.2	5,649.5	4,958.7	4,958.7	8,865.5	8,060.7
Avg. No. Trips /year by Incidental Permit Holders	222	222	92	92	222	92
Dead Discards/trip by Incidental Permit Holders	0.5	0	1.2	0.2	0.5	1.2
Dead Discards/year by Incidental Permit Holders	118.6	0	108.6	16.4	118.6	108.6
Total Dead Discards/year	5,567.0	5,649.5	5,067.4	4,975.2	8,984.0	8,169.4
Total Mortality/year in Numbers	9,838.2	9,788.0	8,944.9	9,074.1	8,984.0	8,169.4
Average Blacknose Weight (lb dw)	6.4	6.4	6.4	6.4	6.4	6.4
Total Mortality/year in Weight (lb dw)	63,260.3	62,937.2	57,515.5	58,346.6	57,767.4	52,529.1
Total Mortality Allowed/year in Weight (lb dw)	94,135.1	94,135.1	38,421.1	38,421.1	94,135.1	0.0
Difference (if positive, meets goal)	30,874.8	31,197.9	-19,094.4	-19,925.5	36,367.6	-14,108.0

A.3 Alternatives A3 and A4

In the DEIS, alternative A3 proposed a non-blacknose SCS quota of 42.7 mt dw, or an 82 percent landings reduction, and a blacknose quota of 16.6 mt. dw. Alternative A4 originally proposed a 56.9 mt dw non-blacknose SCS quota, or a 76 percent landings reduction, and a blacknose quota of 14.9 mt dw. In determining the quotas in the DEIS, the average number of blacknose sharks caught in the directed fisheries under alternative A3, which allowed all current gear types, was 64.3. The average number of blacknose sharks caught in the directed shark fishery under alternative A4, which would exclude gillnets, was 84.5.

Because of the revisions between the DEIS and FEIS described earlier for mortality rates of sharks released from gillnets, and the average weight of sharks caught in gillnets, NMFS has modified the quotas for alternative A3 and A4. In both alternatives, NMFS looked at reductions in the non-blacknose SCS quota to determine the level of non-blacknose SCS harvest that would allow for a limited blacknose shark fishery and a reduction in discards. The methodology for both alternatives was the same. The only difference between them is whether shark gillnet gear was allowed. As previously described, for the alternatives in this document NMFS was aiming to keep the commercial harvest of blacknose sharks at or under 7,094 blacknose sharks per year.

NMFS determined the average annual landings from 2004 through 2008 for finetooth, Atlantic sharpnose, and bonnethead sharks, in other words, the landings of non-blacknose SCS (see Table 4.2 in Chapter 4). NMFS then calculated what these landings would be under various percent reductions under alternatives A3 and A4 (Table A.6 and Table A.7). NMFS also determined the number of trips it would take to harvest these reduced landings, based on past retention of non-blacknose SCS for directed shark permit holders (see below). Based on the percentage of non-blacknose SCS trips taken by directed shark permit holders that landed blacknose sharks in the past (see below), NMFS then determined the number of blacknose sharks that would be caught, kept, and discarded while the different non-blacknose SCS quotas were harvested under alternatives A3 and A4 (Table A.8 and Table A.9).

Neither alternative would change the retention limit for SCS for directed shark permit holders (*i.e.*, no trip limits for SCS and pelagic sharks for directed shark permit holders). However, under alternative A3, incidental permit holders would be able to retain blacknose sharks, so they would be able to retain 16 SCS (blacknose and non-blacknose SCS) and pelagic sharks combined per trip. Under alternative A4, incidental permit holders would not be allowed to retain blacknose sharks, but they would still be able to retain 16 non-blacknose SCS and pelagic sharks combined per trip. In addition, NMFS assumed that fishermen would fish for non-blacknose SCS in a directed fashion until the non-blacknose SCS and/or blacknose shark quotas reached 80 percent. At that time, both the non-blacknose SCS fishery and the blacknose shark fishery would close, and fishermen would fish for other fish species, and all SCS, including blacknose sharks, would have to be discarded.

For each various percent reductions in landings, NMFS determined the number of trips it would take to harvest that reduced non-blacknose SCS quota based on the average number of non-blacknose SCS kept from 2004 through 2008 (column E in Table A.6 and Table A.7). NMFS determined the average number of non-blacknose SCS kept per trip from Coastal Fisheries logbook data from 2004 through 2007. For all gear types under alternative A3, 140.9

non-blacknose SCS were kept per trip (Table A.6). With the exclusion of gillnets under alternative A4, fishermen kept, on average, 134.7 non-blacknose SCS per trip (Table A.7). NMFS then determined the number of trips it would take to fulfill the non-blacknose SCS quota by dividing the total number of sharks available under the reduced non-blacknose SCS quota (columns D in Table A.6 and Table A.7) by the average number of non-blacknose SCS kept per trip (columns E in Table A.6 and Table A.7).

NMFS then estimated the number of trips it would take for directed shark permit holders to catch blacknose sharks while harvesting the non-blacknose SCS quota (columns E in Table A.8 and Table A.9). To do this, NMFS determined the percentage of trips taken by directed shark permit holders that harvested blacknose sharks relative to the overall number of trips taken by directed shark permit holders that landed SCS during 2004 through 2007 (based on the Coastal Fisheries logbook data for those years). On average, 36 percent of the trips taken by directed shark permit holders that landed SCS landed blacknose sharks (251.3 directed trips that landed blacknose sharks / 696.8 directed trips that landed SCS = 36 percent).

Due to revisions between the DEIS and FEIS in the mortality rate and the size of blacknose sharks caught in the gillnets fisheries described above, the average number of blacknose sharks caught per trip used in the FEIS for alternative A3 was revised to 44.1 (column B in Table A.8), and alternative A4 was revised to 78.0 (column B Table A.9). Because of the revisions to the average number of blacknose sharks caught per trip, the retention limit and the number of discards under each alternative has also been revised from the figures used in the DEIS. In this document the retention limit for alternatives A3 and A4 are equal to the average landings per trip, 44.1 and 78.0, respectively (columns C in Table A.8 and Table A.9). Because the revised retention limit is equal to the average landing per trip, the dead discards drops to 0 (column D in Table A.8 and Table A.9), as the directed shark fisheries would be allowed to retain all blacknose sharks caught up to the 2004 through 2007 average trip landings.

By multiplying the number of trips estimated to catch blacknose sharks (36 percent of the trips taken to harvest non-blacknose SCS or columns E in Table A.8 and Table A.9), by the sum of the average number of blacknose sharks kept (columns C in Table A.8 and Table A.9) and the number discarded dead (columns D in Table A.8 and Table A.9), in both cases 0, NMFS determined the number of blacknose that would be harvested (columns H, I, and J in Table A.8 and Table A.9) and discarded dead (columns F and G in Table A.8 and Table A.9) while the non-blacknose SCS quota is harvested under alternatives A3 and A4. The blacknose quota is based on the number of blacknose sharks taken while fishermen harvest the non-blacknose SCS quota (columns J in Table A.8 and Table A.9).

In this FEIS for alternative A3, NMFS assumed all fishing gears that are currently authorized for sharks would continue to be used to harvest sharks. Under alternative A3, the available commercial harvest would be equivalent to 95,135 lb. dw (42.7 mt dw) (7,094 sharks x 13.4 lb dw /blacknose shark = 95,135 lb dw) using the average weight for blacknose sharks caught in BLL and gillnet gear of 13.4 lb dw. In this document alternative A3, would set the blacknose shark quota at 19.9 mt dw, a 64 percent reduction in the average landings from 2004–2008, while the non-blacknose SCS quota would be set at 110.8 mt dw, a 50 percent reduction in landings.

Under alternative A4 in this FEIS, because gillnet gear would no longer be allowed to harvest sharks, NMFS assumed that directed fishing effort for sharks with gillnet gear would stop and that non-directed shark fishermen would still use gillnet gear to harvest other fish species and would discard any sharks that were caught. Under alternative A4, the available commercial harvest would be equivalent to 38,421 lb dw (17.1 mt dw) (7,094 sharks x 5.4 lb dw / blacknose shark = 38,421 lb dw) using the average weight of 5.4 lb dw for blacknose sharks caught in all other gears with the exclusion of gillnet gear. Alternative A4 would set the blacknose shark quota at 15.9 mt dw, a 71 percent reduction in the average landings from 2004 through 2008, while the non-blacknose SCS quota would be set at 55.4 mt dw (a 75 percent reduction in landings).

Once the non-blacknose SCS and blacknose shark quotas are filled and those fisheries close, NMFS assumes that all trips taken by directed shark permit holders for non-blacknose SCS and blacknose sharks would stop and fishermen would target other fish species (*e.g.*, Spanish mackerel, bluefish, etc.). Any SCS caught, including blacknose sharks, would have to be discarded. On average, 0.5 blacknose sharks (column B in Table A.8) and 22.7 non-blacknose SCS were caught (kept and discarded dead) on trips taken by incidental permit holders that includes gillnet gear under alternative A3. When gillnet gear is excluded under alternative A4, on average, 1.2 blacknose sharks (column B in Table A.9) and 18.7 non-blacknose SCS were caught on trips taken by incidental permit holders. NMFS assumes that the remaining directed SCS effort would target other fish species, and all SCS caught, including blacknose sharks, would have to be discarded. Thus, NMFS estimated the number of blacknose sharks (columns F and G in Table A.8 and Table A.9) that would be discarded for the remaining SCS trips fished in an incidental fashion (columns E in Table A.8 and Table A.9) based on the same methodology as explained above.

NMFS assumes that fishermen with incidental shark permits would continue to catch sharks and would catch and discard blacknose sharks as described above. For incidental permit holders, NMFS determined the number of blacknose sharks that would be discarded by multiplying the average number of blacknose caught by this group (columns B in Table A.8 and Table A.9) by the number of trips anticipated under alternatives A3 and A4 (columns E in Table A.8 and Table A.9). The number of trips taken by incidental permit holders was estimated from 2004 – 2007 Coastal Fisheries logbook data, where, on average, there were 222 trips taken by incidental permit holders that landed SCS using all gear types (columns E in Table A.8 and Table A.9). To estimate blacknose shark discards by incidental permit holders, NMFS used the average number of blacknose sharks caught across all gear types and the average number of trips taken by incidental permit holders for all gear types estimated from the Coastal Fisheries logbook from 2004 – 2007.

NMFS also determined the number of discards for non-blacknose SCS by incidental permit holders. NMFS used estimates of percent discards from the BLL and gillnet observer programs from 2005 – 2008 to estimate the number of discards of non-blacknose SCS by incidental permit holders. On average, incidental permit holders discarded 5.6 non-blacknose SCS per trip. NMFS determined total discards by multiplying the average number of non-blacknose SCS discarded per trip (*e.g.*, 5.6 non-blacknose SCS) by the total number of incidental

trips (columns E in Table A.8 and Table A.9). In addition, NMFS included the number of non-blacknose SCS that gillnet fishermen with incidental shark permits would have to discard under alternatives A4 and B2 and B3 by multiplying the average number of non-blacknose SCS kept by gillnet fishermen with incidental shark permits (*e.g.*, 16.1) by the number of gillnet trips under alternatives B2 (*e.g.*, 130 trips) and B3 (*e.g.*, 123.3 trips).

To determine the total mortality of blacknose sharks, NMFS added the weight of blacknose sharks landed and discarded dead under the different non-blacknose SCS quota reductions (columns D in Table A.10 and Table A.11). Total mortality was found by adding up the weight (lb dw) of blacknose sharks discarded and landed by the different permit holders under alternatives A3 and A4 (columns G and I in Table A.8 and Table A.9). To determine the total mortality in number, NMFS divided the total weight of blacknose sharks harvested and discarded (columns D in Table A.10 and Table A.11) by 6.4 lb dw for alternative A3 (which is the average weight of blacknose caught on BLL and gillnet gear), and 5.4 lb dw under alternative A4 (which is the average weight of blacknose caught on BLL gear only since gillnet gear would be excluded under alternative A4) (columns E in Table A.10 and Table A.11).

At the quota levels for alternative A3, the annual number of projected blacknose shark mortalities would be 6,964 (column E Table A.10) which is just below the target mortality number of 7,094. This number of blacknose mortalities translates into a total weight of 44,777 lb dw (column D Table A.10), or 19.9 mt dw. Under the quotas for alternative A4, the number of projected blacknose shark mortalities would be 6,557 (column E Table A.11). That number of blacknose sharks would translate into a commercial landings of 35,406 lb dw (column D Table A.11), or 15.9 mt dw. Under these alternatives, NMFS would close down the directed shark fisheries when either the non-blacknose SCS quota or the blacknose shark individual quota reached, or was expected to reach, 80 percent of the target amount.

Even though both alternatives A3 and A4 meet the reduction targets in terms of landings weight, and numbers, they meet the reduction targets in significantly different ways. For alternative A3, the number of blacknose sharks landed remains under the proposed quota by 130 blacknose sharks (7,094 blacknose quota – 6,964 blacknose landed = 130 blacknose sharks remaining), but the landings of 44,777 lb dw falls well short of the available quota (94,135 lb dw blacknose quota – 44,777 lb dw blacknose landed = 49,357 lb dw quota remaining). Under alternative A4, the projected blacknose landings, in terms of weight, would fall short of the available quota by 3,014 lb dw (38,421 lb dw blacknose quota - 35,406 lb dw blacknose landed = 3,014 lb dw quota remaining). Using the average size of blacknose caught (5.4 lb dw) in all gear types except gillnets, the projected landings in numbers of individuals would fall significantly short of the available quota by 537 sharks (7,094 blacknose quota – 6,557 blacknose landed = 537 blacknose sharks remaining).

Table A.6 Percent reductions in non-blacknose SCS quotas based on average landings from 2004-2008 under alternative A3.

A Reduction of Non- Blacknose SCS Landings	B Landings with Reduction (lb dw)	C Landings with Reduction (mt dw)	D Landings with Reduction (number)	E Avg. retention/trip (number) of non- blacknose SCS for directed permit holders	F # Trips/Year to Catch Quota	G Reduction in # of Trips/Year
40%	293,178.1	133.0	71,189.9	140.9	505.3	78.7%
45%	268,746.6	121.9	65,257.4	140.9	463.2	80.5%
50%	244,315.1	110.8	59,325.0	140.9	421.1	82.2%
55%	219,883.6	99.7	53,392.5	140.9	379.0	84.0%
60%	195,452.1	88.7	47,460.0	140.9	336.9	85.8%
65%	171,020.6	77.6	41,527.5	140.9	294.8	87.6%
70%	146,589.1	66.5	35,595.0	140.9	252.7	89.3%
75%	122,157.6	55.4	29,662.5	140.9	210.6	91.1%
80%	97,726.0	44.3	23,730.0	140.9	168.4	92.9%

Table A.7 Percent reductions in non-blacknose SCS quotas based on average landings from 2004-2008 under alternative A4.

A Reduction of Non- Blacknose SCS Landings	B Landings with Reduction (lb dw)	C Landings with Reduction (mt dw)	D Landings with Reduction (number)	E Avg. retention/trip (number) of non- blacknose SCS for directed permit holders	F # Trips/Year to Catch Quota	G Reduction in # of Trips/Year
50%	244,315.1	110.8	59,325.0	134.7	440.6	81.4%
55%	219,883.6	99.7	53,392.5	134.7	396.5	83.3%
60%	195,452.1	88.7	47,460.0	134.7	352.4	85.1%
70%	146,589.1	66.5	35,595.0	134.7	264.3	88.9%
75%	122,157.6	55.4	29,662.5	134.7	220.3	90.7%
76%	117,271.2	53.2	28,476.0	134.7	211.5	91.1%
78%	107,498.6	48.8	26,103.0	134.7	193.8	91.8%
80%	97,726.0	44.3	23,730.0	134.7	176.2	92.6%
85%	73,294.5	33.2	17,797.5	134.7	132.2	94.4%

Table A.8 Blacknose shark harvest and discards under alternative A3.

A Reduction in Non- Blacknose SCS Quota	B Avg # Blacknose Caught/Trip	C Avg. retention/trip (number) of blacknose for directed permit holders	D Discards (number per trip)	E Estimated # of Trips	F Total Discards (total # of sharks for all trips)	G Total Discards (lb dw)	H Total Kept (number of sharks)	I Total Kept (lb dw)	J Total Kept (mt dw)
<i>Directed Trips</i>									
40%	44.1	44.1	0	182.2	0.0	0.0	8,037.6	51,681.7	23.4
45%	44.1	44.1	0	167.0	0.0	0.0	7,367.8	47,374.9	21.5
50%	44.1	44.1	0	151.9	0.0	0.0	6,698.0	43,068.1	19.5
55%	44.1	44.1	0	136.7	0.0	0.0	6,028.2	38,761.3	17.6
60%	44.1	44.1	0	121.5	0.0	0.0	5,358.4	34,454.5	15.6
65%	44.1	44.1	0	106.3	0.0	0.0	4,688.6	30,147.7	13.7
70%	44.1	44.1	0	91.1	0.0	0.0	4,018.8	25,840.9	11.7
75%	44.1	44.1	0	75.9	0.0	0.0	3,349.0	21,534.0	9.8
80%	44.1	44.1	0	60.7	0.0	0.0	2,679.2	17,227.2	7.8
<i>Remaining directed trips that landed SCS (fishing in incidental fashion after quota filled)</i>									
40%	0.5	0	0.5	191.4	102.2	657.4	0	0	0
45%	0.5	0	0.5	233.5	124.7	802.1	0	0	0
50%	0.5	0	0.5	275.6	147.2	946.7	0	0	0
55%	0.5	0	0.5	317.7	169.7	1,091.4	0	0	0
60%	0.5	0	0.5	359.9	192.2	1,236.0	0	0	0
65%	0.5	0	0.5	402.0	214.7	1,380.6	0	0	0
70%	0.5	0	0.5	444.1	237.2	1,525.3	0	0	0
75%	0.5	0	0.5	486.2	259.7	1,669.9	0	0	0
80%	0.5	0	0.5	528.3	282.2	1,814.6	0	0	0
<i>Trips taken by incidental permit holders</i>									
40%	0.5	0.5	0.0	222	0	0.0	118.6	762.5	0.35
45%	0.5	0.5	0.0	222	0	0.0	118.6	762.5	0.35
50%	0.5	0.5	0.0	222	0	0.0	118.6	762.5	0.35
55%	0.5	0.5	0.0	222	0	0.0	118.6	762.5	0.35
60%	0.5	0.5	0.0	222	0	0.0	118.6	762.5	0.35
65%	0.5	0.5	0.0	222	0	0.0	118.6	762.5	0.35
70%	0.5	0.5	0.0	222	0	0.0	118.6	762.5	0.35
75%	0.5	0.5	0.0	222	0	0.0	118.6	762.5	0.35
80%	0.5	0.5	0.0	222	0	0.0	118.6	762.5	0.35

Table A.9 Blacknose shark harvest and discards under alternative A4.

A Reduction in Non- Blacknose SCS Quota	B Avg # Blacknose Caught/Trip	C Avg. retention/trip (number) of blacknose for directed permit holders	D Discards (number per trip)	E Estimated # of Trips	F Total Discards (total # of sharks for all trips)	G Total Discards (lb dw)	H Total Kept (number of sharks)	I Total Kept (lb dw)	J Total Kept (mt dw)
<i>Directed Trips</i>									
50%	78.0	78.0	0	158.9	0.0	0.0	12,384.6	66,876.7	30.3
55%	78.0	78.0	0	143.0	0.0	0.0	11,146.1	60,189.1	27.3
60%	78.0	78.0	0	127.1	0.0	0.0	9,907.7	53,501.4	24.3
70%	78.0	78.0	0	95.3	0.0	0.0	7,430.7	40,126.0	18.2
75%	78.0	78.0	0	79.4	0.0	0.0	6,192.3	33,438.4	15.2
76%	78.0	78.0	0	76.3	0.0	0.0	5,944.6	32,100.8	14.6
78%	78.0	78.0	0	69.9	0.0	0.0	5,449.2	29,425.8	13.3
80%	78.0	78.0	0	63.5	0.0	0.0	4,953.8	26,750.7	12.1
85%	78.0	78.0	0	47.7	0.0	0.0	3,715.4	20,063.0	9.1
<i>Remaining directed trips that landed SCS (fishing in incidental fashion after quota filled)</i>									
50%	1.2	0.0	1.2	-175.3	0.0	0.0	0	0	0
55%	1.2	0.0	1.2	-131.2	0.0	0.0	0	0	0
60%	1.2	0.0	1.2	-87.2	0.0	0.0	0	0	0
70%	1.2	0.0	1.2	0.9	0.0	0.0	0	0	0
75%	1.2	0.0	1.2	45.0	53.0	286.1	0	0	0
76%	1.2	0.0	1.2	53.8	63.4	342.2	0	0	0
78%	1.2	0.0	1.2	71.4	84.1	454.3	0	0	0
80%	1.2	0.0	1.2	89.0	104.9	566.4	0	0	0
85%	1.2	0.0	1.2	133.1	156.8	846.7	0	0	0
<i>Trips taken by incidental permit holders</i>									
50%	1.2	1.2	0.0	222	0.0	0.0	261.6	1,681.9	0.76
55%	1.2	1.2	0.0	222	0.0	0.0	261.6	1,681.9	0.76
60%	1.2	1.2	0.0	222	0.0	0.0	261.6	1,681.9	0.76
70%	1.2	1.2	0.0	222	0.0	0.0	261.6	1,681.9	0.76
75%	1.2	1.2	0.0	222	0.0	0.0	261.6	1,681.9	0.76
76%	1.2	1.2	0.0	222	0.0	0.0	261.6	1,681.9	0.76
78%	1.2	1.2	0.0	222	0.0	0.0	261.6	1,681.9	0.76
80%	1.2	1.2	0.0	222	0.0	0.0	261.6	1,681.9	0.76
85%	1.2	1.2	0.0	222	0.0	0.0	261.6	1,681.9	0.76

Table A.10 Total blacknose shark mortality under different non-blacknose SCS quota reductions for alternative A3.

A Reduction in Non- Blacknose SCS Quota	B Blacknose allowance (number of sharks)	C Blacknose allowance (lb dw)	D Total Mortality Under A3 (lb dw)	E Total Mortality Under A3 (number of sharks)	F Difference Between allowance and Total Mortality (lb dw)	G Difference Between allowance and Total Mortality (number of sharks)	H SCS Quota (mt dw)	I Blacknose Quota (mt dw)
40%	7,094	94,135	53,101.6	8,258	41,033.4	-1,164	133.0	23.8
45%	7,094	94,135	48,939.5	7,611	45,195.6	-517	121.9	21.8
50%	7,094	94,135	44,777.3	6,964	49,357.8	130	110.8	19.9
55%	7,094	94,135	40,615.2	6,317	53,519.9	778	99.7	17.9
60%	7,094	94,135	36,453.0	5,669	57,682.1	1,425	88.7	16.0
65%	7,094	94,135	32,290.8	5,022	61,844.2	2,072	77.6	14.0
70%	7,094	94,135	28,128.7	4,375	66,006.4	2,719	66.5	12.1
75%	7,094	94,135	23,966.5	3,727	70,168.6	3,367	55.4	10.1
80%	7,094	94,135	19,804.3	3,080	74,330.7	4,014	44.3	8.2

Table A.11 Total blacknose shark mortality under different non-blacknose SCS quota reductions for alternative A4.

A Reduction in Non- Blacknose SCS Quota	B Blacknose allowance (number of sharks)	C Blacknose allowance (lb dw)	D Total Mortality Under A4 (lb dw)	E Total Mortality Under A4 (number of sharks)	F Difference Between allowance and Total Mortality (lb dw)	G Difference Between allowance and Total Mortality (number of sharks)	H SCS Quota (mt dw)	I Blacknose Quota (mt dw)
50%	7,094	38,421	68,558.6	12,696	-30,137.5	-5,602	110.8	31.1
55%	7,094	38,421	61,870.9	11,458	-23,449.8	-4,364	99.7	28.1
60%	7,094	38,421	55,183.3	10,219	-16,762.1	-3,125	88.7	25.0
70%	7,094	38,421	41,807.9	7,742	-3,386.8	-648	66.5	19.0
75%	7,094	38,421	35,406.4	6,557	3,014.7	537	55.4	15.9
76%	7,094	38,421	34,124.9	6,319	4,296.2	775	53.2	15.3
78%	7,094	38,421	31,561.9	5,845	6,859.2	1,249	48.8	14.1
80%	7,094	38,421	28,999.0	5,370	9,422.1	1,724	44.3	12.9
85%	7,09	38,421	22,591.6	4,184	15,829.5	2,910	33.2	9.9

A.4 Alternative A6

Alternative A6 is a composite alternative combining elements of alternatives A2 and A3. This alternative would establish a new non-blacknose SCS quota of 212.6 mt dw, which is equal to the average annual landings for the non-blacknose SCS fishery from 2004 through 2008, and an individual blacknose shark quota of 19.9 mt dw (43,872 lb dw), which would be a 64 percent reduction in blacknose shark landings relative to average landings from 2004 – 2008 of 55 mt dw.

Based on public comments and recent analysis of the 2005 – 2008 Shark Gillnet Observer Data, it appears that gillnet fishermen can selectively target different shark species with gillnet

gear, and minimize the mortality of blacknose sharks (and other protected species). Thus, elimination of gillnets as an authorized gear in the Atlantic shark fishery would not achieve a conservation and management objective necessary to rebuilding the blacknose shark. Therefore, contrary to the DEIS, NMFS would not prohibit gillnets as an authorized gear for sharks under alternative A6, and would continue to allow retention of blacknose sharks by incidental permit holders.

Alternative A6 would be implemented under a framework mechanism, which would be based on the gillnet shark fishermen's ability to avoid, or not avoid, catching blacknose sharks. The framework would be based on a ratio determined through revised data that indicates 20 mt dw of blacknose sharks would be harvested during the course of harvesting 110 mt dw of non-blacknose SCS (alternative A3). This framework mechanism would give NMFS the flexibility to increase or decrease either the blacknose or non-blacknose SCS quotas based on the ability of fishermen to avoid blacknose sharks and target non-blacknose SCS, and any subsequent change in status based on new stock assessments of these species of sharks.