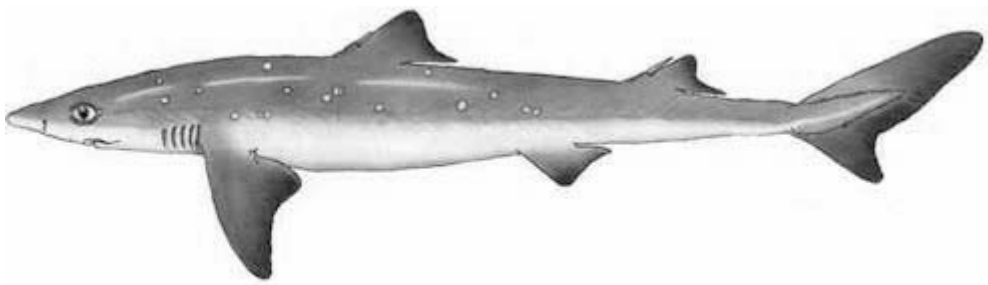
2009
Spiny Dogfish Specifications, Draft Environmental Assessment, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis



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1.0 EXECUTIVE SUMMARY

Statutory/Regulatory Basis

Pursuant to the Magnuson Stevens Fishery Conservation and Management Act of 1976 (MSA) as amended, the Northwest Atlantic stock of spiny dogfish (*Squalus acanthias*) is jointly managed by the Mid-Atlantic (MAFMC) and New England Fishery Management Councils (NEFMC; Councils) through the Federal Spiny Dogfish Fishery Management Plan (FMP). In accordance with the FMP, this document has been prepared as part of the specification process through which the Councils recommend an annual commercial quota and other management measures for spiny dogfish (50 CFR § 648 Subpart L). Additionally, in accordance with the National Environmental Policy Act of 1969 (NEPA) and the National Oceanic and Atmospheric Administration (NOAA) Administrative Order (NAO) 216-6, the environmental impacts of the recommended management actions and the anticipated level of significance of these impacts are addressed.

Management History/Objectives

The Federal Spiny Dogfish FMP was developed in 1998 and implemented in 2000 in order to halt large scale depletion of reproductively mature female spiny dogfish and allow the stock to recover to a sustainable level. This was a necessary management response under the MSA because the biomass of mature females had been driven below the threshold (100,000 mt) level (NEFSC 1997). The directed dogfish fishery of the 1990s harvested primarily the largest spiny dogfish in the stock, and the species' life history is such that these fish are primarily mature females. Therefore, the recovery plan intended to constrain fishing mortality (F) on mature females at a rate ($F_{rebuild}$) that would return the stock to its nominal biomass target in five years. Because the commercial fishery concentrated on mature females, achieving $F_{rebuild}$ required the elimination of the directed fishery. Accordingly, an incidental catch quota (4.0 million lbs) and restrictive trip limits (600 lbs per trip in quota Period 1[1] and 300 lbs per trip in quota Period 2) were put in place when the FMP was implemented. Management measures consistent with discouraging the development of any meaningful directed spiny dogfish fishery have been maintained in Federal waters since implementation of the FMP. Most recently, specifications for fishing years 2006-2008 modified trip limits to be consistent at 600 lbs in both periods.

In state waters, 0-3 nautical miles (nm) from shore, spiny dogfish are managed under the Atlantic States Marine Fisheries Commission (ASMFC) Interstate FMP for Spiny Dogfish. With the exception of 2004 and 2005, spiny dogfish management in state-jurisdictional waters under the Interstate FMP has deviated from the Federal FMP. For the 2008 fishing year, the quota under the Interstate FMP was 8.0 million lbs and trip limits were 3,000 lbs. While the quota between both FMPs has varied in past years, both FMPs are intended to cover the entire spiny dogfish population along the Atlantic coast of the United States (i.e., in both state and Federal waters from 0-200 nm). In other words, the quota under both FMPs is not additive. Therefore, when the quota implemented under the Interstate FMP is higher, the Federal quota is generally exceeded by landings from state waters. The inconsistencies in the state and Federal FMPs are

[1] The annual commercial quota is distributed between two periods (Period 1 is May 1 - October 31 and Period 2 is November 1 - April 30) based on the historical percentage of commercial landings for each semi-annual period during the years 1990 through 1997. Period 1 is allocated 57.9% of the annual quota and Period 2 is allocated 42.1%. This is intended to preserve the traditional distribution of landings, both geographically and seasonally.

likely to have prolonged the timeframe for stock recovery, are confusing for fishermen, and create administrative burden.

Stock Status

In the fall of 2008, the Northeast Fisheries Science Center (NEFSC) updated the spiny dogfish stock status using the model from the 43rd Stock Assessment Review Committee (SARC), 2007 catch data, and results from the 2008 trawl survey. The updated stochastic estimate of mature female biomass (i.e., spawning stock biomass; SSB) for 2008 is 231,962 mt (511 million lbs), about 16% above SSB_{max} (200,000 mt), the recommended B_{msy} (Biomass representing maximum sustainable yield) proxy. No official biomass target exists in the Federal FMP since a biomass target of 90% SSB_{max} was proposed by the Councils and subsequently rejected by the National Marine Fisheries Service (NMFS) in the development and implementation of the Federal FMP. Framework Adjustment 2 to the FMP will permit automatic incorporation of biological reference points, such as SSB_{max}, into the FMP as they are recommended through peer-reviewed assessments (such an assessment is expected to occur in 2009). The rulemaking for Framework Adjustment 2 is expected to be published in the *Federal Register* in the spring of 2009. The current 2008 estimate of SSB appears to have a 75% probability of exceeding SSB_{max}. In comparison to the FMP's biomass threshold (1/2 SSB_{max}, 100,000 mt), used to determine if the stock is overfished, SSB_{2008} appears to be associated with a nearly 100% probability that *the stock is not overfished*.

Several sources of removals contribute to the estimate of fishing mortality (F) for 2007. These include U.S. commercial landings (3,524 mt), Canadian commercial landings (2,328 mt), U.S. discards (6,247 mt), and U.S. recreational landings (37 mt). Total removals in 2007 were approximately 12,136 mt corresponding to an F estimate of 0.1104, well below the overfishing threshold of F = 0.39 and essentially equivalent to $F_{rebuild} = 0.11$. Therefore, *overfishing was not occurring* ($F_{2007} < F_{threshold}$).

Nevertheless, other information needs to be considered with respect to determining the current condition of the stock. Low pup production from 1997 through 2003 has been implicated by survey catches of pups and is further supported by subsequent low survey catches of the size categories these age classes have grown into. As such, a decline in SSB is expected when these small 1997-2003 year-classes recruit into the SSB (approximately 2015). Another potentially important factor is that the current survival rate for pups may be less than historic levels due to reduced maternal size and a skewed male to female sex ratio. Finally, as with all fish species, environmental variables are likely to be contributing to recruitment success, but no specific factor has been identified. The important point is that a simplistic comparison of current SSB against the SSB_{max} reference point may result in overly optimistic conclusions about the condition of the stock, and as such management measures should be appropriately precautionary.

Proposed Management Measures

The quota recommendation in this specification package is based upon the latest stock status information, given above. This information was presented to the Councils at their November (NEFMC) and December (MAFMC) 2008 meetings.

Under Framework Adjustment 2, once a biomass rebuilding target is defined through scientific peer-review, the F target for a given year will be set based on whether mature female biomass is above or below the biomass target. If the stock is above the biomass target, then the target fishing mortality rate may transition from $F_{rebuild}$ (currently estimated to be 0.11) to F_{target} (currently estimated to be 0.28). The current stock status update suggests that the stock may be "rebuilt"; however, numerous biological concerns suggest setting target F in 2009 above $F_{rebuild}$ would be imprudent. As such, both the Mid-Atlantic and New England Fishery Management Councils are recommending a commercial quota for fishing year 2009 (FY2009) that is consistent with achieving $F_{rebuild}$ (0.11). Specifically, they recommend setting the commercial quota at 12.0 million lbs, the level calculated to achieve $F_{rebuild}$ after other sources of fishing mortality are accounted for (U.S. commercial discards, Canadian commercial landings, recreational landings and discards). Additionally, the Councils recommend trip limits of 3,000 lbs in both quota periods. These recommendations are consistent with those implemented for state waters in FY2009 by the ASMFC under their Interstate FMP. While the trip limits are inherently difficult to link to fishing mortality targets, the 3,000 lb trip limit in place in state jurisdictional waters in 2007 coincided with a realized F that was equivalent to $F_{rebuild}$ (0.11). Framework Adjustment 1, established an allowance for management measures to be established in a given specification setting year for up to five subsequent years. Nevertheless, at this time, the Councils are recommending that the specifications and management measures be set for fishing year 2009 only. This is primarily because a peer-reviewed stock assessment is expected to occur in 2009.

Alternative 1 – (Preferred Alternative – Set quota to achieve $F_{rebuild}$ [0.11]): For FY2009, specify a commercial quota of 12.0 million lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (6,948,000 lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (5,052,000 lbs).

Alternative 2 – (Set quota to achieve F_{target} [0.28]): For FY2009, specify a commercial quota of 36.500 million lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (21,133,500 lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (15,366,500 lbs).

Alternative 3 – (No Action - Status Quo): For FY2009, specify a commercial quota of 4 million lbs with trip limits of 600 lb (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (2,316,000 lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (1,684,000 lbs).

According to the regulations, the “true” No Action Alternative for dogfish is not equivalent to the status quo or baseline condition. If the actions proposed in this document are not taken, some current management measures will remain in place (i.e. 600 lb trip limit), but the overall management program will not be identical to that of 2008 (i.e. there would be no specified quota for FY 2009). The “true” No Action Alternative for this fishery is infeasible and inconsistent with the FMP which requires specifications, or quotas, to be established for the fishery.

Therefore, the “true” No Action Alternative is not analyzed in this document. For comparison purposes, the alternatives in this specifications document are compared to the status quo alternative (baseline) as opposed to the “true” No Action Alternative. Since management measures similar to those specified in the 2006-2008 specifications package (i.e., 4 million lb commercial quota and 600 lb trip limit) have been in place since 2000, this is considered to be the baseline condition, and is discussed as Alternative 3.

Impacts of the Management Actions

The 12.0 million lb quota under the Preferred Alternative is consistent with the Monitoring Committee's recommendation and is based on projections using $F_{rebuild}$ (0.11). With regard to trip limits, the Monitoring Committee agreed that compared to a more restrictive trip limit, the 3,000 lb trip limit under the Preferred Alternative would allow for increased retention of dogfish captured in Federal (offshore) waters. Based on NEFSC trawl data, dogfish captured 40nm or more offshore are likely to be males, while dogfish caught nearshore are predominantly female. Since all dogfish are counted against the quota, increased landings of dogfish caught offshore may reduce the proportional catch of mature females, and actually work to reduce the realized F on mature females. Compared to Alternative 2, the Preferred Alternative is likely to minimize interactions with non-target species (including fish and protected resources) and habitat disturbance. Increasing the quota to 12 million lbs (compared to the current 4 million lb quota) would likely result in greater potential economic benefits than the No Action Alternative. The preferred alternative is not associated with significant direct or indirect impacts and has a positive cumulative impact in the context of other ongoing activities.

Further discussion on the impacts of the alternatives is presented in Section 7.0, and summarized in Table E-1 below. Table E-1 presents a qualitative summary of the direct and indirect impacts of the various management alternatives.

Table E-1. Qualitative summary of the expected impacts of various alternatives considered for the spiny dogfish specifications.

Proposed Federal Action		Valued Ecosystem Component (VEC)				
Spiny Dogfish Management Alternatives		**Target Species**	**Non-target/Bycatch Species**	**Habitat (including Essential Fish Habitat [EFH])**	**Protected Resources**	**Human Communities**
Alt. 1 (*preferred*) Set quota to achieve $F_{rebuild}$ (0.11)	Quota: 12 million lbs Trip Limits: 3,000 lbs	**Positive** By definition, mortality should achieve F rebuild if the quota is landed. Trip limits make it more likely that male dogfish will be counted against the quota.	**Potential Low Negative** Discarding may increase if directed fishing effort increases but because the abundance of dogfish has increased greatly, effort is unlikely to increase significantly	**Potential Low Negative** Gear impacts on habitat may increase if directed fishing increases but because the abundance of dogfish has increased greatly, effort is unlikely to increase significantly	**Potential Low Negative** Encounters may increase if directed fishing increases but because the abundance of dogfish has increased greatly, effort is unlikely to increase significantly	**Positive** Overall revenue increases expected if entire quota is taken
Alt. 2 Set quota to achieve F_{target} (0.28)	Quota: 36.5 million lbs Trip Limits: 3,000 lbs	**Negative** By definition, mortality expected to *exceed* F rebuild if the entire quota is landed. Trip limits make it more likely that male dogfish will be counted against the quota.	**Negative** Discarding more likely to increase compared to Alt 1 (function of larger trip limits and very large quota)	**Negative** Habitat impacts more likely to increase compared to Alt 1 (function of larger trip limits and very large quota)	**Negative** Encounters more likely to increase compared to Alt 1 (function of larger trip limits and very large quota)	**Positive** Overall revenue increases expected
Alt. 3 No Action/Status Quo	Quota: 4 million lbs Trip Limits: 600 lbs	**Positive** Mortality likely to achieve F rebuild, consistent with current measures which have resulted in the stock recovering.	**Negligible** Since this is not a directed fishery and one would not develop under same management measures as previous years, no change in discard expected	**Negligible** Since management measures would remain the same, no change in interactions with habitat are expected.	**Negligible** Since management measures would remain the same, no change in interactions with Protected Resources are expected.	**Negligible** Since management measures would rema the same, revenue fro Federal water landing would remain low.

2.0 LIST OF ACRONYMS

ACCSP	Atlantic Coastal Cooperative Statistics Program
ACFCMA	Atlantic Coastal Fisheries Cooperative Management Act
ASMFC	Atlantic States Marine Fisheries Commission
B	Biomass
CEQ	Council on Environmental Quality
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EO	Executive Order
ESA	Endangered Species Act of 1973
F	Fishing Mortality Rate
FR	Federal Register
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
FY	Fishing Year
HPTRP	Harbor Porpoise Take Reduction Plan
IRFA	Initial Regulatory Flexibility Analysis
M	Natural Mortality Rate
MC	Spiny Dogfish Monitoring Committee
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistical Survey
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSRA	Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
MSY	Maximum Sustainable Yield
mt	metric tons
NAO	NOAA Administrative Order
NE	New England
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
nm	nautical mile
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PBR	Potential Biological Removal
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SSB	Spawning Stock Biomass
SFA	Sustainable Fisheries Act
VECs	Valued Ecosystem Components
VTR	Vessel Trip Report

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4.0 INTRODUCTION AND BACKGROUND OF SPECIFICATION PROCESS

4.1 Purpose and Need for the Action

The purpose of this action is to analyze Federal spiny dogfish specifications and management measures for fishing year 2009 (FY2009: May 1, 2009 - April 30, 2010) to ensure the sustainability of the stock. As required by the FMP, this action is needed to establish a commercial fishing quota and any other management measures that will ensure that the (appropriate) target fishing mortality rate for spiny dogfish is not exceeded in any given year. In addition to the commercial quota, the Councils may also recommend trip limits, minimum or maximum fish sizes, seasons, mesh-size restrictions, and other gear restrictions.

Basis of Specifications and Management Measures

The FMP established a procedure to develop specifications and management measures based on analyses of fishery and scientific information by the Spiny Dogfish Monitoring Committee. Furthermore, the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA) mandates review of management measures by the Councils' Science and Statistical Committees.

As announced in the Federal Register (73 CFR 61788), the Spiny Dogfish Monitoring Committee (MC) met on October 31, 2008 via conference call. At that meeting, the latest NEFSC survey catches, landings/discard estimates, fishing mortality estimates, and other indicators of spiny dogfish stock status were reviewed. Eight of the eleven members of the MC and one of the twelve members of the SSC participated in the conference call. Other members of the SSC communicated their input directly to MAFMC staff. The Committees agreed that the improvement in stock biomass (see Section 6.1) would allow for an increase in the quota under the status quo fishing mortality. The Committees, therefore, recommended a commercial quota consistent with achieving F=0.11 ($F_{rebuild}$), specifically, 12.0 million lbs. The Committee also recommended setting trip limits at 3,000 lbs. This is an increase from status quo trip limits (600 lbs) and is intended to allow access to the available quota and to draw fishing pressure away from the nearshore component of the stock which is predominantly female. These measures are also consistent with action taken by the ASMFC.

The Joint Spiny Dogfish Committee reviewed the Committees' recommendations at its November 17, 2008 meeting and endorsed the SSC/MC recommendation. The Councils received the recommendations of the various Committees and adopted the recommendations outlined in Section 5.0.

4.2 Management Objectives of the Spiny Dogfish FMP

The overall goal of the FMP is to conserve spiny dogfish in order to achieve optimum yield from the resource in the western Atlantic Ocean. The specification of an annual commercial quota and trip limits meets that overall goal by accomplishing the following objectives, which were adopted into the FMP:

1. Reduce fishing mortality to ensure that overfishing does not occur.

2. Promote compatible management regulations between state and Council jurisdictions and the US and Canada.

3. Promote uniform and effective enforcement of regulations.

4. Minimize regulations while achieving the management objectives stated above.

5. Manage the spiny dogfish fishery so as to minimize the impact of the regulations on the prosecution of other fisheries, to the extent practicable.

6. Contribute to the protection of biodiversity and ecosystem structure and function.

5.0 MANAGEMENT ALTERNATIVES

Three alternatives were selected for consideration as the specifications and management measures for the dogfish fishery for FY 2009. These alternatives were developed based on the recent stock assessment results which indicated that the spiny dogfish stock is not overfished, nor is overfishing occurring. Alternative 1 represents a conservative approach by maintaining the $F_{rebuild}$ target, but reflecting the increase in biomass estimate. Alternative 2 is based on a higher F_{target} that assumes the biomass estimate is stable. Alternative 3, the No Action Alternative, is required by NEPA for comparison of the impacts of the other alternatives to the status quo baseline condition. No other alternatives were considered and analyzed in this EA.

5.1 Alternative 1 – (Preferred Alternative – Set quota to achieve $F_{rebuild}$ [0.11])

For FY2009, specify a commercial quota of 12.0 million lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) being allocated 57.9% of the quota (6,948,000 lbs), and quota Period 2 (November 1 through April 30) being allocated 42.1% of the quota (5,052,000 lbs).

5.2 Alternative 2 – (Set quota to achieve F_{target} [0.28])

For FY2009, specify a commercial quota of 36.500 million lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) being allocated 57.9% of the quota (21,133,500 lbs), and quota Period 2 (November 1 through April 30) being allocated 42.1% of the quota (15,366,500 lbs).

5.3 Alternative 3 – (No Action - Status Quo):

For FY2009, specify a commercial quota of 4 million lbs with trip limits of 600 lb (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October

31) allocated 57.9% of the quota (2,316,000 lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (1,684,000 lbs).

According to the regulations, the "true" No Action Alternative for dogfish is not equivalent to the status quo or baseline condition. If the actions proposed in this document are not taken, some current management measures will remain in place (i.e. 600 lb trip limit), but the overall management program will not be identical to that of 2008 (i.e. there would be no specified quota for FY 2009). The "true" No Action Alternative for this fishery is infeasible and inconsistent with the FMP which requires specifications, or quotas, to be established for the fishery. Therefore, the "true" No Action Alternative is not analyzed in this document. For comparison purposes, the alternatives in this specifications document are compared to the status quo alternative (baseline) as opposed to the "true" No Action Alternative. Since the management measures similar to those specified in the 2006-2008 specifications package (i.e., 4 million lb commercial quota and 600 lb trip limit) have been in place since 2000, this is considered to be the baseline condition, and is discussed as Alternative 3.

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6.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES

The Valued Ecosystem Components (VECs) affected by the alternatives include the spiny dogfish resource, non-target/bycatch species, protected resources, habitat including Essential Fish Habitat (EFH), and human communities/socio-economic environment, all of which are described below.

6.1 Spiny Dogfish Stock and Fisheries

In the sections below, the biology of the stock, history and current status of the stock, as well as U.S. and Canadian catch information is presented. Currently, there is no directed fishery for spiny dogfish; however, dogfish are primarily caught as non-target species or bycatch in other fisheries and a fraction of this catch is landed.

6.1.1 Spiny Dogfish Biology and Ecological Relationships

A complete description of spiny dogfish biology and ecological relationships is given in Section 2.1 of the FMP. A summary is provided here.

The spiny dogfish, *Squalus acanthias*, is a small coastal shark with a circumboreal distribution. In addition to being the most abundant shark in the western North Atlantic, it is also one of the most highly migratory species of the Atlantic coast (Bigelow and Schroeder 1953). Rago et al. (1994) report that their general distribution in the Northwest Atlantic is between Labrador and Florida but are most abundant from Nova Scotia to Cape Hatteras, North Carolina. Seasonal inshore-offshore movements and coastal migrations are thermally induced (Bigelow and Schroeder 1953, Jensen 1965). Generally, spiny dogfish spend summers in inshore waters and overwinter in deeper offshore waters. They are usually epibenthic, but occur throughout the water column and are found in a depth range from nearshore shallows to offshore shelf waters approaching 3,000 ft (Collette and MacPhee 2002).

Length and age at 50% maturity of spiny dogfish in the Northwest Atlantic is estimated to be 23.4 inches and 6 years for males and 30.6 inches and 12 years for females (Nammack et al. 1985). Litter size ranges from 2 to 15 pups (average of 6) with fecundity increasing with length (Soldat 1979). Nammack et al. (1985) reported maximum ages in the Northwest Atlantic for males and females to be 35 and 40 years, respectively. Maximum length is estimated to be 49 inches for females and less than 36 inches for males. An estimate of M is 0.092, which was the value assumed for spiny dogfish greater than 12 in the NEFSC 1994, 1998 and 2003 assessments.

Bowman et al. (1984) observed a high degree of variability in the diet of spiny dogfish across seasons, areas and years. They considered this to be a reflection of the species omnivorous nature and the high degree of temporal and spatial variability of both dogfish and their prey. Their diet appears broadly related to abundance trends in some of their major prey items (e.g., herrings, Atlantic mackerel, codfishes, hakes, and squid). Spiny dogfish are potential competitors with virtually every marine predator within the

Northwest Atlantic Ocean ecosystem. These include a wide variety of predatory fish, marine mammals, and seabirds.

6.1.2 Status of the Spiny Dogfish Stock

Historic Stock Status

At the onset of the domestic fishery in the early 1990's, population biomass for the Northwest Atlantic stock of spiny dogfish was at its highest estimated level (approx. 1.2 billion lbs). The Federal Spiny Dogfish FMP was developed in 1998 and implemented in 2000 in order to halt large scale depletion of reproductively mature female spiny dogfish and allow the stock to recover to a sustainable level. This was a necessary management response under the MSA because the biomass of mature females had been driven below the threshold (100,000 mt) level (NEFSC 1997). The directed dogfish fishery of the 1990s harvested primarily the largest spiny dogfish in the stock, and the species' life history is such that these fish are primarily mature females. Therefore, the recovery plan intended to constrain fishing mortality (F) on mature females at a rate ($F_{rebuild}$) that would return the stock to its nominal biomass target in five years. Because the commercial fishery concentrated on mature females, achieving $F_{rebuild}$ required the elimination of the directed fishery. Accordingly, an incidental catch quota (4.0 million lbs) and restrictive trip limits (600 lbs per trip in quota Period 1[2] and 300 lbs per trip in quota Period 2) were put in place when the FMP was implemented. Management measures consistent with discouraging the development of any meaningful directed spiny dogfish fishery have been maintained in Federal waters since implementation of the FMP. Most recently, specifications for fishing years 2006-2008 modified trip limits to be consistent at 600 lbs in both periods.

In state waters, 0-3 nautical miles (nm) from shore, spiny dogfish are managed under the ASMFC Interstate FMP for Spiny Dogfish. With the exception of 2004 and 2005, spiny dogfish management in state-jurisdictional waters under the Interstate FMP has deviated from the Federal FMP. For the 2008 fishing year, the quota under the Interstate FMP was 8.0 million lbs and trip limits were 3,000 lbs. While the quota between both FMPs has varied in past years, both FMPs are intended to cover the entire spiny dogfish population along the Atlantic coast of the United States (i.e., in both state and Federal waters from 0-200 nm). In other words, the quota under both FMPs is not additive. Therefore, when the quota implemented under the Interstate FMP is higher, the Federal quota is generally exceeded by landings from state waters. The inconsistencies in the state and Federal FMPs are likely to have prolonged the timeframe for stock recovery, are confusing for fishermen, and create administrative burden.

The most recent peer-reviewed evaluation of the status of the Northwest Atlantic spiny dogfish stock was conducted at the 43rd Northeast Regional Stock Assessment Workshop (NEFSC 2006). According to that assessment the spiny dogfish stock was not overfished in 2005, and overfishing was not occurring. The estimate of reproductively mature

[2] The annual commercial quota is distributed between two periods (Period 1 is May 1 - October 31 and Period 2 is November 1 - April 30) based on the historical percentage of commercial landings for each semi-annual period during the years 1990 through 1997. Period 1 is allocated 57.9% of the annual quota and Period 2 is allocated 42.1%. This is intended to preserve the traditional distribution of landings, both geographically and seasonally.

female component of the stock (SSB) had increased from 48,000 mt (the 2004 estimate) to 106,000 mt in 2005 (Biomass threshold is 100,000 mt). Nevertheless pup production was still low. The low levels of SSB following depletion of the stock in the 1990s has resulted in sustained low recruitment since 1997. Fishing mortality on the female exploitable stock in 2005 was estimated to be about 0.13 ($F_{rebuild}$ is 0.11 and $F_{threshold}$ is 0.39).

Current Stock Status

In the fall of 2008, the Northeast Fisheries Science Center (NEFSC) updated the spiny dogfish stock status using the model from the 43rd Stock Assessment Review Committee (SARC), 2007 catch data, and results from the 2008 trawl survey. The updated stochastic estimate of mature female biomass (i.e., spawning stock biomass; SSB) for 2008 is 231,962 mt (511 million lbs), about 16% above SSB_{max} (200,000 mt), the recommended B_{msy} (Biomass representing maximum sustainable yield) proxy. No official biomass target exists in the Federal FMP since a biomass target of 90% SSB_{max} was proposed by the Councils and subsequently rejected by the National Marine Fisheries Service (NMFS) in the development and implementation of the Federal FMP. Framework Adjustment 2 to the FMP will permit automatic incorporation of biological reference points, such as SSB_{max}, into the FMP as they are recommended through peer-reviewed assessments (such an assessment is expected to occur in 2009). The rulemaking for Framework Adjustment 2 is expected to be published in the *Federal Register* in the spring of 2009. The current 2008 estimate of SSB appears to have a 75% probability of exceeding SSB_{max}. In comparison to the FMP's biomass threshold (1/2 SSB_{max}, 100,000 mt), used to determine if the stock is overfished, SSB_{2008} appears to be associated with a nearly 100% probability that *the stock is not overfished*.

Several sources of removals contribute to the estimate of fishing mortality (F) for 2007. These include U.S. commercial landings (3,524 mt), Canadian commercial landings (2,328 mt), U.S. discards (6,247 mt), and U.S. recreational landings (37 mt). Total removals in 2007 were approximately 12,136 mt corresponding to an F estimate of 0.1104, well below the overfishing threshold of F = 0.39 and essentially equivalent to $F_{rebuild}$ = 0.11. Therefore, *overfishing was not occurring* ($F_{2007} < F_{threshold}$).

Nevertheless, other information needs to be considered with respect to determining the current condition of the stock. Low pup production from 1997 through 2003 has been implicated by survey catches of pups and is further supported by subsequent low survey catches of the size categories these age classes have grown into. As such, a decline in SSB is expected when these small 1997-2003 year-classes recruit into the SSB (approximately 2015). Another potentially important factor is that the current survival rate for pups may be less than historic levels due to reduced maternal size and a skewed male to female sex ratio. Finally, as with all fish species, environmental variables are likely to be contributing to recruitment success, but no specific factor has been identified. The important point is that a simplistic comparison of current SSB against the SSB_{max} reference point may result in overly optimistic conclusions about the condition of the stock, and as such management measures should be appropriately precautionary.

6.1.3 Spiny Dogfish Catch

A variety of domestic and foreign interests have historically participated in the harvest of the Northwest Atlantic spiny dogfish stock. Calendar year harvest estimates from 1962-2007 are provided in Table 1. These include landings from U.S. commercial and recreational sectors as well as Canadian, former USSR, and "other foreign" commercial fisheries. A thorough characterization of the historic (pre-FMP) fishery for spiny dogfish is given in Section 2.3 of the FMP (MAFMC 1999). Since the Federal FMP was implemented in 2000, annual landings of spiny dogfish have declined considerably (Table 1).

While there is currently no directed fishery for dogfish, they are primarily caught as non-target or bycatch species in other fisheries, and a fraction of those caught are landed. Participants in these other fisheries may obtain a Federal permit that will allow them to retain and sell small amounts of incidentally captured spiny dogfish. The FY2007 bycatch allowance was 600 lbs per trip. At the average FY2007 price of $0.20 per lb, harvesting the full Federal trip limit would generate only $120.00 gross revenue. This is generally less than the amount necessary to offset the cost of an average fishing trip (NEFSC 2003 unpubl. data).

The deployment of certain commercial gear types tends to be associated with the retention of spiny dogfish in Federal waters. The catch of spiny dogfish by gear in FY2007 is given in Table 6. These data indicate that spiny dogfish landings came mostly from sink gill nets (60.72%), and hook gear (15.92%), bottom otter trawls (4.21%), as well as unspecified (15.57%) or other gear (3.58%).

6.1.3.1 Spiny Dogfish Commercial Catch

The spiny dogfish commercial catch currently comprises a combination of U.S. commercial landings and discards from state and Federal waters, as well as Canadian commercial landings (Table 1). Canadian commercial discards are not currently estimated.

6.1.3.1.1 U.S. Commercial Spiny Dogfish Landings

Calendar year 2007 U.S. commercial landings were 7.723 million lbs, which is about 12.9% of the 1996 high (60.1 million lbs; Table 1). Commercial harvest has historically been dominated by Massachusetts, although according to dealer reports, dogfish landings from Virginia surpassed those of Massachusetts in 2007 (Table 2). This could be an artifact of landings reporting by the state of Virginia. When Atlantic Coastal Cooperative Statistics Program (ACCSP) landings for these states are compared, Massachusetts appears to have landed about 300,000 lbs more than Virginia.

Unpublished NMFS dealer reports indicate that the total ex-vessel value of commercially landed spiny dogfish in calendar year 2007 was about $1.508 million, and in fishing year 2007 was about $1.360 million making the approximate price/lb of spiny dogfish $0.20 in either timeframe (Table 3).

The Federal quota for spiny dogfish has been consistently set at 4.0 million lbs since FY2000. The state water quota in FY2006 was set at 6.0 million lbs and then increased to 8.0 million lbs in FY2008. Commercial landings in FY2007 (6.795 million lbs) represented about a 4% increase from the FY2006 landings (6.502 million lbs). Spiny dogfish were landed in all months in FY2007 with peak landings occurring in September of Period 1 and December-January of Period 2 (Table 4).

6.1.3.1.2 U.S. Commercial Spiny Dogfish Discards

A method for estimating spiny dogfish discards as a function of the landings from various commercial fishing sectors (catch-based method) was developed in NEFSC (2003). Dead discards are calculated as the product of total estimated discards by gear type and assumed proportional mortality by gear type. Proportional mortalities by gear type were reviewed in NEFSC (2006) and are currently assumed to be 50% for trawls, 30% for gillnets, and 10% for hook gear. Following the current estimation method, dead discards from U.S. commercial fishing activity appears to have peaked at about 104 million lbs in 1991, and subsequently declined and stabilized at around 10 million lbs since 1997. In 2007, dead discards from U.S. commercial fisheries were estimated to be about 12.4 million lbs.

6.1.3.1.3 Canadian Commercial Spiny Dogfish Landings

Historic Canadian commercial landings have been low relative to landings from the U.S. commercial fishery (Table 1). In 2001, following the implementation of the FMP, Canadian commercial landings (8.3 million lbs) exceeded U.S. commercial landings (5.1 million lbs) for the first time. Canadian commercial landings have fluctuated since then and were about 5.1 million lbs in 2007 (Table 1). Although U.S. Federal managers have implemented restrictions to discourage the directed harvest of spiny dogfish, Canada has maintained a directed fishery under a 5.5 million lb quota with no trip limits.

6.1.3.2 U.S. Spiny Dogfish Recreational Catch

Estimates of the recreational catch (landings and discards) of spiny dogfish are generated from data obtained through the NMFS Marine Recreational Fishery Statistics Survey (MRFSS). An method for estimating spiny dogfish discards was developed in NEFSC (2003) and reviewed in NEFSC (2006). The estimated recreational discard mortality is 20% compared to the assumed discard mortality for commercially caught spiny dogfish from hook and line gear which is 10%. Spiny dogfish are generally caught with live bait and are often mishandled by anglers. The 20% recreational mortality rate is in the upper range of recreational mortality rates applied by the NEFSC based on Malchoff (1995). Total recreational removals (landings + dead discards) for 2007 were estimated to be about 1.98 million lbs which is roughly consistent with levels reported in NEFSC (2006) since 2001. As indicated in Table 5, Massachusetts accounted for the largest share of the recreational landings (57%), followed by Delaware (12%), New Jersey (9 %), Maryland (8%), New Hampshire (5%), Connecticut (4%), North Carolina (2%), and 2% from all other states.

6.2 Non-target Species

Although an evaluation of fishery impacts on non-target species may be fairly straight-forward for most Federally-managed species, the circumstances under which spiny dogfish are harvested represents somewhat of an anomaly. This is because, at the present time, there is not a widespread directed spiny dogfish fishery in Federal waters. As discussed above, the spiny dogfish is, in and of itself, a non-target species, and its "harvest" is generally a byproduct of the activity of other fishery operations.

However, discards associated with gear types when spiny dogfish were retained were tabulated from 2007 vessel trip reports and are indicated in Table 7. Spiny dogfish comprised the bulk of the discards for each gear type, 92.7% for sink gill nets, 99.8% for hook gear, and 37.8% for bottom otter trawl. Other species reported to be discarded included Atlantic cod in sink gill nets (2.7%). A wider variety of discarded species (skates, haddock, and Atlantic cod) occurred in bottom otter trawl catches. The low discard reporting of other species when gill nets and hook gear were used to land dogfish suggests that directed fishing may be dominated by these gear types (Table 7).

6.3 Habitat Including EFH

The affected environment for management actions proposed in this document encompasses all of the spiny dogfish EFH. Given the ubiquitous distribution of spiny dogfish (Northwest Atlantic between Labrador and Florida) this also includes EFH for most federally managed species. A more complete description of essential fish habitat for spiny dogfish is given in Section 2.2.2 in the FMP. A summary of that description is given here.

For juvenile spiny dogfish, EFH is defined as: 1) North of Cape Hatteras, the waters of the Continental shelf from the Gulf of Maine through Cape Hatteras, North Carolina in areas that encompass the highest 90% of all ranked ten minute squares for the area where juvenile dogfish were collected in the NEFSC trawl surveys. 2) South of Cape Hatteras, the waters over the Continental Shelf from Cape Hatteras, North Carolina through Cape Canaveral, Florida, to depths of 1280 ft. 3) Inshore, the "seawater" portions of the estuaries where dogfish are common or abundant on the Atlantic coast, from Passamaquoddy Bay, Maine to Cape Cod Bay, Massachusetts. Generally, juvenile dogfish are found at depths of 33 to 1280 ft in water temperatures ranging between 37ºF and 82ºF.

For adults: 1) North of Cape Hatteras, EFH is the waters of the Continental shelf from the Gulf of Maine through Cape Hatteras, North Carolina in areas that encompass the highest 90% of all ranked ten minute squares for the area where adult dogfish were collected in the NEFSC trawl surveys. 2) South of Cape Hatteras, EFH is the waters over the Continental Shelf from Cape Hatteras, North Carolina through Cape Canaveral, Florida, to depths of 1476 ft. 3) Inshore, EFH is the "seawater" portions of the estuaries where dogfish are common or abundant on the Atlantic coast, from Passamaquoddy Bay, Maine to Cape Cod Bay, Massachusetts. Generally, adult dogfish are found at depths of 33 to 1476 ft in water temperatures ranging between 37ºF and 82ºF.

As stated in the Section 6.2, there has been no meaningful directed fishery for spiny dogfish in Federal waters since FY2000. Commercial gear types used to harvest spiny dogfish include sink gill nets, hook gear, and to a much lesser extent bottom otter trawls

(Table 6). Of these gear types, the bottom otter trawl is the most likely to be associated with adverse impacts to habitat since it is a bottom-tending mobile gear. The primary impact associated with this type of gear is reduction of bottom habitat complexity (Auster and Langton, 1999). Because directed fishing for spiny dogfish with otter trawls has effectively been eliminated in Federal waters since FY2000, it is unlikely that the distribution and intensity of bottom otter trawl effort in Federal waters is significantly influenced by the small bycatch allowance that has been in place for spiny dogfish. As long as a directed trawl fishery for spiny dogfish does not exist, and the retention of spiny dogfish is a byproduct of the activity of other trawl fisheries, impacts on habitat will continue to be analyzed under the management plans for those fisheries.

6.4 Endangered and Other Protected Species

There are numerous species under NMFS' jurisdiction that inhabit the environment within the spiny dogfish management unit and are protected under the Endangered Species Act of 1973 (ESA) and/or the Marine Mammal Protection Act of 1972 (MMPA). Sixteen are classified as endangered or threatened under the ESA, while the remainder are protected by the provisions of the MMPA. The Council has determined that the following list of species protected either by the ESA and the MMPA may be found in the environment inhabited by spiny dogfish:

Cetaceans

Species	Status
Northern right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Beaked whales (*Ziphius* and *Mesoplodon* spp.)	Protected
Risso's dolphin (*Grampus griseus*)	Protected
Pilot whale (*Globicephala* spp.)	Protected
White-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Spotted and striped dolphins (*Stenella* spp.)	Protected
Bottlenose dolphin (*Tursiops truncatus*)	Protected

Sea Turtles

Species	Status
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered
Hawksbill sea turtle (*Eretmochelys imbricata*)	Endangered
Loggerhead sea turtle (*Caretta caretta*)	Threatened

Fish

Species	Status
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered

Atlantic salmon (*Salmo salar*)	Endangered
Smalltooth sawfish (*Pristis pectinata*)	Endangered

Birds

Species	Status
Roseate tern (Sterna dougallii dougallii)	Endangered
Piping plover (Charadrius melodus)	Endangered

Critical Habitat Designations

Species	Area
Right whale	Cape Cod Bay

The status of the marine mammal populations listed above has been discussed in detail in the U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments. Initial assessments were presented in Blaylock et al. (1995) and are updated in Waring et al. (2007). The most recent information on the stock assessment of various mammals can be found at the following website:

http://www.nmfs.noaa.gov/pr/PR2/Stock_Assessment_Program/sars.html

Three other useful websites on marine mammals are:

http://www.nmfs.noaa.gov/prot_res/PR3/recovery.html

http://spo.nwr.noaa.gov/mfr611/mfr611.htm

http://www.nmfs.noaa.gov/pr/species/Cetaceans/cetaceans.html

The North Carolina gillnet fishery for spiny dogfish has historically caught both sea turtles and Atlantic bottlenose dolphins. To date, management measures consistent with the Federal spiny dogfish rebuilding plan have eliminated widespread directed fishing for spiny dogfish, including the gillnet fishery for spiny dogfish in North Carolina. Additionally, protective measures under the Harbor Porpoise Take Reduction Plan (HPTRP) in combination with Federal spiny dogfish harvest policy have been sufficient to reduce gillnet fishery interactions with harbor porpoises below Potential Biological Removal (PBR) levels.

The dominant gear types associated with the retention of spiny dogfish in 2007 (sink gill nets and hook gear) are used by several fisheries identified in the List of Fisheries for 2009 (73 CFR 73032). Sink gill nets are deployed in two Category I fisheries: "Mid-Atlantic gillnet" and "Northeast sink gillnet". Hook gear that catches spiny dogfish is deployed by a Category III fishery: "Northeast/Mid-Atlantic bottom longline/hook and line". Category I fisheries are those identified in the List of Fisheries are associated with frequent incidental mortality and serious injury of marine mammals. Category III fisheries have a remote likelihood of, or no known incidental mortality and serious injury of marine mammals. As long as a significant directed fishery for spiny dogfish does not exist, and the retention of spiny dogfish should generally be a byproduct of the activity of other fisheries, and interactions with protected species will continue to be analyzed under the management plans for those fisheries.

6.5 Human Communities/ Socio-economic Environment

Human communities include the individuals that harvest the stock, as well as the ports and communities in which they reside, home port of the vessels, and otherwise indirectly support shore-side businesses. The following section discusses the participants involved in the spiny dogfish fishery, as well as their home ports and/or states.

6.5.1 Vessel Activity and Permit Information

According to unpublished NMFS permit file data, 3,142 vessels were issued Federal spiny dogfish permits in FY2007, while 257 of these vessels contributed to overall landings. The distribution of permitted and active vessels by home port state is given in Table 8. Most of the active vessels were from home ports in Massachusetts (46.7%), Rhode Island (16.3%), New Hampshire (12.5%), Maine (8.2%), New York (7.4%), Virginia (3.9%), New Jersey (2.3%), and Maryland (1.6%). All other states comprised 1.2% of the total.

NMFS permit data indicate that 288 dealers possessed Federal spiny dogfish dealer permits in FY2007 while dealer reports indicate 61 of those dealers actually bought spiny dogfish. The distribution of permitted and active dealers by state is given in Table 9. Most of the active dealers were from the states of Massachusetts (29.5%), New York (21.3%), Rhode Island (18.0%), Virginia (9.8%) and North Carolina (6.6%), with other states comprising 14.8% of the total.

Landings by port for FY2007 are given in Table 10. Gloucester, MA accounted for the largest share of total FY2007 landings (18.8%), followed by Lynnhaven, VA (14.8%), Chatham, MA (9.8%), Wachapreague, VA (8.1%), Chincoteague, VA (7.3%), and Virginia Beach, VA (6.6%). Accomac, VA accounted for 5.5% of total landings and all other ports comprised less than 5% of total landings.

Comparing spiny dogfish revenue to total revenue by port, spiny dogfish landings accounted for 71.5% of total revenue in Lynnhaven, VA and 18.9% in Wachapreague, VA. This indicates that dependence on the harvest of spiny dogfish by fishing communities on the Atlantic Coast is quite limited.

6.5.2 Port and Community Description

The Council contracted with Dr. Bonnie McCay and her associates at Rutgers University to describe the ports and communities associated with the fisheries in Mid-Atlantic (McCay et al. 1993). The elimination of the directed spiny dogfish fishery in Federal waters since 2000 renders their findings for that fishery somewhat obsolete, however, their work is useful for comparison to historic trends. The Spiny Dogfish FMP contains details of McCay et al. (1993) with regard to the spiny dogfish fishery. As stated above, however, there is very limited dependence on the harvest of spiny dogfish by any fishing community, with the exception of Lynnhaven and Wachapreague VA.

Wachapregue, VA is a small town located seaside of the Eastern Shore of Virginia (NMFS, 2008). Wachapreague Channel goes from the town through a marsh and out to

the barrier islands, offering access to the ocean beyond (USGS 2008). Wachapreague relies more heavily on its recreational fishing industry than its commercial industry. Dogfish was ranked third in value amongst commercial fisheries (1997-2006), behind summer flounder, scup, and black seabass, along with “other” fishery which includes any species not accounted for in a federally managed group. Many businesses and people in the town are still dependant on the fishing industry, from the restaurants that sell the fish caught in the area and cater to visiting fishermen, to the many tackle and bait shops (Oles 2005).

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7.0 ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF DIRECT AND INDIRECT IMPACTS

As discussed in Section 6.0 (Description of the Affected Environment and Fisheries), the VECs include the target species (spiny dogfish), non-target and bycatch species, protected resources, and human communities. This section shall describe and characterize the impacts of the alternatives on these VECs as compared to the No Action Alternative.

7.1. Target Species (Spiny Dogfish) Impacts

The alternative management measures are described in Section 5.0 of this document. The ASMFC has already set a 12.0 million lb quota with a 3,000 lb trip limit for FY2009, and therefore, total U.S. commercial landings of spiny dogfish may reach 12.0 million lbs whether or not the preferred alternative (Alternative 1) is implemented for Federal waters. The 12.0 million lb quota and 3,000 lb trip limit under Alternative 1 are equivalent to the levels recommended by the SSC and MC in order to achieve target F ($F_{rebuild}$ = 0.11) in FY2009. Although the levels represent an increase from the FY2008 quota and trip limits over the No Action Status Quo Alternative 3 (4.0 million lbs and 600 lbs, respectively), the MC/SSC observed that stock conditions have improved greatly over the nine years since the rebuilding plan was implemented. The recommended quota (Alternative 1) actually represents a precautionary response to the improvement in stock condition because it is based on achieving $F_{rebuild}$. In comparison, Alternative 2 proposes an even higher quota (36.5 million lbs. with a higher F_{target} (F=0.28) relative to the No Action Alternative 3. Although stock biomass is expected to continue to grow in the near term, long term biomass projections at F=0.28 show a subsequent decline below the "overfished" threshold in approximately ten years, resulting in a negative impact to the resource. As such, Alternative 2 is more likely to result in $F_{rebuild}$ being exceeded in FY2009 than is the preferred alternative. Additionally, remaining concerns about recruitment and pup survival caused the MC/SSC to recommend against increasing fishing mortality to the long term F-target (0.28; Alternative 2).

Compared to a more restrictive trip limit of 600 lbs under the No Action Alternative 3, the 3,000 lb trip limit under Alternatives 1 and 2 would allow for increased retention of dogfish captured in Federal (offshore) waters. Based on NEFSC trawl data, dogfish captured 40nm or more offshore are likely to be males, while dogfish caught nearshore are predominantly female. Since all dogfish are counted against the quota, increased landings of dogfish caught offshore may reduce the proportional catch of mature females, and under Alternative 1, may reduce the realized F on mature females. This is likely not the case with Alternative 2 due to the substantially greater commercial quota and target F, and the greater potential for development of a directed fishery. The magnitude of this outcome will be in part influenced by cost-benefit decisions by fishermen and as such is difficult to predict without knowing what other options they will be confronted with. The costs associated with offshore fishing tend to be greater than the costs of nearshore fishing. As such, because of the low market value for dogfish, it is unlikely that directed fishing will occur far offshore unless it is initiated as part of a mixed species trip. Nevertheless, there is some likelihood that more male dogfish will be landed from the Exclusive Economic Zone (EEZ) under Alternatives 1 and 2 due to a 3,000 lb daily trip limit compared to Alternative 3 that has a 600 lb trip limit.

In summary, Alternative 1 (preferred) is the most likely to positively impact the dogfish population by contributing to long term recovery of the female stock, compared to Alternative 2. Since the stock has been managed using measures similar to the No Action Alternative since 2000, and the stock is no longer overfished, nor is overfishing occurring, this alternative would also have a positive effect on the resource.

7.2 Non-target Species Impacts

The degree to which discarding of non-target species would change under any of the alternatives is related to how fishing effort would change if a given alternative is implemented. Non-target species from dogfish fishing in the EEZ has been somewhat of a non-issue since the Federal FMP was implemented because dogfish are generally retained in the EEZ as incidental catch. In other words, dogfish themselves have been a non-target species in other fisheries, not the other way around due to the lack of a directed dogfish fishery. However, if the quota and trip limit in the EEZ are increased (as under Alternatives 1 and 2), then it is likely that there will be some increase in directed dogfish fishing in the EEZ. If this occurs, then bycatch of non-target species could indeed be attributable to the dogfish fishery. The amount of directed fishing effort that may occur is not easily predicted. That a given trip would be made for the sole purpose of harvesting dogfish is less likely the farther from shore that the trip occurs. Additionally, because the abundance of dogfish has increased, a greater quantity of dogfish caught would not necessarily be associated with an increase in fishing effort. Nevertheless, in comparison to the No Action Status Quo Alternative 3, it is expected that directed dogfish fishing in the EEZ is more likely to increase than decrease under Alternatives 1 and 2, and would be most likely to increase under Alternative 2.

The composition of the bycatch from any directed dogfish fishing will likely be similar to that described in Section 6.2 and Table 7. Other than spiny dogfish, which dominate the discards when dogfish are retained, codfish, skates and haddock are also discarded. For gillnets and hook gear, species other than dogfish comprise a very small proportion of discards (Table 7). For trawls, the proportion of other species is greater, but trawl-caught dogfish comprise a small (4.2%) proportion of total commercial dogfish landings (Table 6). The amount of bycatch associated with spiny dogfish harvest in state waters is poorly understood since non-federally permitted vessels are not required to participate in the Federal Observer program or submit vessel trip reports. In conclusion, it is possible that discards associated with spiny dogfish harvest would increase under either Alternative 1 or 2, but to the greatest degree under Alternative 2

In comparison to the No Action Status Quo Alternative 3, Alternative 2 allows for an annual quota three times greater than Alternative 1, and approximately nine times more than the status quo. Although the bycatch associated with spiny dogfish harvest is not well understood, it is likely that with a potential for a nine-fold increase in fishing, there would be an increase in catch of non-target and bycatch species, resulting in a negative impact on this VEC under Alternative 2. There is the potential for low negative impacts to non-target and bycatch species under Alternative 1 as well, due to the three-fold increase of the annual quota over the No Action Alternative. However, because the abundance of dogfish has increased greatly, effort is unlikely to increase significantly.

7.3 Habitat Impacts

The degree to which gear impacts on habitat would change any of the alternatives is related to how fishing effort would change if a given alternative is implemented. If the quota and trip limit in the EEZ are increased (as under Alternatives 1 and 2), then it is likely that there would be some increase in *directed* dogfish fishing in the EEZ in comparison with the No Action Status Quo Alternative 3. The amount of directed fishing effort that may occur is not easily predicted. Additionally, because the abundance of dogfish has increased, larger catches are not necessarily associated with an increase in fishing effort. That a given trip would be made for the sole purpose of harvesting dogfish is less likely the farther from shore that trip occurs. Nevertheless, it is expected that directed fishing in the EEZ is more likely to increase than decrease under Alternatives 1 and 2, and to the greatest degree under Alternative 2.

Commercial gear types currently used to harvest spiny dogfish include sink gill nets, hook gear and, to a much lesser degree, bottom otter trawls (Table 6). Of these gear types, the bottom otter trawl is the most likely to be associated with adverse impacts to habitat since it is a bottom-tending mobile gear. The primary impact associated with this type of gear is reduction of bottom habitat complexity (Auster and Langton, 1999). The degree of habitat disturbance associated with directed spiny dogfish harvest in state waters is poorly understood since non-federally permitted vessels are not required to participate in the Federal Observer program or submit vessel trip reports which would provide locational data on their activities. It is likely that habitat impacts associated with spiny dogfish harvest would increase under Alternatives 1 or 2 as compared to the No Action Alternative, but to the greatest degree under Alternative 2.

In comparison to the No Action Status Quo Alternative 3, Alternative 2 allows for an annual quota three times greater than Alternative 1, and approximately nine times more than the status quo. It is likely with this potential for an increase in fishing would result in an increase in gear interactions with habitat, resulting in negative impacts to this VEC. There is the potential for low negative impacts to habitat under Alternative 1 as well, due to the three-fold increase of the annual quota over the No Action Alternative. However, because the abundance of dogfish has increased greatly, effort is unlikely to increase significantly.

7.4 Impacts on Endangered Species and Other Protected Resources

The degree to which encounters with endangered and other protected species would change any of the alternatives is related to how fishing effort would change if a given alternative is implemented. Protected resource encounters from dogfish fishing in the EEZ have been somewhat of a non-issue since the Federal plan was implemented because dogfish are generally retained in the EEZ as incidental catch from other fisheries. However, if the quota and trip limit are increased over the No Action Status Quo Alternative 3 (as under Alternatives 1 and 2), then it is likely that there will be some increase in *directed* dogfish fishing in the EEZ. If this occurs, then encounters with protected resources could indeed be attributable to the dogfish fishery. The amount of directed fishing effort that may occur is not easily predicted. Additionally, because the abundance of dogfish has increased, larger catches are not necessarily associated with an

increase in fishing effort. That a given trip would be made for the sole purpose of harvesting dogfish is less likely the farther from shore that trip occurs. Nevertheless, in comparison to the No Action Status Quo Alternative 3, it is expected that directed dogfish fishing in the EEZ is more likely to increase than decrease under Alternatives 1 and 2, and to the greatest degree under Alternative 2.

The protected species that would be encountered from directed dogfish fishing would likely be similar to that which occurred in the historic North Carolina gill net fishery. As such, one might expect that encounters with coastal bottlenose dolphins, sea turtles, and harbor porpoises may occur (see Section 6.4). However, since the implementation of the Bottlenose Dolphin Take Reduction Plan and Harbor Porpoise Take Reduction Plan, more stringent rules are in place than existed when those previously mentioned encounters took place. Specifically, nets must be attended and no night time sets are allowed. Nevertheless, it is possible that protected resource encounters associated with spiny dogfish harvest may increase under Alternatives 1 and 2 as compared to the No Action Alternative, and to the greatest degree under Alternative 2.

In comparison to the No Action Status Quo Alternative 3, Alternative 2 allows for an annual quota three times greater than Alternative 1, and approximately nine times more than the status quo. It is likely with this potential for increased fishing, gear interactions with protected resources would also increase, resulting in negative impacts to this VEC. There is the potential for low negative impacts to protected resources under Alternative 1 as well, due to the three-fold increase of the annual quota over the No Action Alternative. However, because the abundance of dogfish has increased greatly, effort is unlikely to increase significantly.

7.5 Human Community Impacts

As noted in Section 6.5, there is quite limited dependence by fishing communities on the harvest of spiny dogfish. Nevertheless, Alternatives 1 and 2 would be expected to increase overall revenue from dogfish landings since they are associated with an increase in quota compared to the No Action Status Quo Alternative 3. Note that the status quo includes landings from state jurisdictional waters where the quota was 8.0 million lbs in FY2008. Total FY2007 revenue was $1.360 million. Using the average FY2007 price/lb ($0.20) landing the full FY2008 state water quota corresponds to $1.6 million, and therefore the increase in revenue in FY2009 compared to FY2008 could amount to $800,000 under Alternative 1 (preferred), and $5.7 million under Alternative 2. Assuming the distribution of landings is consistent with FY2007 (Section 6.5), the increases would likely benefit Lynnhaven and Wachapreague, Virginia since they are more heavily dependent on dogfish revenue than other communities. Additionally, the increases would benefit fishing vessel crews. In FY2007, 30 vessels with Federal dogfish permits were reported in the dealer data to have had dogfish revenues greater than 5% of total revenue (dogfish revenue range $209 – 19,087, average = $5,234; dependency range 5.1% - 100%, average = 44.0%). Among the vessels, crew size ranged from 1 to 4 (average = 2). The economic benefits would be greatest under Alternative 2, but fishermen would still benefit with the potential for increased revenue under Alternative 1, relative to the No Action Status Quo Alternative. If the No Action Status Quo Alternative remained in place, revenue from Federal water landings would remain low.

7.6 Cumulative Impacts

7.6.1 Introduction; Definition of Cumulative Effects

This section analyzes and discusses the significance of the cumulative impacts of the proposed alternatives. Cumulative impacts are defined under NEPA as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other action" (40 CFR § 1508.7). Consistent with NEPA, the MSA, as amended, requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Additionally, the MSA promotes long-term positive impacts on the environment through guidance outlined in the National Standards. Under this regulatory regime, the cumulative impacts of past, present, and future Federal fishery management actions on the spiny dogfish stock should generally be positive. This document analyzes the significance to the human environment of impacts that may result from the alternatives. Consideration is given to the relative probability that each alternative will achieve the management objectives of the FMP through biological/ecological, socioeconomic, and legal review by experts on Council staff and NMFS. In addition, this Cumulative Impacts Assessment specifically considers the proposed management alternatives in the context of the cumulative impacts of past, present and reasonably foreseeable future fishing and non-fishing actions. The analysis is generally qualitative in nature because of the limitations of determining effects over time and over the large geographic areas under consideration.

Temporal and Geographic Scope of the Cumulative Impacts Assessment
In terms of past actions for fisheries, habitat and socioeconomic impacts, the temporal scope of this analysis is primarily focused on actions that have taken place since the early 1990s, when the directed U.S. spiny dogfish commercial fishery began its rapid expansion. For endangered and other protected species, the context is largely focused on the 1980s and 1990s, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. In terms of future actions, the analysis considers the period between the effective date for these specifications (May 1, 2009) and the year by which the stock is currently expected to be fully recovered (2020).

The geographic scope of the analysis of impacts to fish species and habitat for this action is the range of the fisheries in the western Atlantic Ocean, as described in the Affected Environment and Environmental Consequences sections of the document (Sections 6.0 and 7.0). For endangered and protected species the geographic range is the total range of each species (information available online in latest stock assessments for each species). The geographic range for socioeconomic impacts is defined as those fishing communities bordering the range of the commercial spiny dogfish fishery (Sections 6.5) from the U.S.-Canada border to, and including, North Carolina.

7.6.2 Non-Fishing Activities

Cumulative impacts from non-fishing activities such as pollution, loss of coastal wetlands, marine transportation, and marine mining pose a risk to the spiny dogfish resource. These impacts are most likely to occur indirectly through habitat degradation.

As indicated in the FMP, EFH for both juvenile and adult spiny dogfish is widespread, and includes generally all continental shelf waters from the Gulf of Maine to Cape Canaveral, Florida. Additionally, no habitat areas of particular concern (HAPC) have been identified to date for spiny dogfish. Nevertheless, the potential for adverse impacts to spiny dogfish and spiny dogfish EFH should coincide with wherever human induced disturbances are occurring. Activities of concern may include discharge of chemical pollutants and sewage; changes in water temperature, salinity and dissolved oxygen; an increase in suspended sediment and activities that involve dredging and the disposal of dredged material. Non-fishing activities generally tend to be concentrated in nearshore areas and only affect localized areas offshore. Wherever these activities co-occur, they can work additively or synergistically to decrease habitat quality and, as such, may indirectly constrain the sustainability of the managed resources, non-target species, and protected resources. Decreased habitat suitability could tend to reduce the tolerance of these VECs to the impacts of fishing effort. Impacts are generally negative in the immediate area of the activity. However, the overall impact to the affected species and their habitats on a population level is uncertain, but may be considered “low negative” or even “negligible”, since a large portion of these species have a limited or minor exposure to these local non-fishing perturbations.

In addition to guidelines mandated by the MSA, NMFS reviews these types of effects through the review process required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for certain activities that are regulated by Federal, state, and local authorities. Such reviews and permitting by NMFS and other agencies often reduce, mitigate or avoid anticipated adverse effects.

7.6.3 Fishing Activities: Past, Present, and Reasonably Foreseeable Future Activities

7.6.3.1 Target Species Impacts

The Federal Spiny Dogfish FMP eliminated directed fishing for spiny dogfish in Federal waters, greatly reducing fishing mortality and halting the decline in female spawning stock biomass. Following the initiation of Federal management of spiny dogfish, increased activity by the Canadian dogfish fishery and inconsistent harvest policy in state waters constrained the Federal recovery plan from succeeding in the manner that had been originally envisioned. Recovery to 90% of SSB_{max} was expected by the 2004 fishing year, however, the 2004 update to the status of the stock indicated that biomass was about 30% of SSB_{max}. For 2008, SSB was been estimated to have increased to 231,962 mt which is above the rebuilding target. However, long term projections indicate that no matter what fishing mortalities are achieved, biomass will oscillate - continuing to increase in the near term, then declining to a "low" around 2017, followed by another increase. The reason for this oscillation is a "hole" in female biomass that is the result of prolonged low production from 1997-2003. Nevertheless, as a result of past actions (implementation of the Federal FMP and, more recently, extension of the rebuilding plan into state waters), fishing mortality on mature female dogfish dropped from around 0.30 in 1998 to about 0.11 in 2006 and 2007. Therefore, although long term stability of the stock has not been fully achieved, the additive effects of past management actions have directly benefited the spiny dogfish stock.

7.6.3.2 Non-target Species Impacts

The establishment of the Federal Spiny Dogfish FMP, which eliminated the directed spiny dogfish fishery in Federal waters, is associated with positive impacts on non-target species. At the present time the spiny dogfish is itself a non-target species, the landing of which is a byproduct of the activity of other fishery operations. At present, participants in these other fisheries may obtain a Federal permit that will allow them to retain and sell small amounts of incidentally captured spiny dogfish. The current bycatch allowance is 600 lbs per trip, and although the proposed action would increase the trip limit to 3,000 lbs, the abundance of dogfish has increased greatly and larger catches are not necessarily associated with an increase in fishing effort. There are no known plans to investigate methods to decrease spiny dogfish bycatch in other fisheries. Given that a major directed spiny dogfish fishery is unlikely to develop in the near future, impacts on non-target species as a result of spiny dogfish harvest are not expected to be significant in future years.

7.6.3.3 Habitat Impacts

Commercial gear types historically used to harvest spiny dogfish include sink gill nets, bottom longlines, and to a much lesser extent, bottom otter trawls. Of these gear types, the bottom otter trawl is the most likely to be associated with adverse impacts to habitat since it is a bottom-tending mobile gear. The primary impact associated with this type of gear is reduction of bottom habitat complexity (Auster and Langton, 1999). Prior to the implementation of the Federal Spiny Dogfish FMP, bottom otter trawls were an important component of the directed fishery, for example, harvesting as much as 30% of the annual landings in 1999. In FY2007, however, bottom otter trawls contributed 4.2% of the total commercial landings (Table 6). As stated throughout this document, widespread directed fishing for spiny dogfish has effectively been eliminated in Federal waters since FY2000. With the proposed increase in the trip limit and quota, it is possible that the intensity of bottom otter trawl effort associated with dogfish harvest may increase, resulting in minimal adverse impacts to habitat. However, the abundance of dogfish has increased greatly and larger catches are not necessarily associated with an increase in fishing effort. Additionally, the continuance of rebuilding measures for the spiny dogfish stock do not allow for the development of a major directed spiny dogfish fishery in the near future. Therefore, no significant impacts by the spiny dogfish fishery on habitat, including EFH are expected.

7.6.3.4 Endangered and Other Protected Species Impacts

The North Carolina gillnet fishery for spiny dogfish caught both sea turtles and Atlantic bottlenose dolphins. Management measures consistent with the Federal spiny dogfish rebuilding plan, have eliminated the directed gillnet fishery for spiny dogfish in North Carolina. Additionally, protective measures under the HPTRP in combination with Federal spiny dogfish harvest policy have been sufficient to reduce the fishery interactions with harbor porpoises below PBR levels. The impacts of these past management actions can be characterized as indirect and positive in that they have reduced mortality for these species that was associated with the historic spiny dogfish fishery. The dominant gear types currently associated with the retention of spiny dogfish (sink gill nets and hook gear) are used by several fisheries identified in the List of

Fisheries for 2009 (73 CFR 73032). Sink gill nets are deployed in two Category I fisheries: "Mid-Atlantic gillnet" and "Northeast sink gillnet". Widespread directed fishing for spiny dogfish has effectively been eliminated in Federal waters since FY2000. However, with the proposed increase in trip limits and quota, it is possible that encounters with protected resources could increase from status quo (i.e., non-existent) level. Nevertheless, a major directed spiny dogfish fishery is unlikely to develop in the near future. As such, impacts on endangered and other protected species as a result of spiny dogfish harvest are not expected to be significant in future years.

7.6.3.5 Fishery and Socioeconomic Impacts

As a result of the implementation of the spiny dogfish FMP, negative effects have been incurred by the socioeconomic sector of the environment through loss of revenue to fishermen and decreased export revenue to wholesalers. These negative effects are expected to be ameliorated as recovery of the spiny dogfish stock proceeds. Under the proposed action, revenue associated with spiny dogfish harvest should increase (see Section 7.5) disregarding changes in market value. Nevertheless, a significant directed fishery is not expected to return for several more years given the protracted rebuilding period for the spiny dogfish stock.

7.6.4 Summary of Cumulative Effects/Conclusions

Alternative 1, the preferred alternative, is expected to have positive impacts on both the spiny dogfish resource and the human communities involved. The proposed increase in quota and trip limit is expected to continue the rebuilding of the stock and increase revenues. There is a low likelihood that a major directed spiny dogfish fishery and corresponding low negative impact associated with increases in fishery interactions with non-target species, habitat, and protected resources would develop in Federal waters in the upcoming fishing year. Socioeconomic benefits are expected because harvest levels in FY2009 are expected to be greater than in FY2008 due to the proposed increase in the quota. The increase in the quota is allowable because stock conditions have improved greatly from a cumulative effects perspective.

As discussed above, past, present, and reasonably foreseeable future fishing actions (i.e., the FMP, FW1 and other specifications) have had a positive impacts on the spiny dogfish stock, and negligible impacts on non-target/bycatch species, habitat, and protected resources. The Federal management actions have had negative impacts on the human communities, due to limited annual quota and trip limits which effectively eliminated the directed fishery.

Given the importance of spiny dogfish harvest in state jurisdictional waters in recent years, the incremental impact of proposed Federal management actions must be considered in the context of anticipated state fishery activity. Except for FY2004 and FY2005, divergent state water harvest policy has had a constraining effect on the Federal spiny dogfish stock recovery plan. For most years since 2000, the ASMFC has increased their overall quota and trip limits above Federal levels. However, in the upcoming fishing year, the ASMFC and Federal action are expected to be consistent and should both help to achieve the Federal rebuilding objectives.

As explained in Section 7.6.2, non-fishing actions generally tend to be concentrated in nearshore areas, and include the discharge of chemical pollutants and sewage; changes in water temperature, salinity and dissolved oxygen; an increase in suspended sediment and activities that involve dredging and the disposal of dredged material. The impacts to habitat and to the dogfish stock, non-target species, and protected species from non-fishing activities are likely negative in the immediate area of the action. However, the degree of negative impact to the population as a whole is uncertain, but likely low negative or even negligible, since a large portion of these species populations have a limited or minor exposure to these local non-fishing perturbations. Also adverse effects are often reduced or even avoided as required by certain conditions placed on these activities during permitting.

The cumulative effects on the VECs are, by definition, a combination of the proposed action and the other above described fishing and non-fishing actions. Past and current fishing regulatory actions have resulted in positive impacts to the dogfish stock, which is supported by the increase in biomass of the stock. The preferred alternative would have a positive cumulative effect since the net result would be to continue rebuilding the dogfish stock and allow further exploitation of the increased biomass at the same fishing effort. The cumulative impacts to non-target/bycatch species, habitat, and protected resources are all negligible since the impacts of the preferred alternative on these VECs are also negligible. Although past and current fishery management actions have had negative social and economic impacts to dogfish fishermen and the associated businesses, the preferred alternative offers the opportunity to increase revenues and therefore would result in positive cumulative impact to these entities. As described above, none of the impacts outlined in this assessment (direct, indirect or cumulative) are considered significant.

8.0 ESSENTIAL FISH HABITAT ASSESSMENT

Spiny dogfish have EFH designated in many of the same bottom habitats that have been designated as EFH for species in the following FMPs: Northeast Multispecies; Atlantic Sea Scallop; Summer Flounder, Scup, and Black Sea Bass; Atlantic Mackerel, Squid, and Butterfish; Atlantic Surf Clam and Ocean Quahog; Bluefish; Atlantic Billfish; Spiny Dogfish; Monkfish; Atlantic Tunas, Swordfish and Sharks; Calico Scallop; Wreckfish; King and Spanish Mackerel; Atlantic Coast Red Drum; Shrimp; Stone Crab; Snapper-Grouper of the South Atlantic; Coral and Coral Reefs of the Gulf of Mexico and the South Atlantic; and Coastal Migratory Pelagic Resources of the Gulf of Mexico and the South Atlantic..

Section 2.2.2.2 of the Spiny Dogfish FMP defined EFH as follows:

> *Juveniles:*
> 1) North of Cape Hatteras, EFH is the waters of the Continental shelf from the Gulf of Maine through Cape Hatteras, North Carolina in areas that encompass the highest 90% of all ranked ten-minute squares for the area where juvenile dogfish were collected in the NEFSC trawl surveys. 2) South of Cape Hatteras, EFH is the waters over the Continental Shelf from Cape Hatteras, North Carolina through Cape Canaveral, Florida, to depths of 1300 ft. 3) Inshore, EFH is the "seawater" portions of the estuaries where dogfish are common or abundant on the Atlantic coast, from Passamaquoddy Bay, Maine to Cape Cod Bay, Massachusetts. Generally, juvenile dogfish are found at depths of 33 to 1280 ft in water temperatures ranging between 37°F and 82°F.
>
> *Adults:*
> 1) North of Cape Hatteras, EFH is the waters of the Continental shelf from the Gulf of Maine through Cape Hatteras, North Carolina in areas that encompass the highest 90% of all ranked ten-minute squares for the area where adult dogfish were collected in the NEFSC trawl surveys. 2) South of Cape Hatteras, EFH is the waters over the Continental Shelf from Cape Hatteras, North Carolina through Cape Canaveral, Florida, to depths of 1500 ft. 3) Inshore, EFH is the "seawater" portions of the estuaries where dogfish are common or abundant on the Atlantic coast, from Passamaquoddy Bay, Maine to Cape Cod Bay, Massachusetts. Generally, adult dogfish are found at depths of 33 to 1480 ft in water temperatures ranging between 37°F and 82°F.

Prior to implementation of the FMP, the primary gears utilized to harvest spiny dogfish were otter trawls and gill nets. Since the otter trawl is a bottom-tending mobile gear, it is most likely to be associated with adverse impacts to bottom habitat. The primary impact associated with this type of gear is reduction of habitat complexity (Auster and Langton, 1999). In FY2007, bottom otter trawls comprise about 4.2% of the harvest of spiny dogfish. The dominant gear types are sink gillnets and hook gear (together comprising 76.0% of FY2007 landings). Gear used by gillnet and hook fisheries are not expected to significantly impact essential fish habitat.

The FMP evaluated the potential EFH impacts of the dogfish fishery and concluded that because dogfish are not associated with any particular type of bottom habitat, it is

difficult to identify specific adverse impacts from bottom trawls or dredges on dogfish EFH. Therefore, no management measures were proposed at that time for minimizing the potential adverse impacts of trawls on EFH. Since then, the NEFMC has established habitat closed areas for minimizing the adverse impacts of bottom trawls and dredges on EFH for a number of managed species in NMFS Northeast Region. These management measures are sufficient for minimizing any adverse habitat impacts that may be associated with the proposed increase in the commercial quota for dogfish in FY 2009.

In addition, the stock rebuilding objectives established in the Spiny Dogfish FMP have resulted in fishing effort reductions of about 82% compared to the historic unregulated fishery. This large reduction in effort is expected to have produced a corresponding reduction in gear impacts to bottom habitats. Although the management alternative (e.g., Alternative 1) proposed in this document will allow for some increase in fishing effort, the increase is only expected to have a minor adverse impact on habitat and is not expected to significantly impact EFH. This is because the abundance of dogfish has increased greatly and larger catches are not necessarily associated with an increase in fishing effort. In addition, most of the commercially landed dogfish are taken with gillnets and hook gear, not bottom otter trawls.

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9.0 APPLICABLE LAWS

9.1 NEPA

9.1.1 Finding of No Significant Environmental Impact (FONSI)

National Oceanic and Atmospheric Administration Administrative Order (NAO) 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 C.F.R. 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

1) Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

The proposed action is intended to achieve the F = 0.11 rebuilding target, prevent overfishing, and continue to recover spiny dogfish biomass. The proposed action is not expected to jeopardize the sustainability of any target species that may be affected by the action. As discussed in Section 6.1.2, the spiny dogfish stock has rebounded, and is likely not overfished, nor is it likely that overfishing is occurring. While the preferred alternative allows for three times the 4 million lb status quo quota, the biomass is such that the 12 million lb quota would maintain fishing mortality at the rebuilding level ($F_{rebuild}$).

2) Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?

The proposed action is not expected to jeopardize the sustainability of any non-target species. The proposed measures are not expected to significantly alter fishing methods or activities. In addition, as discussed in Section 7.0, the amount of directed fishing effort that may occur is not easily predicted. However, because the abundance of dogfish has increased, larger catches are not necessarily associated with an increase in fishing effort; therefore, none of the proposed measures are expected to significantly increase fishing effort.

3) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

The proposed action is not expected to cause substantial damage to the ocean, coastal habitats, and/or EFH as defined under the MSA and identified in the FMP. Historically, spiny dogfish harvest has been a byproduct of fishing activities in other fisheries. As such, the harvest of spiny dogfish has not been directly associated with impacts on habitat, including EFH (Section 7.3). The increase in trip limit and quota may increase effort, but not significantly (Section 7.0). Any increases in fishing activity are only expected to have minimal adverse impacts to EFH and do not require any mitigation.

4) Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?

No changes in fishing behavior that would affect safety are anticipated. The overall effect of the proposed action would not adversely impact public health or safety. NMFS will consider comments received concerning safety and public health issues.

5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

The proposed action is not reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat for these species. While there may be some adverse impact due to an increase in fishing activity from the proposed action, that impact is not expected to be significant. Because the abundance of dogfish has increased greatly, effort is unlikely to increase significantly. In addition, measures in place to protect endangered or threatened species, marine mammals, and critical habitat for these species would remain in place.

6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

The proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. The action is not expected to significantly alter fishing methods or activities or fishing effort or the spatial and/or temporal distribution of current fishing effort.

7) Are significant social or economic impacts interrelated with natural or physical environmental effects?

The proposed action is not expected to have a substantial impact on the natural or physical environment. The proposed action is not expected to significantly alter fishing methods or activities, fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, there are no social or economic impacts interrelated with natural or physical environmental effects.

8) Are the effects on the quality of the human environment likely to be highly controversial?

On the contrary, the proposed action, for the first time since the FMP was implemented, reflects agreement between both Councils and the ASMFC. Although there has been some controversy over the setting of dogfish specifications in the past, the effects of this action are not highly controversial.

9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

This action addresses the proposed annual commercial quota and trip limit for spiny dogfish. This fishery is not known to be prosecuted in any unique areas such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas. Therefore, the proposed action is not expected to have a substantial impact on any of these areas.

10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

The impacts of the proposed action on the human environment are described in Section 7.0 of the EA. The proposed action addresses the annual commercial quota and trip limit for the spiny dogfish fishery. The proposed action is not expected to significantly alter fishing methods or activities, and is not expected to significantly increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The measures contained in this action are not expected to have highly uncertain, unique, or unknown risks on the human environment.

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

As discussed in Section 7.6, the proposed action is not expected to have cumulatively significant impacts when considered with the impacts from other fishing and non-fishing activities. The synergistic interaction of improvements in the condition of the stock are expected to generate positive impacts overall. The proposed action, together with past and future actions are not expected to result in significant cumulative impacts on the biological, physical, and human components of the environment.

12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

The proposed action addresses the annual commercial quota and trip limit for the spiny dogfish fishery. This fishery is not known to be prosecuted in any areas that might affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause the loss or destruction of significant scientific, cultural or historical resources. Therefore, the proposed action is not expected to affect on any of these areas.

13) Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

The proposed action addresses the annual commercial quota and trip limit for the spiny dogfish fishery. There is no evidence or indication that this fishery has ever resulted in the introduction or spread of nonindigenous species. The proposed action is not expected to significantly alter fishing methods or activities, and is not expected to significantly increase fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, it is highly unlikely that the proposed action would be expected to result in the introduction or spread of a non-indigenous species.

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

The proposed action addresses the annual commercial quota and trip limit for the spiny dogfish fishery. The proposed action is not expected to significantly alter fishing methods or activities, and is not expected to significantly increase fishing effort or the spatial and/or temporal distribution of current fishing effort. When new stock assessment or other biological information about these species becomes available in the future, then the specifications may be adjusted according to the overfishing definitions contained in the FMP. The proposed action will not result in significant effects, nor does it represent a decision in principle about a future consideration.

15) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

The proposed action addresses the annual commercial quota and trip limit for the spiny dogfish fishery. The proposed action is not expected to alter fishing methods or activities such that they threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment. In fact, the proposed action has been found to be consistent with other applicable laws (see Sections 9.2 - 9.10 below).

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

The impacts of the preferred alternatives on the biological, physical, and human environment are described in Section 7.0. The cumulative effects of the proposed action on target and non-target species are detailed in Section 7.6. The proposed action is not expected to significantly increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The synergistic interaction of improvements in the condition of the stock through implementation of annual quotas based on the fishing mortality target contained in the FMP is expected to generate positive impacts overall.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment, it is hereby determined that the proposed actions in this specification package will not significantly impact the quality of the human environment as described above and in the Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not necessary.

_____ _____

Regional Administrator, Northeast Region, NMFS Date

9.2 Marine Mammal Protection Act

The MAFMC has reviewed the impacts of the proposed spiny dogfish specifications on marine mammals and has concluded that the proposed management actions are consistent with the provisions of the MMPA, and will not alter existing measures to protect the species likely to inhabit the spiny dogfish management unit. For further information on the potential impacts of the fishery and the proposed management action on marine mammals, see Section 7.4 of this document.

9.3 Endangered Species Act

Section 7 of the Endangered Species Act requires federal agencies conducting, authorizing, or funding activities that affect threatened or endangered species to ensure that those effects do not jeopardize the continued existence of listed species. The MAFMC has concluded, using information available at this writing, that the proposed spiny dogfish specifications are not likely to jeopardize any ESA-listed species or alter or modify any critical habitat, based on the discussion of impacts in this document (Section 7.4).

9.4 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972, as amended, provides measures for ensuring stability of productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. It is recognized that responsible management of both coastal zones and fish stocks must involve mutually supportive goals. The Council has developed this specifications document and will submit it to NMFS; NMFS must determine whether this action is consistent to the maximum extent practicable with the CZM programs for each state (Maine through North Carolina).

9.5 Administrative Procedures Act

Sections 551-553 of the Federal Administrative Procedure Act establish procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process and to give the public notice and an opportunity to comment before the agency promulgates new regulations.

The Administrative Procedure Act requires solicitation and review of public comments on actions taken in the development of a fishery management plan and subsequent amendments and framework adjustments. Development of this specifications document provided many opportunities for public review, input, and access to the rulemaking process. This proposed specifications document was developed as a result of a multi-stage process that involved review of the source document (2009 Specifications package) by affected members of the public. The public had the opportunity to review and comment on management measures during the Spiny Dogfish Monitoring Committee Meeting held on October 31, 2008, during the Joint Spiny Dogfish Committee meeting held on November 17, 2008, the NEFMC meeting held on November 18, 2008, and the MAFMC meeting held on December 10, 2008. In addition, the public will have further

opportunity to comment on this specifications package once NMFS publishes a proposed rule in the Federal Register (FR) requesting comments.

9.6 Data Quality Act

Utility of Information Product

The proposed document includes: A description of the proposed specifications, description of the alternatives considered, and the reasons for selecting the proposed management measures. This action proposes commercial quotas and other management measures for spiny dogfish in 2009. This proposed specifications document implements the FMP's conservation and management goals consistent with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as well as all other existing applicable laws.

This proposed specifications document was developed as a result of a multi-stage process that involved review of the source document (2009 Specifications package) by affected members of the public. The public had the opportunity to review and comment on management measures during the Spiny Dogfish Monitoring Committee Meeting held on October 31, 2008, during the Joint Spiny Dogfish Committee meeting held on November 17, 2008, the NEFMC meeting held on November 18, 2008, and the MAFMC meeting held on December 10, 2008.

The Federal Register notice that announces the proposed rule and the implementing regulations will be made available in printed publication and on the website for the Northeast Regional Office. The notice provides metric conversions for all measurements.

Integrity of Information Product

The information product meets the standards for integrity under the following types of documents:

Other/Discussion (e.g., Confidentiality of Statistics of the Magnuson-Stevens Fishery Conservation and Management Act; NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the Marine Mammal Protection Act.)

Objectivity of Information Product

The category of information product that applies for this product is “Natural Resource Plans.”

In preparing specifications documents, the Council must comply with the requirements of the Magnuson-Stevens Act, the National Environmental Policy Act, the Regulatory Flexibility Act, the Administrative Procedure Act, the Paperwork Reduction Act, the Coastal Zone Management Act, the Endangered Species Act, the Marine Mammal Protection Act, the Data Quality Act, and Executive Orders 12630 (Property Rights), 12866 (Regulatory Planning), 13132 (Federalism), and 13158 (Marine Protected Areas).

This specifications document has been developed to comply with all applicable National Standards, including National Standard 2. National Standard 2 states that the FMP's conservation and management measures shall be based upon the best scientific information available. Despite current data limitations, the conservation and management measures proposed to be implemented under this specifications document are based upon the best scientific information available. This information includes NMFS dealer weighout data for 2007, which was used to characterize the economic impacts of the management proposals. These data, as well as the NMFS Observer program database, were used to characterize historic landings, species co-occurrence in the spiny dogfish catch, and discarding. The specialists who worked with these data are familiar with the most recent analytical techniques and with the available data and information relevant to the spiny dogfish fishery. Marine Recreational Fisheries Statistical Survey (MRFSS) data were used to characterize the recreational fishery for this species.

The policy choices (i.e., management measures) proposed to be implemented by this specifications document are supported by the available scientific information and, in cases where information was unavailable, proxy reference points are based on observed trends in survey data. The management measures contained in the specifications document are designed to meet the conservation goals and objectives of the FMP, and prevent overfishing and rebuild overfished resources, while maintaining sustainable levels of fishing effort to ensure a minimal impact on fishing communities.

The supporting materials and analyses used to develop the measures in the proposed rule are contained in the specifications document and to some degree in previous specifications and/or FMPs as specified in this document.

The review process for this specifications package involves the Mid-Atlantic Fishery Management Council, the Northeast Fisheries Science Center, the Northeast Regional Office, and NOAA Fisheries headquarters. The Center's technical review is conducted by senior level scientists with specialties in population dynamics, stock assessment methods, demersal resources, population biology, and the social sciences. The Council review process involves public meetings at which affected stakeholders have opportunity to provide comments on the specifications document. Review by staff at the Regional Office is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. Final approval of the specifications document and clearance of the rule is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

9.7 Paperwork Reduction Act

The Paperwork Reduction Act (PRA) concerns the collection of information. The intent of the PRA is to minimize the Federal paperwork burden for individuals, small businesses, state and local governments, and other persons as well as to maximize the usefulness of information collected by the Federal government. There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the Paperwork Reduction Act.

9.8 Impacts Relative to Federalism/E.O. 13132

This specifications document does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order (EO) 13132.

9.9 Environmental Justice/Executive Order (E.O.) 12898

This EO provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." EO 12898 directs each Federal agency to analyze the environmental effects, including human health, economic, and social effects of Federal actions on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA. Agencies are further directed to "identify potential effects and mitigation measures in consultation with affected communities, and improve the accessibility of meetings, crucial documents, and notices."

The proposed actions are not expected to affect participation in the spiny dogfish fishery. Since the proposed action represents no changes relative to the current opportunity to participate in this fishery, no negative economic or social effects are anticipated as a result (Section 7.0). Therefore, the proposed action under the preferred alternatives is not expected to cause disproportionately high and adverse human health, environmental or economic effects on minority populations, low-income populations, or Indian tribes.

9.10 Regulatory Flexibility Act/E.O. 12866

9.10.1 Regulatory Impact Review (RIR) and Initial Regulatory Flexibility Analysis (IRFA)

This section provides the analysis and conclusions to address the requirements of Executive Order 12866 and the Regulatory Flexibility Act (RFA). Since many of the requirements of these mandates duplicate those required under the MSA and NEPA, this section contains references to other sections of this document. The following sections provide the basis for concluding that the proposed action is not significant under E.O. 12866 and will not have a significant economic impact on a substantial number of small entities under the RFA.

9.10.2 Description of Management Objectives

The goals and objectives of the management plan for the spiny dogfish resource are stated in Section 1.1.3 of the Spiny Dogfish FMP. The proposed action is consistent with, and does not modify those goals and objectives.

9.10.3 Description of the Fishery

Section 2.3 of the Spiny Dogfish FMP contains a detailed description of the historic spiny dogfish fishery. Updated fishery activity is given in Section 6.5 of this document.

9.10.4 Statement of the Problem

The purpose and need for this action is identified in Section 4.1 of this document. The Spiny Dogfish FMP requires that the Councils and the Regional Administrator review the best available stock and fishery data when developing specifications for the upcoming fishing year(s).

9.10.5 Description of the Alternatives

Alternative 1 – (Preferred Alternative – Set quota to achieve $F_{rebuild}$ [0.11]): For FY2009, specify a commercial quota of 12.0 million lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) being allocated 57.9% of the quota (6,948,000 lbs), and quota Period 2 (November 1 through April 30) being allocated 42.1% of the quota (5,052,000 lbs).

Alternative 2 – (Set quota to achieve F_{target} [0.28]): For FY2009, specify a commercial quota of 36.5 million lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) being allocated 57.9% of the quota (21,133,500 lbs), and quota Period 2 (November 1 through April 30) being allocated 42.1% of the quota (15,366,500 lbs).

Alternative 3 – (No Action - Status Quo): For FY2009, specify a commercial quota of 4 million lbs with trip limits of 600 lb (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (2,316,000 lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (1,684,000 lbs).

According to the regulations, the "true" No Action Alternative for dogfish is not equivalent to the status quo or baseline condition. If the actions proposed in this document are not taken, some current management measures will remain in place (i.e. 600 lb trip limit), but the overall management program will not be identical to that of 2008 (i.e. there would be no specified quota for FY 2009). The "true" No Action Alternative for this fishery is infeasible and inconsistent with the FMP which requires specifications, or quotas, to be established for the fishery. Therefore, the "true" No Action Alternative is not analyzed in this document. For comparison purposes, the alternatives in this specifications document are compared to the status quo alternative (baseline) as opposed to the "true" No Action Alternative. Since management measures similar to those specified in the 2006-2008 specifications package (i.e., 4 million lb commercial quota and 600 lb trip limit) have been in place since 2000, this is considered to be the baseline condition, and is discussed as Alternative 3.

9.10.6 Economic Analysis

The economic impacts of the proposed actions are discussed in Section 7.0 of this document. The proposed action is expected to result in beneficial economic impacts. Higher quota and trip limits are expected to increase revenue from the dogfish fishery. In general, no significant economic impacts are expected because the proposed actions are consistent with the goals of the FMP and are unlikely to result in significant deviation from the status quo.

9.10.7 Determination of Significance under E.O. 12866

NMFS Guidelines provide criteria to be used to evaluate whether a proposed action is significant. A significant regulatory action means any regulatory action that is likely to result in a rule that may:

1. *Have an annual effect on the economy of $100 million or more, or adversely effect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities.*

The proposed action will not have an effect on the economy in excess of $100 million. The proposed action is not expected to have any adverse impacts on the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local or tribal governments or communities.

2. *Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.*

The proposed action will not create a serious inconsistency with, or otherwise interfere with, an action taken or planned by another agency. No other agency has indicated that it plans an action that will affect the spiny dogfish fishery in the EEZ.

3. *Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof.*

The proposed action will not materially alter the budgetary impact of entitlements, grants, user fees or loan programs, or the rights and obligations of their participants.

4. *Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.*

The proposed action does not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

9.10.8 Initial Regulatory Flexibility Analysis

The following sections contain analyses of the effect of the proposed action on small entities. Under Section 603(b) of the RFA, each initial regulatory flexibility analysis is required to address:

1. Reasons why the agency is considering the action,
2. The objectives and legal basis for the proposed rule,
3. The kind and number of small entities to which the proposed rule will apply,
4. The projected reporting, record-keeping and other compliance requirements of the proposed rule, and
5. All Federal rules that may duplicate, overlap, or conflict with the proposed rule.

9.10.9 Reasons for Considering the Action

The purpose and need for this action is identified in Section 4.1 of this document. The Spiny Dogfish FMP requires that the Council and the Regional Administrator annually review the best available stock and fishery data when developing specifications for the upcoming fishing year.

9.10.10 Objectives and Legal Basis for the Action

The objective of the proposed action is to implement specifications for the spiny dogfish fishery, as required under the regulations implementing the spiny dogfish FMP, which are provided in 50 CFR 648, Subpart L.

9.10.11 Description and Number of Small Entities to Which the Rule Applies

All of the potentially affected businesses are considered small entities under the standards described in NOAA Fisheries guidelines because they have gross receipts that do not exceed $3.5 million annually. A discussion of vessel activity during the 2007 fishing year is given in Section 6.5.1 of this document.

9.10.12 Recordkeeping and Reporting Requirements

The proposed action does not introduce any new reporting, recordkeeping, or other compliance requirements.

9.10.13 Duplication, Overlap, or Conflict with Other Federal Rules

The proposed action does not duplicate, overlap or conflict with any other Federal rules.

9.10.14 Economic Impacts on Small Entities

Section 7.0 of this document contains the economic analysis of the alternatives that were considered during the specification process.

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11.0 LIST OF AGENCIES AND PERSONS CONSULTED

This document was prepared by the Mid-Atlantic Fishery Management Council in consultation with the National Marine Fisheries Service and the New England Fishery Management Council.

Members of the Spiny Dogfish Monitoring Committee include:

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In addition, the following organizations/agencies were consulted during the development of the spiny dogfish specifications, either through direct communication/correspondence and/or participation in Council public meetings:

NOAA Fisheries, National Marine Fisheries Service, Northeast Regional Office, Gloucester MA
Northeast Fisheries Science Center, Woods Hole MA
Atlantic States Marine Fisheries Commission
The Ocean Conservancy

TABLES

Table 1. Landings of spiny dogfish (1,000s lbs) in the Northwest Atlantic Ocean for calendar years 1962 to 2007.

Year	US Comm	US Rec	US Total	Canada	Former USSR	Other Foreign	Total (NW Atl.Stock)
1962	518	-	518	-	-	-	518
1963	1,344	-	1,344	-	-	2	1,346
1964	1,610	-	1,610	-	-	35	1,645
1965	1,076	-	1,076	20	414	22	1,532
1966	1,274	-	1,274	86	20,699	-	22,059
1967	612	-	612	-	5,370	-	5,982
1968	348	-	348	-	9,709	-	10,057
1969	250	-	250	-	19,460	800	20,510
1970	233	-	233	42	10,855	1,578	12,709
1971	162	-	162	9	23,814	1,684	25,669
1972	153	-	153	7	51,372	1,519	53,050
1973	197	-	197	44	31,347	10,084	41,672
1974	281	-	281	79	45,071	8,971	54,401
1975	324	-	324	2	49,231	423	49,980
1976	1,212	-	1,212	7	36,775	236	38,229
1977	2,053	-	2,053	2	15,304	567	17,926
1978	1,826	-	1,826	185	1,272	99	3,383
1979	10,478	-	10,478	2,934	231	181	13,824
1980	9,006	-	9,006	1,477	774	547	11,804
1981	15,135	3,291	18,426	1,243	1,138	1,010	21,817
1982	11,928	154	12,082	2,101	60	743	14,986
1983	10,795	148	10,943	-	791	231	11,965
1984	9,811	201	10,012	9	642	220	10,883
1985	8,880	196	9,076	29	1,530	701	11,336
1986	6,057	401	6,459	46	472	340	7,316
1987	5,960	675	6,634	617	256	51	7,558
1988	6,846	791	7,637	-	1,265	161	9,063
1989	9,903	922	10,825	366	373	192	11,755
1990	32,475	395	32,870	2,901	844	22	36,637
1991	29,049	289	29,338	644	481	35	30,498
1992	37,165	474	37,639	1,828	57	90	39,614
1993	45,509	265	45,774	3,111	-	60	48,944
1994	41,447	340	41,786	4,010	-	4	45,801
1995	50,068	141	50,209	2,090	-	31	52,330
1996	60,055	57	60,112	917	-	520	61,550
1997	40,460	146	40,606	983	-	472	42,061
1998	45,476	134	45,609	2,379	-	1,338	49,326
1999	32,760	119	32,880	5,439	-	1,221	39,540
2000	20,407	10	20,418	5,902	-	1,089	27,408
2001	5,056	61	5,117	8,278	-	666	14,061
2002	4,839	452	5,290	6,614	-	-	11,904
2003	2,579	87	2,667	2,800	-	-	5,467
2004	2,160	244	2,404	5,150	-	-	7,554
2005	2,535	79	2,615	4,034	-	-	6,649
2006	5,212	-	5,212	5,185	-	-	10,397
2007	7,723	185	7.908	5,132	-	-	13,040

Source: unpublished NMFS Dealer Reports, South Atlantic General Canvass, MRFSS data, and SAW-43.

Table 2. Commercial landings (1,000s lbs) of spiny dogfish by state from calendar years 1962 through 2007.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Total
1962	48	0	0	0	6	55	4	0	38	367	0	518
1963	757	0	0	0	0	78	4	0	36	468	0	1,344
1964	225	0	0	1	10	73	1	0	27	1,273	0	1,610
1965	378	0	17	2	15	97	2	0	16	550	0	1,076
1966	572	0	0	0	11	180	3	0	15	493	0	1,274
1967	181	0	15	1	4	196	0	0	14	201	0	612
1968	0	0	1	0	50	136	7	0	16	138	0	348
1969	0	0	0	0	5	145	13	0	17	70	0	250
1970	0	0	5	1	18	119	1	0	13	74	0	233
1971	0	0	1	0	9	111	12	0	3	24	0	162
1972	0	0	2	18	0	113	0	0	5	14	0	153
1973	0	0	12	23	0	98	5	0	10	49	0	197
1974	0	0	7	5	0	176	1	1	14	76	0	281
1975	0	0	4	20	0	223	2	4	6	65	0	324
1976	944	0	7	4	2	206	4	0	7	38	0	1,212
1977	1,748	0	38	58	2	172	10	0	8	16	0	2,053
1978	1,426	70	69	6	5	194	14	1	16	24	0	1,826
1979	2,314	310	6,536	4	9	213	865	0	12	215	0	10,478
1980	1,365	15	6,161	1	0	229	580	0	11	641	3	9,006
1981	1,138	0	9,972	4	4	110	204	8	1,533	2,156	4	15,135
1982	623	0	6,361	3	3	104	5	3	1,974	2,846	6	11,928
1983	496	1	9,987	0	9	57	1	4	213	27	0	10,795
1984	1,247	0	8,164	24	5	77	9	6	259	19	0	9,811
1985	903	0	7,636	2	10	137	8	0	170	14	1	8,880
1986	770	0	4,774	5	19	295	53	0	129	12	0	6,057
1987	598	0	5,148	31	6	156	4	0	8	10	0	5,960
1988	482	1	5,828	1	94	86	10	0	24	19	302	6,846
1989	4,880	0	4,925	4	1	48	23	0	4	19	0	9,903
1990	6,366	185	17,807	1,301	24	18	4,544	0	2,182	7	41	32,475
1991	2,016	0	14,489	3,160	9	77	2,716	6	4,939	174	1,463	29,049
1992	1,719	402	18,376	2,028	22	156	2,535	0	3,063	229	8,635	37,165
1993	3,525	1,642	26,831	1,924	15	95	770	0	1,796	105	8,806	45,509
1994	1,813	2,598	23,214	530	170	237	1,130	0	1,429	447	9,878	41,447
1995	1,664	2,106	28,760	574	294	934	2,389	63	3,117	810	9,357	50,068
1996	911	1,080	26,959	1,129	706	1,328	4,635	0	7,151	2,483	13,674	60,055
1997	449	1,009	21,665	1,015	347	488	3,950	0	4,227	4,275	3,035	40,460
1998	274	1,893	24,911	1,769	267	1,457	6,305	2	2,399	3,190	3,008	45,476
1999	35	1,239	14,915	1,338	88	1,453	3,925	0	2,134	5,018	2,617	32,760
2000	8	2,335	5,762	306	30	1,906	5,222	0	450	1,545	2,845	20,407
2001	0	536	3,913	394	7	63	17	0	0	126	0	5,056
2002	1	349	3,799	438	0	50	1	0	2	196	3	4,839
2003	0	175	2,006	123	1	38	0	0	1	236	0	2,579
2004	3	0	1,208	149	50	53	7	0	6	261	423	2,160
2005	29	153	1997	147	84	48	1	0	6	63	8	2,535
2006	184	620	2797	549	81	15	0	0	21	941	4	5,212
2007	109	185	2,795	525	23	25	14	0	23	3,895	129	7,723

Source: unpublished NMFS Dealer Reports, South Atlantic General Canvass data.

Table 3. Ex-vessel value and price per pound of commercially landed spiny dogfish, Maine - North Carolina combined, 1996-2007.

Calendar Year	Value ($1,000)	Price ($/lb)	Fishing Year	Value ($1,000)	Price ($/lb)
1996	10,877	0.18	1996	10,371	0.18
1997	6,781	0.15	1997	5,717	0.14
1998	7,833	0.17	1998	8,338	0.17
1999	5,400	0.16	1999	5,510	0.17
2000	4,342	0.21	2000	1,989	0.24
2001	1,137	0.22	2001	1,147	0.23
2002	989	0.20	2002	970	0.20
2003	364	0.14	2003	415	0.12
2004	311	0.14	2004	260	0.17
2005	479	0.19	2005	545	0.21
2006	1,188	0.23	2006	1,434	0.22
2007	1,508	0.20	2007	1,360	0.20

Source: Unpublished NMFS Dealer Weighout and South Atlantic General Canvass data.

Table 4. Spiny dogfish landings (lbs) by month in FY2007.

	Month	Landings(lbs)	Pct of Total
Period 1	May	552,476	8.1%
	Jun	777,959	11.4%
	Jul	951,930	14.0%
	Aug	74,024	1.1%
	Sep	1,614,344	23.8%
	Oct	124,023	1.8%
	Total	**4,094,756**	**60.3%**
Period 2	Nov	124,188	1.8%
	Dec	1,398,610	20.6%
	Jan	1,173,842	17.3%
	Feb	0	0.0%
	Mar	2,744	0.0%
	Apr	499	0.0%
	Total	**2,699,883**	**39.7%**
	Grand Total	**6,794,639**	**100.0%**

Source: Unpublished NMFS dealer reports

Table 5. Recreational landings (N) of spiny dogfish by state for 2007.

State	Landings (N)	Pct of Total
MASSACHUSETTS	19,252	57%
DELAWARE	4,200	12%
NEW JERSEY	3,199	9%
MARYLAND	2,772	8%
NEW HAMPSHIRE	1,679	5%
CONNECTICUT	1,364	4%

NORTH CAROLINA	698	2%
OTHER	545	2%
TOTAL	33,709	100%

Source: NMFS Marine Recreational Fisheries Statistical Survey

Table 6. Commercial gear types associated with spiny dogfish harvest in FY2007.

Commercial Gear Type	Landings (1,000s lbs)	Pct Total
GILL NET	4,125,925	60.72%
HOOK AND LINE	1,081,705	15.92%
UNKNOWN	1,058,030	15.57%
TRAWL, OTTER, BOTTOM	285,818	4.21%
OTHER	243,161	3.58%
Total	6,794,639	100.00%

Source: Unpublished NMFS dealer reports

Table 7. Discards associated with the deployment of the dominant gear types used to harvest spiny dogfish in 2007 as reported in vessel trip report (VTR) data. Species comprising 2% or more of the discards by gear are shown.

Gill Nets, Sink			Bottom Otter trawl			Hook and Line		
Discard Species	**Discards (lbs)**	**Pct Of Total for this Gear**	**Discard Species**	**Discards (lbs)**	**Pct Of Total for this Gear**	**Discard Species**	**Discards (lbs)**	**Pct Of Total for this Gear**
DOGFISH SPINY	958,861	92.7%	DOGFISH, SPINY	140,766	37.8%	DOGFISH, SPINY	96,389	99.8%
COD, ATLANTIC	28,383	2.7%	SKATE, LITTLE	99,310	26.7%	OTHER	226	0.2%
OTHER	47,385	4.6%	HADDOCK	43,913	11.8%			
			COD, ATLANTIC	25,429	6.8%			
			SKATE, NK	17,110	4.6%			
			OTHER	45,419	12.2%			
Total	**1,034,629**	**100%**	**Total**	**371,947**	**100%**	**Total**	**96,615**	**100%**

Source: 2007 vessel trip reports

Table 8. Federally permitted dogfish vessel activity by home port state in FY2007. Active vessels are defined as vessels identified in the dealer reports as having landed spiny dogfish in FY2007.

State	Permitted Vessels	Pct of Total
MA	1,124	35.8%
NJ	444	14.1%
ME	393	12.5%
NY	292	9.3%
RI	210	6.7%
NC	174	5.5%
NH	151	4.8%
VA	130	4.1%
CT	61	1.9%
MD	57	1.8%
DE	41	1.3%
PA	28	0.9%
FL	19	0.6%
GA	9	0.3%
ALL OTHERS	9	0.3%
TOTAL	3,142	100.0%

State	Active Vessels	Pct of Total
MA	120	46.7%
RI	42	16.3%
NH	32	12.5%
ME	21	8.2%
NY	19	7.4%
VA	10	3.9%
NJ	6	2.3%
MD	4	1.6%
ALL OTHERS	3	1.2%
TOTAL	257	100.0%

Source: NMFS permit database, Dealer weighout data

Table 9. Federally permitted spiny dogfish dealers by state in FY2007. Active dealers are defined as dealers identified in the federal dealer reports as having bought spiny dogfish in FY2007.

State	Permitted Dealers	Pct of Total	State	Active Dealers	Pct of Total
MA	79	27.4%	MA	18	29.5%
NY	62	21.5%	NY	13	21.3%
NJ	38	13.2%	RI	11	18.0%
RI	28	9.7%	VA	6	9.8%
NC	25	8.7%	NC	4	6.6%
VA	21	7.3%	ALL OTHERS	9	14.8%
ME	13	4.5%	TOTAL	61	100.0%
MD	8	2.8%			
NH	7	2.4%			
ALL OTHERS	7	2.4%			
TOTAL	288	100.0%			

Source: NMFS permit database, Dealer weighout data

Table 10. Commercial landings (lbs) and value of spiny dogfish by port for fishing year 2007.

Port	Landings (lbs)	Pct of Total	Value ($)	Pct of Total
GLOUCESTER, MASSACHUSETTS	1,131,893	16.7%	255,102	18.8%
LYNNHAVEN, VIRGINIA	1,004,410	14.8%	200,762	14.8%
CHATHAM, MASSACHUSETTS	666,481	9.8%	145,804	10.7%
WACHAPREAGUE, VIRGINIA	548,748	8.1%	99,354	7.3%
CHINCOTEAGUE, VIRGINIA	498,231	7.3%	94,079	6.9%
VIRGINIA BEACH/LYNNHAVEN, VIRGINIA	449,439	6.6%	65,281	4.8%
ACCOMAC, VIRGINIA	372,283	5.5%	52,737	3.9%
PROVINCETOWN, MASSACHUSETTS	250,299	3.7%	50,419	3.7%
LITTLE COMPTON, RHODE ISLAND	240,109	3.5%	52,661	3.9%
MARSHFIELD, MASSACHUSETTS	234,566	3.5%	70,368	5.2%
MARBLEHEAD, MASSACHUSETTS	230,677	3.4%	51,688	3.8%
POINT JUDITH, RHODE ISLAND	169,073	2.5%	23,145	1.7%
ALL OTHERS	998,430	14.7%	198,646	14.6%
TOTAL	**6,794,639**	**100.0%**	**1,360,046**	**100.0%**

Source: Unpublished NMFS Dealer Reports