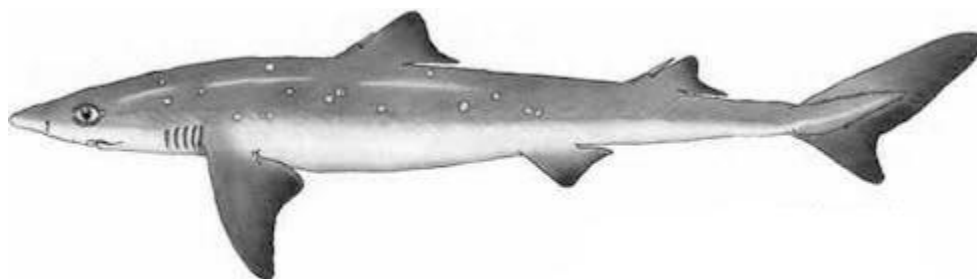


Specifications and Management Measures For:
Spiny Dogfish (2019-2021)

Includes text for DRAFT Environmental Assessment



Prepared by the

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2.0 EXECUTIVE SUMMARY

This spiny dogfish specifications document was prepared by the Mid-Atlantic Fishery Management Council (MAFMC) in consultation with the National Marine Fisheries Service (NMFS). The stock is jointly managed with the New England Fishery Management Council (NEFMC). NMFS may modify the Councils' recommendations using any measures not rejected by both Councils. This document's purpose is to present a reasonable range of spiny dogfish specification alternatives and characterize their impacts. These specifications will set the commercial fishery quotas for spiny dogfish in the 2019 through 2021 fishing years (each fishing year is May 1 – Apr 30 of the following year) and are needed to prevent overfishing and to achieve optimum yield. This document was developed in accordance with a number of applicable laws and statutes that are described in Section 8.

Summary of Current and Preferred Alternatives

For the 2018 fishing year, the year preceding the measures proposed via this action, the domestic spiny dogfish Acceptable Biological Catch (ABC), Annual Catch Limit (ACL), and Annual Catch Target (ACT) were 49,758,333 pounds. Accounting for Canadian catch, recreational catch, and discards resulted in a commercial quota of 38,195,822 pounds. These current specifications are detailed in Section 5 as the no-action/status quo alternative (Alternative 1), since the spiny dogfish regulations automatically roll-over if no new regulations are promulgated.

An updated assessment concluded that the stock is lower than previously thought (but no overfishing and not overfished), and the MAFMC's Scientific and Statistical Committee (SSC) accordingly recommended a lower ABC, which then affects all of the other specifications. The table below details the new ABCs/ACLs/ACTs and commercial quotas recommended by the MAFMC at its October 2018 meeting for the 2019-2021 fishing years. The specifications increase somewhat over the three years because the spiny dogfish stock is expected to grow during this time period.

Table 1. MAFMC Preferred Spiny Dogfish Specifications 2019-2021.

Specifications	Basis	2019 (pounds)	2019 (mt)	2020 (pounds)	2020 (mt)	2021 (pounds)	2021 (mt)
OFL (from SSC)	Projected Catch at Fmsy	47,507,413	21,549	na	na	na	na
ABC (from SSC)	Council Risk Policy	28,470,497	12,914	31,142,499	14,126	35,368,761	16,043
Canadian Landings	= 2017 estimate	108,027	49	108,027	49	108,027	49
Domestic ABC	= ABC – Canadian Landings	28,362,470	12,865	31,034,473	14,077	35,260,734	15,994
ACL	= Domestic ABC	28,362,470	12,865	31,034,473	14,077	35,260,734	15,994
Mgmt Uncert Buffer	Ave pct overage since 2011	0	0	0	0	0	0
ACT	= ACL - mgmt uncert buffer	28,362,470	12,865	31,034,473	14,077	35,260,734	15,994
U.S. Discards	=3 year average 15-16-17	7,661,064	3,475	7,661,064	3,475	7,661,064	3,475
TAL	ACT – Discards	20,701,406	9,390	23,373,409	10,602	27,599,671	12,519
U.S. Rec Landings	= 2017 estimate	178,574	81	178,574	81	178,574	81
Comm Quota	TAL – Rec Landings	20,522,832	9,309	23,194,835	10,521	27,421,096	12,438

Summary of Impacts

Target Species Impact Summary

Compared to no action, the preferred measures would have a low positive impact, avoid overfishing, and allow the stock to gradually increase to the target stock size, due to the more restrictive quotas.

Non-Target Species Impact Summary

Compared to no action, the preferred measures would have low positive impacts related to the more restrictive quotas.

Habitat Impact Summary

Compared to no action, the preferred measures would have similar (minimal) habitat impacts.

Protected Resources Impact Summary

Compared to no action, the preferred measures would have similar to low positive impacts on protected species, related to the more restrictive quotas.

Human Communities Impact Summary

Compared to no action, the preferred measures may have low negative short term impacts but should have long term positive due to avoiding overfishing and achievement of optimum yield.

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3.0 COMMON ACRONYMS AND ABBREVIATIONS

ABC	Annual Biological Catch	MAFMC	Mid-Atlantic Fishery Management Council
ACL	Annual Catch Limit	MMPA	Marine Mammal Protection Act
ALWTRP	Atlantic Large Whale Take Reduction Plan	MRFSS	Marine Recreational Fisheries Statistical Survey
AM	Accountability Measure	MSA	Magnuson-Stevens Fishery Conservation and Management Act
ASAP	Age Structured Assessment Program	MSY	Maximum Sustainable Yield
ASMFC	Atlantic States Marine Fisheries Commission	NAO	NOAA Administrative Order
CEA	Cumulative Effects Assessment	NEFSC	Northeast Fisheries Science Center
CEQ	Council on Environmental Quality	NEFOP	Northeast Fisheries Observer Program
CFR	Code of Federal Regulations	NEPA	National Environmental Policy Act
CV	Coefficient of Variation	NERO	Northeast Regional Office
CZMA	Coastal Zone Management Act	NMFS	National Marine Fisheries Service
DPS	Distinct Population Segment	NOAA	National Oceanic and Atmospheric Administration
DPSWG	Data Poor Stocks Working Group	OFL	Overfishing Limit
EA	Environmental Assessment	OY	Optimal Yield
EEZ	Exclusive Economic Zone	PRA	Paperwork Reduction Act
EFH	Essential Fish Habitat	RFA	Regulatory Flexibility Act
EFP	Exempted Fishing Permit	RIR	Regulatory Impact Review
EIS	Environmental Impact Statement	RSA	Research Set-Aside
EO	Executive Order	SARC	Stock Assessment Review Committee
ESA	Endangered Species Act of 1973	SAW	Stock Assessment Workshop
F	Fishing Mortality Rate	SFA	Sustainable Fisheries Act
FR	Federal Register	SBA	Small Business Administration
FMP	Fishery Management Plan	SSB	Spawning Stock Biomass
FONSI	Finding of No Significant Impact	SSC	Scientific and Statistical Committee
GARFO	Greater Atlantic Regional Fisheries Office	TED	Turtle Excluder Device
HPTRP	Harbor Porpoise Take Reduction Plan		
IRFA	Initial Regulatory Flexibility Analysis	US	United States
LNG	Liquefied Natural Gas	VECs	Valued Ecosystem Components
LOF	List of Fisheries	VTR	Vessel Trip Report
LWTRP	Large Whale Take Reduction Plan		
M	Million		

4.0 INTRODUCTION

This document evaluates potential impacts that would result from the proposed action to implement spiny dogfish specifications for fishing years 2019-2021. In accordance with the National Environmental Policy Act (NEPA), for actions with non-significant impacts, NMFS evaluates the potential impacts of management measures through an Environmental Assessment (EA), i.e. this document in its eventual final form. Beneficial and adverse impacts of the actions are evaluated, allowing a determination to be made whether there are significant impacts to the human environment. This EA presents impact information on the managed resource (spiny dogfish), non-target species, protected resources, habitat, and human communities that would result from approving and implementing this action.

4.1 Background

The spiny dogfish fishery in U.S. waters of the western Atlantic Ocean is managed under the Spiny Dogfish FMP that was prepared cooperatively by the MAFMC and NEFMC. The plan was approved by NMFS in 2000. Following the 2007 reauthorization of the MSA, the FMP was amended through Amendment 2 to the FMP (MAFMC 2011) in order to implement annual catch limits (ACLs) and accountability measures (AMs) for the fishery. These actions, as informed by the MAFMC's risk policy (also established in Amendment 2) created the specifications process currently in use.

This document, which describes the action and its impacts, was developed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the National Environmental Policy Act of 1969 (NEPA), and the Spiny Dogfish Fishery Management Plan (FMP). The MSA is the primary domestic legislation governing fisheries management in the U.S. Exclusive Economic Zone (EEZ) and compliance with the MSA requires preventing overfishing and achieving optimum yield. The MAFMC's SSC provides ongoing catch recommendations for preventing overfishing. The Spiny Dogfish Monitoring Committee recommends specific management measures to constrain spiny dogfish catch to desired levels. The advice of the SSC and Monitoring Committee, as well as the advice of the Spiny Dogfish Advisory Panel (AP), form the basis for the Councils' development of the spiny dogfish specifications. Public input was solicited during an AP meeting (August 2018), the SSC meeting (September 2018), a Spiny Dogfish Monitoring Committee Meeting (September 2018), a Spiny Dogfish Committee meeting (September 2018), and at meetings of the MAFMC (October 2018) and the NEFMC (December 2018).

The current regulations for this fishery are summarized at <https://www.greateratlantic.fisheries.noaa.gov/regs/info.html> and the official regulations may be found at 50 CFR part 648 (<http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=1e9802ffddb05d0243d9c657fade956c&rgn=div5&view=text&node=50:12.0.1.1.5&idno=50>). The Atlantic States Marine Fisheries Commission (ASMFC) coordinates interstate management in a complementary fashion with federal management, and ASMFC-related information is available at <http://www.asmfc.org/species/spiny-dogfish>.

According to the FMP, management measures can be specified for up to five years. The SSC and Monitoring Committee took into account sources of scientific and management uncertainty associated with multi-year management measures in making their recommendations for three year specifications. Further elaboration of this is provided in the respective Committee summaries available at www.mafmc.org. The specifications considered in this document are for three fishing years, 2019-2021 (the 2021 fishing year ends April 30, 2022).

Figure 1 (next page) provides a diagram of the process for determining annual spiny dogfish specifications as established in Amendment 2 to the FMP (MAFMC 2011). The SSC first identifies the catch level above which overfishing occurs (overfishing limit or OFL) as well as the acceptable biological catch (ABC). The ABC adequately accounts for scientific uncertainty in the estimate of OFL and the condition of the stock to achieve the MAFMC's desired risk of overfishing. Next, the Monitoring Committee recommends the annual catch limit (ACL) which, if exceeded, would trigger accountability measures (AMs) such as reductions in future year landings. By accounting for assumed Canadian landings in the upcoming year, the catch limit recommended by the Monitoring Committee reflects a "domestic ACL. The Monitoring Committee further recommends a catch level at or below ACL called the annual catch target (ACT) that accounts for uncertainty in the efficacy of the management measures. The discarded component of catch is deducted to arrive at the total allowable landings (TAL). Assumed recreational landings are deducted from the TAL in order to constrain overall catch and arrive at an appropriate commercial quota. The Spiny Dogfish Committee makes recommendations to the Councils, and the Councils make recommendations to NOAA Fisheries.

NOAA Fisheries will publish a proposed rule along with this Environmental Assessment for public comment. After considering public comments on the proposed rule, NOAA Fisheries will publish a final rule with implementation details as long as the action is ultimately approved by NOAA Fisheries. NMFS may modify the Councils' recommendations using any of the measures that were not rejected by both Councils. This modification provision usually applies in cases where the Councils do not agree in their recommendations.

4.2 Purpose and Need for the Action

This action is needed to avoid overfishing and achieve optimum yield. The purpose of this action is to consider specifications that will avoid overfishing and achieve optimum yield.

Spiny Dogfish Specification Process

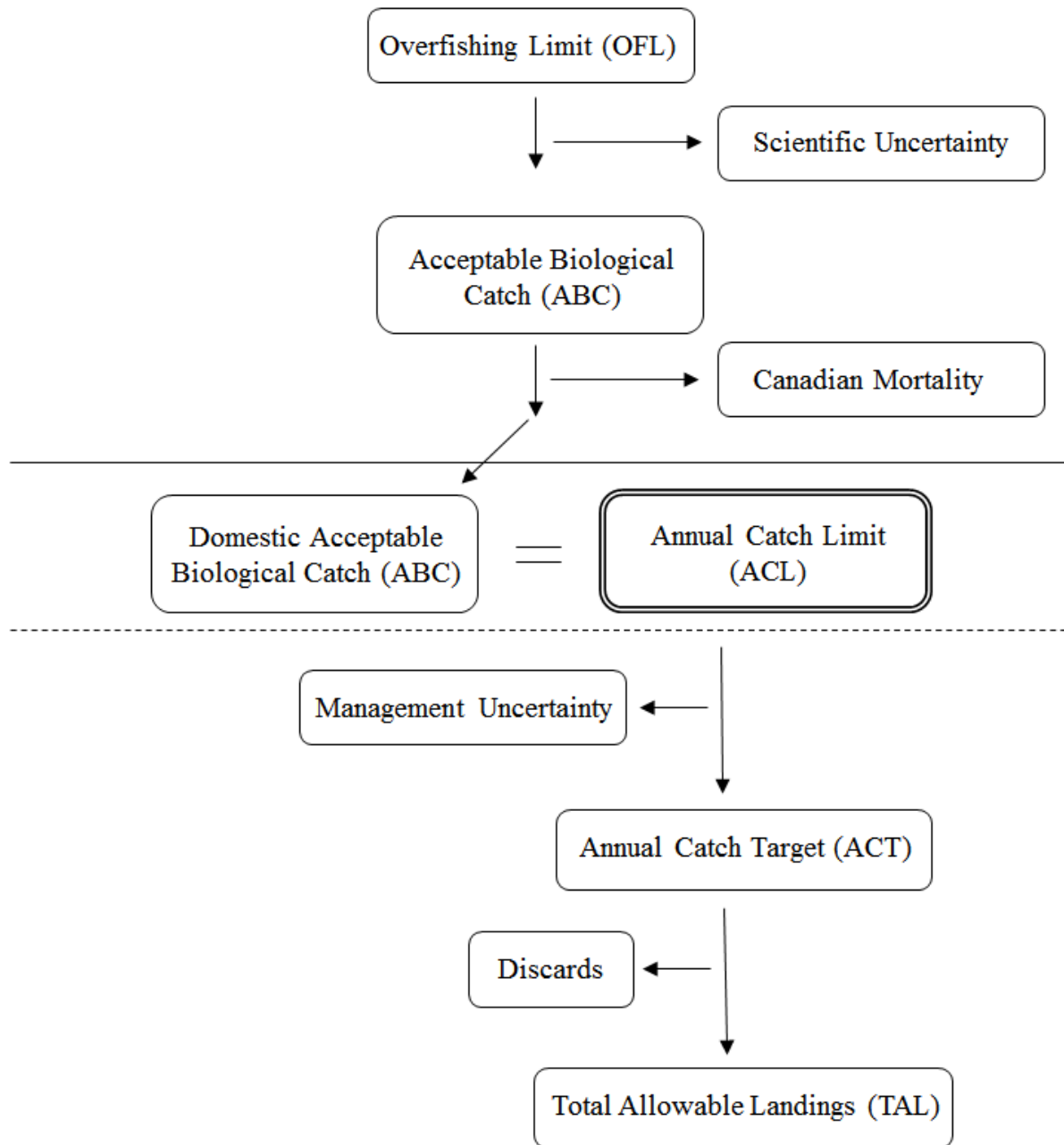


Figure 1. Specification process for spiny dogfish as described in Amendment 2 to the Spiny dogfish FMP (Omnibus ACL/AM Amendment).

5.0 WHAT ALTERNATIVES ARE CONSIDERED IN THIS DOCUMENT?

Introduction

No action or *the no action alternative* is equivalent to the current (“status quo”) specifications¹ because the current regulations contain a "roll-over" provision. This provision specifies that if NMFS fails to publish annual specifications before the start of the new fishing year, then the previous year’s specifications remain in effect.

The MAFMC has recommended the other alternative in this document. It is currently the only other alternative in the document because it, combined with the no action alternative, represent a reasonable range of alternatives for purposes of NEPA analysis given the status of the spiny dogfish stock and the requirements of the MSA. Alternatives that would allow catches higher than the no action alternative would risk overfishing even more than no action. Alternatives that would limit catches to less than the alternative recommended by the MAFMC would be unnecessarily restrictive and hamper achievement of optimum yield. No other management measure changes were recommended by the MAFMC. If recommendations from the NEFMC require modifications to the alternative structure of this document, then those edits will be incorporated after their December 2018 meeting.

[If the Council adds a Trip Limit Framework to the list of 2019 Deliverables/Priorities, add mention of that here.]

At its September 2018 meeting, the NEFMC recommended via a Council vote and subsequent letter that the MAFMC increase the trip limit up to 8,000 pounds. Given the likely reduction in quotas and potential differential regional impacts from changes to trip limits, the MAFMC declined to make any recommendations regarding changes to trip limits via this specifications process. The NEFMC also recommended that an action be considered regarding trip limits that includes removing the federal dogfish trip limit, and in December 2018 the MAFMC will consider such an action among its priorities for 2019.

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¹ Note on research set-asides (RSA): The RSA program has been suspended by the Council pending further review of its overall utility.

5.1 Alternative 1: No Action, Which Would Maintain the Status Quo

Since the FMP has a rollover provision, if no action is taken then all the current specifications and management measures remain in place. The current dogfish regulations are available at <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=1e9802ffddb05d0243d9c657fade956c&rgn=div5&view=text&node=50:12.0.1.1.5&idno=50>. NMFS has also created an overview regulatory webpage, available at <http://www.greateratlantic.fisheries.noaa.gov/regs/info.html>. For the purposes of this document, taking no action has a specific meaning in relation to the specifications: the 2018 fishing year specifications would apply to the 2019 fishing year, as described in the following table.

Table 2. No action/status quo specifications.

Specifications	Basis	2018 (pounds)	2018 (mt)
OFL	Projected Catch at Fmsy	na	na
New ABCs	Council Risk Policy	49,901,633	22,635
Canadian Landings	= avg last 3 years (10,11,12)	143,300	65
Domestic ABC	= ABC – Canadian Landings	49,758,333	22,570
ACL	= Domestic ABC	49,758,333	22,570
Mgmt Uncert. Buffer	Ave pct overage since 2011	0	0
ACT	= ACL - mgmt uncertainty	49,758,333	22,570
U.S. Discards	=3 year average 12-13-14	11,494,167	5,214
TAL	ACT – Discards	38,264,165	17,356
U.S. Rec Landings	= 2014 estimate	68,343	31
Comm Quota	TAL – Rec Landings	38,195,822	17,325

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5.2 Alternative 2: New 2016-2018 SPINY DOGFISH Specifications (PREFERRED)

Alternative 2 (see table below) is the currently preferred alternative because it utilizes the current SSC ABC recommendation, and conforms to the Spiny Dogfish FMP in terms of how specifications are set to derive the commercial quota. It resulted from the SSC's implementation of the Council's risk policy to use ABCs that avoid overfishing, and utilized stock size estimates and projections from a 2018 assessment update that used the methods from the last peer-reviewed assessment. Since the stock is below the target, the tolerated risks of overfishing in each year are relatively low: 26.9%, 27.4%, and 29.6% for 2019, 2020, and 2021 respectively. The tolerated risk of overfishing and ABCs increase each year because the stock size is growing, and the Council tolerates less risk at low stock sizes and more risk at higher stock sizes. The additional tolerated risk with the growing stock size leads to the higher ABCs in future years.

To get the portion of the total ABC available for the U.S. commercial quota, expected discards, Canadian landings, and recreational landings are deducted as per the table below. While it can be difficult to predict these values from past data, the Monitoring Committee recommended the utilized values as providing the best estimate of future catch given the available data and correlation analyses that indicated linkages between past data and expected future results.

Table 3. Preferred Spiny Dogfish Specifications

Specifications	Basis	2019 (pounds)	2019 (mt)	2020 (pounds)	2020 (mt)	2021 (pounds)	2021 (mt)
OFL (from SSC)	Projected Catch at Fmsy	0	0	na	na	na	na
ABC (from SSC)	Council Risk Policy	28,470,497	12,914	31,142,499	14,126	35,368,761	16,043
Canadian Landings	= 2017 estimate	108,027	49	108,027	49	108,027	49
Domestic ABC	= ABC – Canadian Landings	28,362,470	12,865	31,034,473	14,077	35,260,734	15,994
ACL	= Domestic ABC	28,362,470	12,865	31,034,473	14,077	35,260,734	15,994
Mgmt Uncert Buffer	Ave pct overage since 2011	0	0	0	0	0	0
ACT	= ACL - mgmt uncert buffer	28,362,470	12,865	31,034,473	14,077	35,260,734	15,994
U.S. Discards	=3 year average 15-16-17	7,661,064	3,475	7,661,064	3,475	7,661,064	3,475
TAL	ACT – Discards	20,701,406	9,390	23,373,409	10,602	27,599,671	12,519
U.S. Rec Landings	= 2017 estimate	178,574	81	178,574	81	178,574	81
Comm Quota	TAL – Rec Landings	20,522,832	9,309	23,194,835	10,521	27,421,096	12,438

6.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES

6.1 Description of the Managed Resource

6.1.1 Description of the Fisheries

The management unit for spiny dogfish is all spiny dogfish in U.S. waters of the western Atlantic Ocean. An overview of the stock and associated commercial fishery landings is provided below. Additional fishery performance details are provided in Section 6.4.

6.1.1.1 SPINY DOGFISH STOCK

Reports on “Stock Status,” including annual assessment updates, Stock Assessment Workshop (SAW) reports, Stock Assessment Review Committee (SARC) panelist reports and peer-review panelist reports are available online at the NEFSC website:

<http://www.nefsc.noaa.gov/nefsc/saw/>. EFH Source Documents, which include details on stock characteristics and ecological relationships, are available at the following website:

<http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

Figure 2 below provides a snapshot of several relevant characteristics of the spiny dogfish stock that influence management of the commercial fishery. Among these are: 1) Spiny dogfish are slow growing and, therefore, recovery of an overly exploited stock can require prolonged rebuilding. 2) Males and females grow at different rates and to different maximum sizes such that the largest fish in the population are almost all female and these are more valuable to the commercial fishery. 3) Litter size, or fecundity, increases with age such that productivity can be markedly hampered by an absence of large females in the stock. 4) Maturity is delayed (12-21 years) in females such that the immature stock is susceptible to mortality for a prolonged period before contributing to stock production.

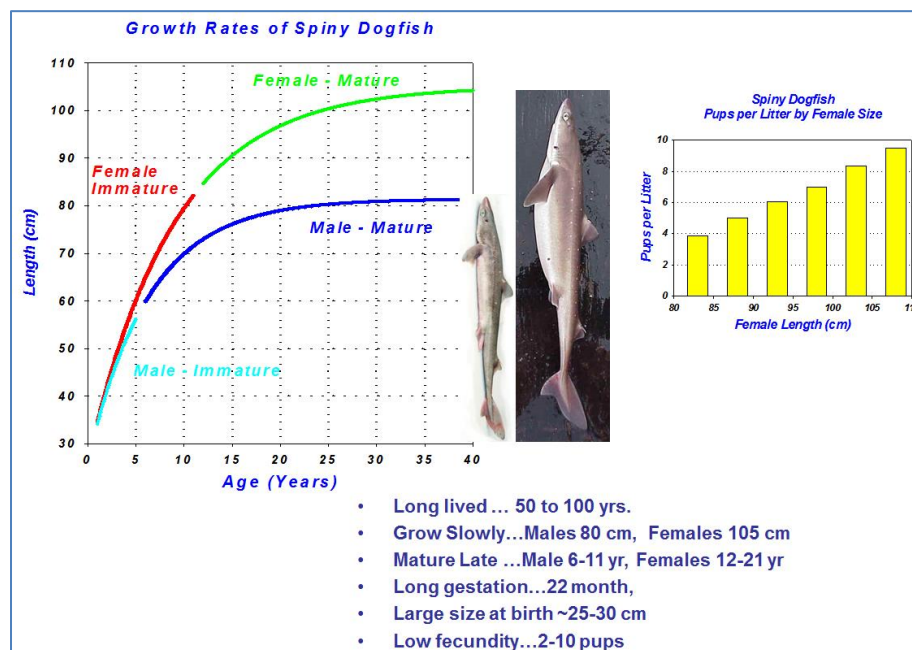


Figure 2. Summary of biological characteristics spiny dogfish relevant to the species' commercial fisheries exploitation (from Rago 2010 unpubl.).

Historical Stock Condition

At the onset of the domestic commercial 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 pounds). A large scale unregulated fishery developed and quickly depleted the stock of mature female spiny dogfish such that in 1997 a stock assessment showed that the stock was *overfished* (NEFSC 1997). The Spiny Dogfish FMP was developed in 1998 and implemented in 2000 in order to halt further depletion of mature female spiny dogfish and allow the stock to recover to a sustainable level. Because the directed commercial fishery concentrated on mature females, rebuilding required elimination of that directed fishery. In 2010 the Northeast Regional Office (NERO) of NMFS communicated the successful *rebuilt* status of the stock to the Councils.

Current Stock Condition

Not Overfished

The Bmsy reference point defines when the stock is rebuilt (above Bmsy) and overfished (below $\frac{1}{2}$ Bmsy). For spiny dogfish, Bmsy (proxy) is the spawning stock biomass that maximizes recruitment (SSBmax) in a Ricker type (dome-shaped) stock-recruitment model (Rago and Sosebee 2010). SSBmax is estimated to be 159,288 mt (351 million pounds (Mlb)) with $\frac{1}{2}$ of that target corresponding to the biomass threshold (79,644 mt; 176 Mlb). In 2018, the Northeast Fisheries Science Center (NEFSC) updated their assessment of the spiny dogfish stock using updated catch and survey data (<http://www.mafmc.org/s/2018-Status-Report-for-spiny-dogfish.pdf>). The updated estimate of SSB for 2018, which is strongly tied to the 2016-2018 average mature female biomass index from the NEFSC spring trawl survey (Figure 3), is 106,753 MT (235 Mlb), about 33% below the target of 159,288 mt. In updating the assessment and setting ABCs, the NEFSC and SSC considered whether the very low 2017 data point (second to last) from the NEFSC spring trawl survey should be discounted, but there was no objective reason to ignore it besides it being low and so the 2017 value was retained in the 2016-2018 average. Of the spring surveys from 2016-2018, the surveys ran late in 2016 and 2018, so from a survey operations perspective 2017 would actually be most comparable to the overall time series.

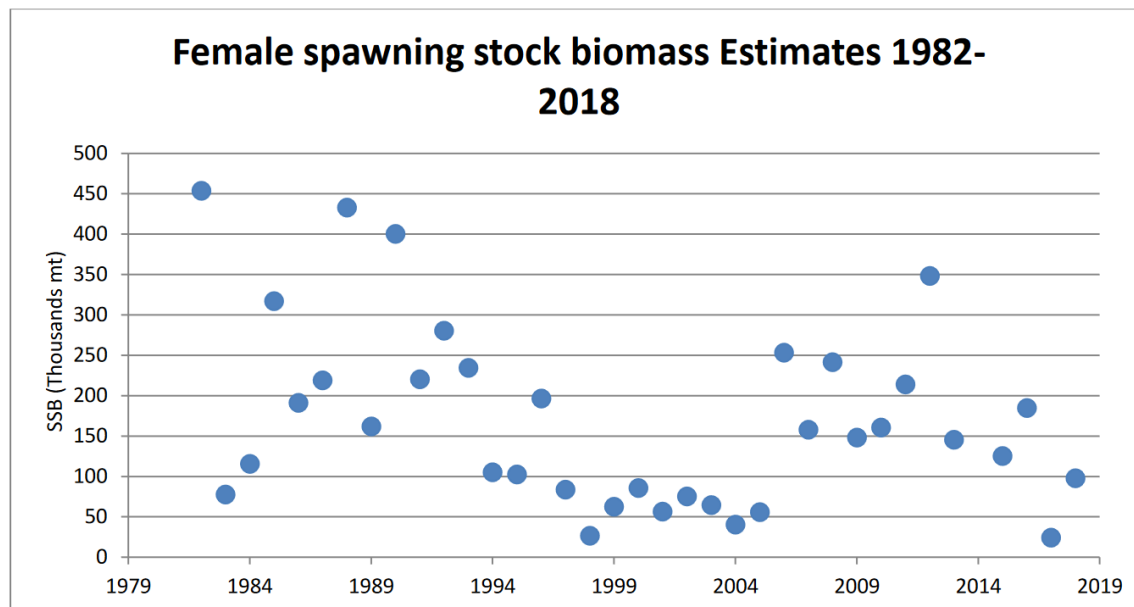


Figure 3. Swept area estimates of female mature biomass (≥ 80 cm) from the NEFSC spring survey from 1980-2018.

Overfishing not Occurring

A review by the Council's SSC in 2011 was conducted to establish its endorsement of a fishing mortality reference point that defines when overfishing is occurring (F_{msy}). The updated fishing mortality reference point provided by the NEFSC is $F_{msy} = 0.2439$. All accountable sources of removals contribute to the annual estimate of fishing mortality (F) under the current assessment. For the most recent full year of catch data (2017), the estimated F was .202 so overfishing is not occurring. For 2019 the SSC calculated the overfishing level point estimate would be 47.5 million pounds (21,549 mt).

Future Stock Condition

Projections of stock biomass were provided as part of the NEFSC's stock status update. With the ABCs resulting from the Council's risk policy, the stock should increase for the next 4-6 years until approaching the target biomass and then should remain near the target biomass.

6.1.2 Non-Target Species

Discards of non-target species in the directed spiny dogfish fishery are difficult to characterize since defining a directed fishery can be done a number of ways. Staff examined observer data 2015-2017 from fixed sink gillnets, drift sink gillnets, and bottom longlines, which accounted for most spiny dogfish landings in 2017 with known gear types in dealer data. Only trips that retained at least 100 pounds of spiny dogfish were included in the analysis, the results of which are described in the table below. The scales of each fishery are not the same and the observer coverage may also vary so the results for the different gear types are not directly comparable, but it would appear that the fixed gill net fishery has the greatest magnitude of discards and variety of species that are discarded. Information on discards is provided for observed hauls in the table below for species with at least 500 pounds of discards, with 500 pounds used as a proxy for discards that might be more than negligible.

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Table 4. 2015-2017 discards associated with the dominant gear types used to harvest spiny dogfish in 2017, as reported in northeast fisheries observer program (NEFOP) trips when at least 100 pounds of spiny dogfish was retained.

Fixed Sink Gill Net			Drift Sink Gill Net			Bottom Long Line		
Species	Pounds Discarded	Percent of All Discards	Species	Pounds Discarded	Percent of All Discards	Species	Pounds Discarded	Percent of All Discards
DOGFISH, SPINY	103,377	38.8%	DOGFISH, SPINY	21,124	81.5%	SKATE, BARNDOR	35,332	39.9%
SKATE, WINTER (BIG)	43,139	16.2%	BASS, STRIPED	1,617	6.2%	DOGFISH, SPINY	25,196	28.4%
LOBSTER, AMERICAN	29,283	11.0%	SKATE, LITTLE	1,427	5.5%	DOGFISH, SMOOTH	18,377	20.7%
SKATE, LITTLE	21,655	8.1%	DOGFISH, SMOOTH	509	2.0%	SKATE, WINTER (BIG)	5,965	6.7%
SKATE, BARNDOR	14,014	5.3%	Other	1,250	4.8%	DEBRIS, FISHING GEAR	1,031	1.2%
SKATE, NK	6,895	2.6%	Total	25,927	100.0%	HAKE, SPOTTED	516	0.6%
CRAB, JONAH	5,460	2.0%				Other	2,185	2.5%
MONKFISH (GOOSEFISH)	4,845	1.8%				Total	88,602	100.0%
BASS, STRIPED	3,080	1.2%						
CRAB, HORSESHOE	2,675	1.0%						
DOGFISH, SMOOTH	2,364	0.9%						
SKATE, THORNY	2,264	0.8%						
FISH, NK	2,117	0.8%						
RAVEN, SEA	1,950	0.7%						
POLLOCK	1,949	0.7%						
SKATE, LITTLE/WINTER, NK	1,789	0.7%						
HALIBUT, ATLANTIC	1,761	0.7%						
CRAB, SPIDER, NK	1,645	0.6%						
BLUEFISH	1,535	0.6%						
MENHADEN, ATLANTIC	1,408	0.5%						
FLOUNDER, SUMMER	1,096	0.4%						
SKATE, CLEARNOSE	1,093	0.4%						
HAKE, SILVER (WHITING)	997	0.4%						
COD, ATLANTIC	898	0.3%						
CRAB, ROCK	870	0.3%						
SHAD, AMERICAN	649	0.2%						
CRAB, NORTHERN STONE	598	0.2%						
HADDOCK	581	0.2%						
CRAB, CANCER, NK	533	0.2%						
CRAB, SPIDER, PORTLY	513	0.2%						
Other	5,427	2.0%						
Total	266,457	100.0%						

Source: Northeast Fishery Observer Program unpublished data

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6.2 *Habitat (Including Essential Fish Habitat)*

A description of the habitat associated with the spiny dogfish fishery is presented in Section 6.2 of Amendment 3 to the FMP (MAFMC 2014), and a brief summary of that information is given here. The impact of fishing on spiny dogfish habitat (and EFH) as well as the impact of the fishery on other species' habitats and EFH can also be found in Section 6.2 of Amendment 3. Potential impacts on habitat (including EFH) associated with the actions proposed in this specifications document are discussed in Section 7.

6.2.1 **Physical Environment**

A report entitled "Characterization of Fishing Practices and the Marine Benthic Ecosystems of the Northeast U.S. Shelf, and an Evaluation of the Potential Effects of Fishing on Essential Fish Habitat" was developed by NMFS (Stevenson et al. 2004). The document provides additional descriptive information on the physical and biological features of regional subsystems and habitats in the Northeast Shelf Ecosystem. It also includes a description of fishing gears used in the NMFS Northeast region, maps showing the regional distribution of fishing activity by different gear types during 1995-2001, and a summary of gear impact studies published prior to 2002 that indicate how and to what degree fishing practices used in the NMFS Northeast region affect benthic habitats and species managed by the New England and Mid-Atlantic fishery management councils. It is available by request through the NMFS Northeast Regional Office or electronically at: <http://www.nefsc.noaa.gov/nefsc/publications>.

The Northeast Shelf Ecosystem has been described as the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream (Sherman et al. 1996). The Gulf of Maine, Georges Bank, and Mid-Atlantic Bight are distinct subsystems within this region.

The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and fast-moving currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC.

6.2.2 **ESSENTIAL FISH HABITAT (EFH)**

Additional information on spiny dogfish habitat requirements can be found in the documents titled, "Essential Fish Habitat Source Document: Spiny Dogfish, *Squalus acanthias*, Life History and Habitat Characteristics" (Stehlik 2007). Electronic versions of these source documents are available at the following website: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

The current EFH designations by life history stage for spiny dogfish are:

Juveniles (male and female, <36 cm):

Pelagic and epibenthic habitats, primarily in deep water on the outer continental shelf and slope between Cape Hatteras and Georges Bank and in the Gulf of Maine, as depicted in Figure 5 [*in Amendment 3*²]. Young are born mostly on the offshore wintering grounds from November to January, but newborns (neonates or “pups”) are sometimes taken in the Gulf of Maine or southern New England in early summer.

Female Sub-Adults (36-79 cm):

Pelagic and epibenthic habitats throughout the region, as depicted in Figure 6 [*in Amendment 3*]. Sub-adult females are found over a wide depth range in full salinity seawater (32-35 ppt) where bottom temperatures range from 7 to 15°C. Sub-adult females are widely distributed throughout the region in the winter and spring when water temperatures are lower, but very few remain in the Mid-Atlantic area in the summer and fall after water temperatures rise above 15°C.

Male Sub-Adults (36-59 cm):

Pelagic and epibenthic habitats, primarily in the Gulf of Maine and on the outer continental shelf from Georges Bank to Cape Hatteras, as depicted in Figure 7 [*in Amendment 3*]. Sub-adult males are found over a wide depth range in full salinity seawater (32-35 ppt) where bottom temperatures range from 7 to 15°C. Sub-adult males are not as widely distributed over the continental shelf as the females and are generally found in deeper water. They are widely distributed throughout the region in the winter and spring when water temperatures are lower, but very few remain in the Mid-Atlantic area in the summer and fall after water temperatures rise above 15°C.

Female Adults:

Pelagic and epibenthic habitats throughout the region, as depicted in Figure 8 [*in Amendment 3*]. Adult females are found over a wide depth range in full salinity seawater (32-35 ppt) where bottom temperatures range from 7 to 15°C. They are widely distributed throughout the region in the winter and spring when water temperatures are lower, but very few remain in the Mid-Atlantic area in the summer and fall after water temperatures rise above 15°C.

Male Adults:

Pelagic and epibenthic habitats throughout the region, as depicted in Figure 9 [*in Amendment 3*]. Adult males are found over a wide depth range in full salinity seawater (32-35 ppt) where bottom temperatures range from 7 to 15°C. They are widely distributed throughout the region in the winter and spring when water temperatures are lower, but very few remain in the Mid-Atlantic area in the summer and fall after water temperatures rise above 15°C.

² Available at <http://www.mafmc.org/fisheries/fmp/dogfish>

6.2.3 Fishery Impact Considerations

A baseline fishing effects analysis is provided in Amendment 3 to the FMP (MAFMC 2014). The evaluation of the habitat impacts of gillnets, longlines, and to a lesser degree bottom otter trawls used in the commercial spiny dogfish fishery indicated that the baseline impact of the fishery was minimal and temporary in nature. Consequently, adverse effects of the spiny dogfish fishery on EFH did not need to be minimized further. Since most spiny dogfish landings are from gillnets and longlines, and trawl landings tend to be non-directed, the adverse impacts of the spiny dogfish fishery have continued to be minimal through 2017. Potential impacts on EFH of the proposed 2019 - 2021 commercial quotas are evaluated in Section 7 of this EA.

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6.3 ESA Listed Species and MMPA Protected Species

Protected species are those afforded protections under the Endangered Species Act (ESA; species listed as threatened or endangered) and/or the Marine Mammal Protection Act (MMPA). The table below provides a list of protected species that occur in the affected environment of the spiny dogfish fishery and the potential for the fishery to impact the species, specifically via interactions with gear types primarily used to prosecute the spiny dogfish fishery (i.e., gillnets and bottom longlines). Marine mammal species (cetaceans and pinnipeds) italicized and in bold are considered MMPA strategic stocks. Shaded rows indicate species who prefer continental shelf edge/slope waters (i.e., >200 meters).

Cusk, alewife, and blueback herring are NMFS "candidate species" under the ESA. Candidate species are those petitioned species for which NMFS has determined that listing may be warranted under the ESA and those species for which NMFS has initiated an ESA status review through an announcement in the Federal Register. If a species is proposed for listing the conference provisions under Section 7 of the ESA apply (see 50 CFR 402.10); however, candidate species receive no substantive or procedural protection under the ESA. As a result, these species will not be discussed further in this and the following sections; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed action. Additional information on cusk, alewife, and blueback herring can be found at:

<https://www.fisheries.noaa.gov/endangered-species-conservation/candidate-species-under-endangered-species-ac>.

Table 5. Species Protected Under the ESA and/or MMPA that May Occur in the Affected Environment of the Spiny Dogfish FMP

Species	Status ²	Observed/documentated interactions with gillnet and/or bottom longline gear?
Cetaceans		
<i>North Atlantic right whale (Eubalaena glacialis)</i>	<i>Endangered</i>	<i>Yes</i>
<i>Humpback whale, West Indies DPS, (Megaptera novaeangliae)</i>	<i>Protected (MMPA)</i>	<i>Yes</i>
<i>Fin whale (Balaenoptera physalus)</i>	<i>Endangered</i>	<i>Yes</i>
<i>Sei whale (Balaenoptera borealis)</i>	<i>Endangered</i>	<i>Yes</i>
<i>Blue whale (Balaenoptera musculus)</i>	<i>Endangered</i>	<i>No</i>
<i>Sperm whale (Physeter macrocephalus)</i>	<i>Endangered</i>	<i>No</i>
Minke whale (<i>Balaenoptera acutorostrata</i>)	Protected (MMPA)	Yes
<i>Pilot whale (Globicephala spp.)³</i>	<i>Protected (MMPA)</i>	<i>Yes</i>
Pygmy sperm whale (<i>Kogia breviceps</i>)	Protected (MMPA)	No
Dwarf sperm whale (<i>Kogia sima</i>)	Protected (MMPA)	No
Risso's dolphin (<i>Grampus griseus</i>)	Protected (MMPA)	Yes
Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>)	Protected (MMPA)	Yes

Short Beaked Common dolphin (<i>Delphinus delphis</i>)	Protected (MMPA)	Yes
Atlantic Spotted dolphin (<i>Stenella frontalis</i>)	Protected (MMPA)	No
Striped dolphin (<i>Stenella coeruleoalba</i>)	Protected (MMPA)	No
Beaked whales (<i>Ziphius and Mesoplodon spp</i>) ⁴	Protected (MMPA)	No
Bottlenose dolphin (<i>Tursiops truncatus</i>)⁵	Protected (MMPA)	Yes
Harbor porpoise (<i>Phocoena phocoena</i>)	Protected (MMPA)	Yes
Pinnipeds		
Harbor seal (<i>Phoca vitulina</i>)	Protected (MMPA)	Yes
Gray seal (<i>Halichoerus grypus</i>)	Protected (MMPA)	Yes
Harp seal (<i>Phoca groenlandicus</i>)	Protected (MMPA)	Yes
Hooded seal (<i>Cystophora cristata</i>)	Protected (MMPA)	Yes
Sea Turtles		
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	Endangered	Yes
Kemp's ridley sea turtle (<i>Lepidochelys kempii</i>)	Endangered	Yes
Green sea turtle, North Atlantic DPS (<i>Chelonia mydas</i>)	Threatened	Yes
Loggerhead sea turtle (<i>Caretta caretta</i>), Northwest Atlantic Ocean DPS	Threatened	Yes
Hawksbill sea turtle (<i>Eretmochelys imbricate</i>)	Endangered	No
Fish		
Atlantic salmon	Endangered	Yes
Atlantic sturgeon (<i>Acipenser oxyrinchus</i>)		
Gulf of Maine DPS	Threatened	Yes
New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS	Endangered	Yes
Cusk (<i>Brosme brosme</i>)	Candidate	Yes
Alewife (<i>Alosa pseudoharengus</i>)	Candidate	Yes
Blueback herring (<i>Alosa aestivalis</i>)	Candidate	Yes
Critical Habitat		
Northwest Atlantic DPS of Loggerhead Sea Turtle	ESA (Protected)	No
North Atlantic Right Whale Critical Habitat	ESA (Protected)	No

Notes:

¹ A strategic stock is defined under the MMPA as a marine mammal stock for which: (1) the level of direct human-caused mortality exceeds the potential biological removal level; (2) based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; and/or (3) is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA (Section 3 of the MMPA of 1972).

² Status is defined by whether the species is listed under the ESA as endangered (i.e. at risk of extinction) or threatened (i.e. at risk of endangerment), or protected under the MMPA. Marine mammals listed under the ESA are also protected under the MMPA. Candidate species are those species for which ESA listing may be warranted.

³ There are 2 species of pilot whales: short finned (*G. melas melas*) and long finned (*G. macrorhynchus*). Due to the difficulties in identifying the species at sea, they are often referred to as *Globicephala spp.*

⁴ There are multiple species of beaked whales in the Northwest Atlantic. They include the cuvier's (*Ziphius cavirostris*), blainville's (*Mesoplodon densirostris*), gervais' (*Mesoplodon europaeus*), sowerbys' (*Mesoplodon bidens*), and trues' (*Mesoplodon mirus*) beaked whales. Species of *Mesoplodon* are difficult to identify at sea, therefore, much of the available characterization for beaked whales is to the genus level only.

⁵ This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins.

6.3.1 SPECIES AND CRITICAL HABITAT NOT LIKELY TO BE AFFECTED BY THE PROPOSED ACTION

Based on available information, it has been determined that this action is not likely to affect blue whales, sperm whales, shortnose sturgeon, Atlantic spotted dolphins, striped dolphins, pygmy sperm whales, dwarf sperm whales, beaked whales, or hawksbill sea turtles. Further, this action is not likely to adversely affect any critical habitat for the species listed in **Error! Reference source not found.** This determination was made because either the occurrence of the species is not known to overlap with the spiny dogfish fishery and/or there have never been documented interactions between the species and these fisheries (NMFS NEFSC FSB 2015, 2016, 2017, 2018;

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>; http://www.nefsc.noaa.gov/fsb/take_reports/nefop.html).

In the case of critical habitat, this determination has been made because the spiny dogfish fishery will not affect the essential physical and biological features of North Atlantic right whale or loggerhead (Northwest Atlantic Distinct Population Segment, or DPS) critical habitat and, and therefore, will not result in the destruction or adverse modification of critical habitat (NMFS 2014a; NMFS 2015a,b).

6.3.2 SPECIES POTENTIALLY AFFECTED BY THE PROPOSED ACTION

Error! Reference source not found. provides a list of protected species of sea turtle, marine mammal, and fish species present in the affected environment of the spiny dogfish fishery, and that may also be affected by the operation of the spiny dogfish fishery; that is, have the potential to become entangled or bycaught in the fishing gear used to prosecute the fishery. To aid in the identification of MMPA protected species potentially affected by the action, the MMPA List of Fisheries and marine mammal stock assessment reports for the Atlantic Region were referenced (<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>; [https://www.fisheries.noaa.gov/national/marine-mammal-protection-act-list-fisheries](https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries)).

To aid in identifying ESA listed species potentially affected by the action, the 2013 Biological Opinion issued by NMFS on the operation of seven commercial fisheries, including the spiny dogfish FMP, and its impact on ESA listed species was referenced (NMFS 2013) was referenced. The 2013 Opinion, which considered the best available information on ESA listed species and observed or documented ESA listed species interactions with gear types used to prosecute the 7 FMPs (e.g., gillnet, bottom trawl, and pot/trap), concluded that the seven fisheries may adversely affect, but was not likely to jeopardize the continued existence of any ESA listed species. The Opinion included an incidental take statement (ITS) authorizing the take of specific numbers of ESA listed species of sea turtles, Atlantic salmon, and Atlantic sturgeon.³ Reasonable and

³ The 2013 Opinion did not authorize take of ESA listed species of whales because (1) an incidental take statement cannot be lawfully issued under the ESA for a marine mammal unless incidental take authorization exists for that marine mammal under the MMPA (see 16 U.S.C. § 1536(b)(4)(C)), and (2) the incidental take of ESA-listed whales by the black seabass fishery has not been authorized under section 101(a)(5) of the MMPA. However, the 2013 BiOp assessed interaction risks to these species and concluded that 7 FMPs assessed, may affect but would not jeopardize the continued existence of any ESA listed species of whales (NMFS 2013).

prudent measures and terms and conditions were also issued with the ITS to minimize impacts of any incidental take

Up until recently, the 2013 Opinion remained in effect; however, new information on North Atlantic right whales has been made available that may reveal effects of the fisheries analyzed in the 2013 Opinion that may not have been previously considered. As a result, per an October 17, 2017, ESA 7(a)(2)/7(d) memo issued by NMFS, the 2013 Opinion has been reinitiated. However, the October 17, 2017, memo concludes that allowing these fisheries to continue during the reinitiation period will not increase the likelihood of interactions with ESA listed species above the amount that would otherwise occur if consultation had not been reinitiated, and therefore, the continuation of these fisheries during the reinitiation period would not be likely to jeopardize the continued existence of any ESA listed species. Until replaced, the spiny dogfish FMP is currently covered by the incidental take statement authorized in NMFS 2013 Opinion.

As the primary concern for both MMPA protected and ESA listed species is the potential for the fishery to interact (e.g., bycatch, entanglement) with these species it is necessary to consider (1) species occurrence in the affected environment of the fishery and how the fishery will overlap in time and space with this occurrence; and (2) data and observed records of protected species interaction with particular fishing gear types, in order to understand the potential risk of an interaction. Information on species occurrence in the affected environment of the spiny dogfish fishery and on protected species interactions with specific fishery gear is provided below.

6.3.2.1 Sea Turtles

This section contains a brief summary of the occurrence and distribution of sea turtles in the affected environment of the spiny dogfish fishery. Additional background information on the range-wide status of affected sea turtles species, as well as a description and life history of each of these species, can be found in a number of published documents, including sea turtle status reviews and biological reports (NMFS and USFWS 1995; Hirth 1997; Turtle Expert Working Group [TEWG] 1998, 2000, 2007, 2009; NMFS and USFWS 2007a, 2007b; Conant et al. 2009; NMFS and USFWS 2013b; NMFS and USFWS 2015; Seminoff et al. 2015), and recovery plans for the loggerhead sea turtle (Northwest Atlantic DPS; NMFS and USFWS 2008), leatherback sea turtle (NMFS and USFWS 1992, 1998a), Kemp's ridley sea turtle (NMFS *et al.* 2011), and green sea turtle (NMFS and USFWS 1991, 1998b).

A general overview of sea turtle occurrence and distribution in waters of the Northwest Atlantic Ocean is provided below to assist in understanding how the spiny dogfish fishery may overlap in time and space with sea turtles. Maps depicting the range wide distribution and occurrence of sea turtles in the Greater Atlantic Region can be found at the following websites:

<https://www.greateratlantic.fisheries.noaa.gov/protected/section7/listing/index.html>; <http://marinecadastre.gov/>; and, <http://seamap.env.duke.edu/>.

Hard-shelled Sea Turtles

In U.S. Northwest Atlantic waters, hard-shelled turtles commonly occur throughout the continental shelf from Florida to Cape Cod, Massachusetts, although their presence varies with the seasons due to changes in water temperature (Shoop and Kenney 1992; Epperly *et al.* 1995a, 1995b; Braun and Epperly 1996; Mitchell *et al.* 2003; Braun-McNeill *et al.* 2008; TEWG 2009). While hard-shelled turtles are most common south of Cape Cod, MA, they are known to occur in the Gulf of Maine. Loggerheads, the most common hard-shelled sea turtle in the Greater Atlantic Region, feed as far north as southern Canada. Loggerheads have been observed in waters with surface temperatures of 7 °C to 30 °C, but water temperatures ≥ 11 °C are most favorable (Shoop

and Kenney 1992; Epperly *et al.* 1995b). Sea turtle presence in U.S. Atlantic waters is also influenced by water depth. While hard-shelled turtles occur in waters from the beach to beyond the continental shelf, they are most commonly found in neritic waters of the inner continental shelf (Mitchell *et al.* 2003; Braun-McNeill and Epperly 2002; Morreale and Standora 2005; Blumenthal *et al.* 2006; Hawkes *et al.* 2006; McClellan and Read 2007; Mansfield *et al.* 2009; Hawkes *et al.* 2011; Griffin *et al.* 2013).

Hard-shelled sea turtles occur year-round in waters off Cape Hatteras, North Carolina and south. As coastal water temperatures warm in the spring, loggerheads begin to migrate to inshore waters of the southeast United States and also move up the Atlantic Coast (Epperly *et al.* 1995a, 1995b, 1995c; Braun-McNeill and Epperly 2002; Morreale and Standora 2005; Griffin *et al.* 2013), occurring in Virginia foraging areas as early as late April and on the most northern foraging grounds in the Gulf of Maine in June (Shoop and Kenney 1992). The trend is reversed in the fall as water temperatures cool. The large majority leave the Gulf of Maine by September, but some remain in Mid-Atlantic and Northeast areas until late fall. By December, sea turtles have migrated south to waters offshore of NC, particularly south of Cape Hatteras, and further south (Shoop and Kenney 1992; Epperly *et al.* 1995b; Hawkes *et al.* 2011; Griffin *et al.* 2013).

Leatherback Sea Turtles

Leatherbacks, a pelagic species, are known to use coastal waters of the U.S. continental shelf and to have a greater tolerance for colder water than hard-shelled sea turtles (James *et al.* 2005; Eckert *et al.* 2006; Murphy *et al.* 2006; NMFS and USFWS 2013b; Dodge *et al.* 2014). Leatherback sea turtles engage in routine migrations between northern temperate and tropical waters (NMFS and USFWS 1992; James *et al.* 2005; James *et al.* 2006; Dodge *et al.* 2014). They are found in more northern waters (i.e., Gulf of Maine) later in the year (i.e., similar time frame as hard-shelled sea turtles), with most leaving the Northwest Atlantic shelves by mid-November (James *et al.* 2005; James *et al.* 2006; Dodge *et al.* 2014).

6.3.2.2 Large Whales

Large whales, such as humpback, North Atlantic right, fin, sei, and minke whales are found throughout the waters of the Northwest Atlantic Ocean. In general, these species follow an annual pattern of migration between low latitude (south of 35°N) wintering/calving grounds and high latitude spring/summer foraging grounds (primarily north of 41°N; Hayes *et al.* 2017; Hayes *et al.* 2018; NMFS 1991, 2005, 2010, 2011a, 2012). This is a simplification of whale movements, particularly as it relates to winter movements. It is unknown if all individuals of a population migrate to low latitudes in the winter, although increasing evidence suggests that for some species (e.g., right and humpback whales), some portion of the population remains in higher latitudes throughout the winter (Brown *et al.* 2002; Clapham *et al.* 1993; Cole *et al.* 2013; Khan *et al.* 2010, 2011, 2012; Khan *et al.* 2009; NOAA 2008; Swingle *et al.* 1993; Vu *et al.* 2012; Hayes *et al.* 2017; Hayes *et al.* 2018). Although further research is needed to provide a clearer understanding of large whale movements and distribution in the winter, the distribution and movements of large whales to foraging grounds in the spring/summer is well understood. Large whales consistently return to these foraging areas each year, therefore these areas can be considered important areas for whales (Baumgartner *et al.* 2003; Baumgartner & Mate 2003; Brown *et al.* 2002; Kenney & Hartley 2001; Kenney *et al.* 1986; Kenney *et al.* 1995; Mayo & Marx 1990; Payne *et al.* 1986; Payne *et al.* 1990; Schilling *et al.* 1992). For additional information on the biology, status, and range wide distribution of whale species, see the marine mammal stock assessment reports provided at:

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>.

6.3.2.3 Small Cetaceans and Pinnipeds

Error! Reference source not found. lists the small cetaceans and pinnipeds that may occur in the affected environment of the spiny dogfish fishery. Small cetaceans can be found throughout the year in the Northwest Atlantic Ocean; however, within this range, there are seasonal shifts in species distribution and abundance. Pinnipeds are primarily found throughout the year or seasonally from New Jersey to Maine; however, increasing evidence indicates that some species (e.g., harbor seals) may be extending their range seasonally into waters as far south as Cape Hatteras, North Carolina (35°N). For additional information on the biology and range wide distribution of each species of small cetacean and pinniped in **Error! Reference source not found.**, see the marine mammal stock assessment reports provided at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>.

6.3.2.4 Atlantic sturgeon

The marine range of U.S. Atlantic sturgeon extends from Labrador, Canada, to Cape Canaveral, Florida. All five DPSs of Atlantic sturgeon have the potential to be located anywhere in this marine range (ASSRT 2007; Dovel and Berggren 1983; Dadswell et al. 1984; Kynard et al. 2000; Stein et al. 2004a; Dadswell 2006; Laney et al. 2007; Dunton et al. 2010, 2015; Erickson et al. 2011; Wirgin et al. 2012; Waldman et al. 2013; O’Leary et al. 2014; Wirgin et al. 2015a,b; ASMFC 2017). Based on fishery-independent and dependent data, as well as data collected from tracking and tagging studies, in the marine environment, Atlantic sturgeon appear to primarily occur inshore of the 50 meter depth contour (Stein et al. 2004 a,b; Erickson et al. 2011; Dunton et al. 2010); however, Atlantic sturgeon are not restricted to these depths, as excursions into deeper continental shelf waters have been documented (Timoshkin 1968; Collins and Smith 1997; Stein et al. 2004a,b; Dunton et al. 2010; Erickson et al. 2011). Data from fishery-independent surveys and tagging and tracking studies also indicate that Atlantic sturgeon may undertake seasonal movements along the coast (Dunton et al. 2010; Erickson et al. 2011; Wipplehauser 2012); however, there is no evidence to date that all Atlantic sturgeon make these seasonal movements and therefore, may be present throughout the marine environment throughout the year. For additional information on the biology, status, and range wide distribution of each distinct population segment (DPS) of Atlantic sturgeon please refer to 77 FR 5880 and 77 FR 5914, as well as the Atlantic Sturgeon Status Review Team’s (ASSRT) 2007 status review of Atlantic sturgeon (ASSRT 2007) and the Atlantic States Marine Fisheries Commission 2017 Atlantic Sturgeon Benchmark Stock Assessment and Peer Review Report (ASMFC 2017).

6.2.3.5 Atlantic salmon

The wild populations of Atlantic salmon are listed as endangered under the ESA. Their freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River, while the marine range of the GOM DPS extends from the GOM (primarily northern portion of the GOM), to the coast of Greenland (NMFS and USFWS 2005, 2016; Fay et al. 2006). In general, smolts, post-smolts, and adult Atlantic salmon may be present in the GOM and coastal waters of Maine in the spring (beginning in April), and adults may be present throughout the summer and fall months (Baum 1997; Fay et al. 2006; USASAC 2004; Hyvarinen et al. 2006; Lacroix and McCurdy 1996; Lacroix et al. 2004, 2005; Reddin

1985; Reddin and Short 1991; Reddin and Friedland 1993; Sheehan et al. 2012; NMFS and USFWS 2005, 2016; Fay et al. 2006). For additional information on the on the biology, status, and range wide distribution of the GOM DPS of Atlantic salmon please refer to NMFS and USFWS 2005, 2016; and Fay et al. 2006.

6.3.3 Interactions Between Commercial Gear and Protected Species

Protected species are vulnerable to interactions with various types of fishing gear, with interaction risks associated with gear type, quantity, and soak or tow time. Available information on gear interactions with a given species (or species group) is provided in the sections below. These sections are not a comprehensive review of all fishing gear types known to interact with a given species; emphasis is only being placed on the primary gear types used to prosecute the spiny dogfish fishery (i.e., gill nets (set/anchored sink and drift sink) and bottom longline).

6.3.3.1 Marine Mammals Interactions

Pursuant to the MMPA, NMFS publishes a List of Fisheries (LOF) annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injuries and/or mortalities of marine mammals in each fishery (i.e., Category I=frequent; Category II=occasional; Category III=remote likelihood or no known interactions. In the Greater Atlantic Region, Northeast and Mid-Atlantic gillnet fisheries are considered Category I fisheries, while Northeast/Mid-Atlantic bottom longline fisheries are considered Category III fisheries (83 FR 5349, February 7, 2018).

The categorization in the LOF determines whether participants in that fishery are subject to certain provisions of the MMPA such as registration, observer coverage, and take reduction plan requirements. Individuals fishing in Category I or II fisheries must comply with requirements of any applicable take reduction plan. In the Greater Atlantic Region, NMFS has implemented take reduction plans for large whales (Atlantic Large Whale Take Reduction Plan (ALWTRP)), bottlenose dolphin (Bottlenose Dolphin Take Reduction Plan (BDTRP)), and harbor porpoises (Harbor Porpoise Take Reduction Plan (HPTRP)). Details on the regulations implemented under these plans may be accessed at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-take-reduction-plans-and-teams>. The spiny dogfish fishery must comply with the regulations and requirements in each of these respective plans.

6.3.3.1.1 Large Whales

Sink Gillnet Gear: The greatest interaction risk, and source of serious injury and mortality, to large whales is posed by entanglement in fixed fishing gear (e.g., sink gillnet and trap/pot gear) comprised of lines (vertical or ground) that rise into the water column (Johnson et al. 2005; NMFS 2014a,c; Kenney and Hartley 2001; Hartley et al. 2003; Whittingham et al. 2005a,b; Hayes et al. 2017; Hayes et al. 2018; Angliss and Demaster 1998; Moore and Van der Hoop 2012; Henry et al. 2017). As trap/pot gear is not used in the spiny dogfish fishery, the greatest entanglement risk to large whales posed by the spiny dogfish fishery is from gillnet gear.

has confirmed human-caused injury and mortality to humpback, fin, sei, minke, and North Atlantic right whales along the Gulf of Mexico Coast, U.S. East Coast, and Atlantic Canadian Provinces from 2011 to 2015 (Henry et al. 2017). The data are specific to confirmed injury or mortality to whales from entanglement in fishing gear. As many entanglement events go unobserved, and because the gear type, fishery, and/or country of origin for reported entanglement events are often not traceable, it is important to recognize that the information likely underestimates the rate of large whale serious injury and mortality due to entanglement. Further studies looking at scar rates for right whales and humpbacks suggests that entanglements may be occurring more frequently than the observed incidences indicate (NMFS 2014b; Robbins 2009; Knowlton et al. 2012).

Table 6. Summary of confirmed human-caused injury or mortality to fin, minke, humpback, sei, and North Atlantic right whales from 2011-2015 due to entanglement in fishing gear.

Species	Total Confirmed Entanglement: Serious Injury ²	Total Confirmed Entanglement: Non-Serious Injury	Total Confirmed Entanglement: Mortality	Entanglement Events: Total Average Annual Injury and Mortality Rate (US waters/Canadian waters/unassigned waters)
North Atlantic Right Whale	19	35	5	4.55 (0.4/0/4.15)
Humpback Whale	32	61	5	6.45 (1.5/0.3/4.65)
Fin Whale	6	2	4	1.85 (0.2/0.8/0.85)
Sei Whale	0	0	0	0
Minke Whale	20	12	22	7.75 (1.9/3.25/2.6)

Information is based on confirmed human-caused injury and mortality events along the Gulf of Mexico Coast, US East Coast, and Atlantic Canadian Provinces; it is not specific to US waters only.

² NMFS defines a serious injury as an injury that is more likely than not to result in mortality (http://www.nmfs.noaa.gov/pr/pdfs/serious_injury_procedure.pdf).

Source: Henry *et al.* (2017)

Due to the incidences of interactions with vertical lines associated with fixed fishing gear, such as gillnet gear, in addition to the endangered status of the species being affected most by these gear types (North Atlantic right whale, fin, and humpback), pursuant to the MMPA, these large whale species were designated as strategic stocks.⁴ Section 118(f)(1) of the MMPA requires the preparation and implementation of a Take Reduction Plan (TRP) for any strategic marine mammal stock that interacts with Category I or II fisheries. As a result, to address and mitigate the risk of large whale entanglement in fixed fishing gear comprised of vertical line, including gillnet gear and trap/pot gear, the ALWTRP was implemented; for additional information on the

⁴ A strategic stock is defined under the MMPA as a marine mammal stock: for which the level of direct human-caused mortality exceeds the potential biological removal level; which, based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; or which is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA.

ALWTRP, including restrictions and management areas under the plan, see:
<http://www.greateratlantic.fisheries.noaa.gov/Protected/whaletrp/>.⁵

Bottom Longline Gear: Based on information provided by the Northeast Fisheries Observer Program (https://www.nefsc.noaa.gov/fsb/take_reports/nefop.html), as well as information provided in marine mammal stock assessment reports and the MMPA List of Fisheries (<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries>), there has been no confirmed serious injury or mortality, or documented interactions, in general, with bottom longline gear and large whales. Based on this information, bottom longline gear is not expected to pose an interaction risk to large whale species and therefore, is not expected to be source of serious injury or mortality to these species.

6.3.3.1.2 Small Cetaceans and Pinnipeds

Sink Gillnet Gear: Small cetaceans and pinnipeds are vulnerable to interactions with sink gillnet gear (Hayes *et al.* 2017; Hayes *et al.* 2018; 83 FR 5349 (February 7, 2018)). Based on the most recent Marine Mammal List of Fisheries (LOF) issued on February 7, 2018 (83 FR 5349), Table 7 provides a list of species that have been observed (incidentally) seriously injured and/or killed by MMPA LOF Category I (frequent interactions) gillnet fisheries that operate in the affected environment of the spiny dogfish fishery (Hayes *et al.* 2017; 83 FR 5349 (February 7, 2018)). Of the species provided in Table 7, gray seals, followed by harbor seals, harbor porpoises, short beaked common dolphins, harps seals, and Atlantic white sided dolphins are the most frequently bycaught small cetacean and pinnipeds in sink gillnet gear in the Greater Atlantic Region (GAR; Hatch and Orphanides 2014, 2015, 2016, 2017).

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⁵ In 1997, the ALWTRP was implemented; since 1997, the Plan has been modified, including the Sinking Groundline Rule and Vertical Line Rules (72 FR 57104, October 5, 2007; 79 FR 36586, June 27, 2014; 79 FR 73848, December 12, 2014; 80 FR 14345, March 19, 2015; 80 FR 30367, May 28, 2015).

Table 7. Small cetacean and pinniped species observed seriously injured and/or killed by Category I gillnet fisheries in the affected environment of spiny dogfish fisheries.

Fishery	Category	Species Observed or reported Injured/Killed
Northeast Sink Gillnet	I	Bottlenose dolphin (offshore)
		Harbor porpoise
		Atlantic white sided dolphin
		Short-beaked common dolphin
		Risso’s dolphin
		Long finned pilot whales
		Harbor seal
		Hooded seal
		Gray seal
		Harp seal
Mid-Atlantic Gillnet	I	Bottlenose dolphin (Northern Migratory coastal)
		Bottlenose dolphin (Southern Migratory coastal)
		Bottlenose dolphin (offshore)
		Harbor porpoise
		Short-beaked common dolphin
		Harbor seal
		Harp seal
		Gray seal
Sources: MMPA LOF 83 FR 5349 (February 7, 2018)		

Several species in Table 7 have experienced such great losses to their populations as a result of interactions with Category I and II fisheries that they are now considered strategic stocks under the MMPA. These species include several stocks of bottlenose dolphins, and until recently, the harbor porpoise.⁶ As noted above, Section 118(f)(1) of the MMPA requires the preparation and implementation of a TRP for any strategic marine mammal stock that interacts with Category I or II fisheries. As a result, the Harbor Porpoise TRP (HPTRP) and the Bottlenose Dolphin TRP (BDTRP) were developed and implemented for these species.⁷ For additional information on each HPTRP or BDTRP, including restrictions and management areas, see

⁶ In the most recent U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessment (Hayes et al. 2018), harbor porpoise are no longer designated as a strategic stock.

⁷ Although the most recent U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessment (Hayes et al. 2018) no longer designates harbor porpoise as a strategic stock, HPTRP regulations are still in place per the mandates provided in Section 118(f)(1).

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-take-reduction-plans-and-teams>.

Bottom Longline Gear: Based on information provided by the Northeast Fisheries Observer Program (https://www.nefsc.noaa.gov/fsb/take_reports/nefop.html), as well as information provided in marine mammal stock assessment reports and the MMPA List of Fisheries (<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries>), there has been no confirmed serious injury or mortality, or documented interactions, in general, with bottom longline gear and small cetaceans and pinnipeds. Based on this information, bottom longline gear is not expected to pose an interaction risk to these species and therefore, is not expected to be source of serious injury or mortality to small cetaceans and pinnipeds species.

6.3.3.2 Sea Turtles and Interactions

Gillnet Gear: Sea turtle interactions with gillnet gear have been observed in the Gulf of Maine, Georges Bank, and the Mid-Atlantic; however, most of the observed interactions have occurred in the Mid-Atlantic and Georges Bank (see Murray (2013) and Murray (2018)). As few sea turtle interactions have been observed in the Gulf of Maine, there is insufficient data available to conduct a robust model-based analysis on sea turtle interactions with gillnet gear in this region and to produce a bycatch estimate for the Gulf of Maine. As a result, the bycatch estimates and discussion below are based on observed sea turtle interactions in gillnet gear in the Mid-Atlantic and Georges Bank.

Murray (2018) conducted an assessment of loggerhead, Kemp's ridley, leatherback, and unidentified hard-shell sea turtle interactions in Mid-Atlantic and Georges Bank gillnet gear during 2012-2016. Based on Northeast Fisheries Observer Program, At-Sea Monitoring Program, and Vessel Trip Report data from 2012-2016, total estimated bycatch of sea turtles in commercial sink gillnet gear in the Mid-Atlantic and Georges Bank regions was 705 loggerheads (equivalent to 19 adults), 145 Kemp's ridleys, 27 leatherbacks, and 112 unidentified hard-shelled sea turtles (Murray 2018). Depending on species, sea turtles were observed captured in nets with mesh sizes ranging from 3.25 inches to 12 inches. Murray (2018) also provided estimates of sea turtle bycatch by managed species landed from 2012-2016; spiny dogfish accounted for a total of 108 sea turtles (52 loggerhead; 38 Kemp's ridley; 1 leatherback; and 17 unidentified hard-shelled sea turtles).

Beginning in the spring of 1995, and continuing in subsequent years, large numbers of sea turtles were stranding along the coastline of North Carolina. These stranding events coincided with the monkfish and spiny dogfish large mesh gillnet fisheries operating offshore, and in fact, some of the stranded turtles coming ashore had large mesh gillnet gear wrapped around their body. Because of the documented strandings and subsequent investigation, NMFS enacted the Mid-Atlantic large mesh gillnet rule in waters of the EEZ on December 3, 2002 (67 FR 71895); this rule was subsequently revised on April 26, 2006 (71 FR 24776). The Mid-Atlantic large mesh gillnet rule, establishes seasonally-adjusted gear restrictions by closing portions of the Mid-Atlantic EEZ to fishing with gillnets with a mesh size ≥ 7 -inch (17.8-cm) stretched mesh to protect migrating sea turtles.

Bottom Longline Gear: Sea turtles are at risk of interacting with bottom longline gear; however, the risk is tied to where the gear is placed relative to where and when sea turtles are present. As sea turtles are commonly found in neritic waters of the inner continental shelf (Braun-McNeill and Epperly 2002; Morreale and Standora 2005; Blumenthal et al. 2006; Hawkes et al. 2006; McClellan and Read 2007; Mansfield et al. 2009; Hawkes et al. 2011; Griffin et al. 2013; James et al. 2005; Eckert et al. 2006; Murphy et al. 2006; Dodge et al. 2014)⁸, bottom longline gear placed in continental shelf waters (<200 meters) poses a greater risk of an interaction than bottom longline gear placed in deep waters greater than 200 meters. This is evidenced by the large number of sea turtle interactions observed in the South Atlantic and Gulf of Mexico (under NMFS SERO jurisdiction; NMFS 2006; NMFS 2011a; NMFS 2012), where numerous fisheries prosecuted by bottom longline gear (e.g., HMS fishery-Atlantic shark bottom longline component; Gulf of Mexico reef fishery) operate in nearshore southern continental shelf waters (<200 meters) where sea turtles are commonly present year-round. Under such conditions, the co-occurrence of gear and sea turtles is high, thereby causing increased interaction risks. In contrast, in the Greater Atlantic Region (GAR), no sea turtles have been observed in bottom longline gear from 1989-2016 (NMFS NEFSC FSB 2015, 2016, 2017, 2018). This may in part be due to the fact that most fisheries prosecuted by bottom longline gear in the GAR primarily operate in deep continental shelf edge/slope waters (>200 meters), though the spiny dogfish bottom longline fishery does operate in shallower water, predominately in statistical area 521 near Cape Cod in the summer and fall. In deeper waters, sea turtle (primarily loggerhead and leatherback) behaviors are primarily directed at migratory movements. As a result, sea turtles are more likely to be present in the water column than near the deep benthos where bottom longline is present, thereby reducing the co-occurrence of bottom longline gear and sea turtles and thus, the potential for an interaction (Braun-McNeill and Epperly 2002; McClellan and Read 2007; Mansfield et al. 2009; Hawkes et al. 2011; Griffin et al. 2013; <http://seamap.env.duke.edu/>). Based on this, although sea turtle interactions with bottom longline gear are possible, due to the fishing behavior of GAR fisheries prosecuted by bottom longline gear, the risk of an interaction is likely low in the GAR.

6.3.3.3 Atlantic Sturgeon Interactions

Gillnet Gear: Atlantic sturgeon interactions (i.e., bycatch) with sink gillnet gear have been observed since 1989; these interactions have the potential to result in the injury or mortality of Atlantic sturgeon (NMFS NEFSC FSB 2015, 2016, 2017, 2018). Three documents, covering three time periods, that use data collected by NEFOP to describe bycatch of Atlantic sturgeon in gillnet gear: Stein et al. (2004b) for 1989-2000; ASMFC (2007) for 2001-2006; and Miller and Shepard (2011) for 2006-2010; none of these documents provide estimates of Atlantic sturgeon bycatch by Distinct Population Segment. Miller and Shepard (2011), the most of the three documents, analyzed fishery observer data and VTR data to estimate the average annual number of Atlantic sturgeon interactions in gillnet gear in the Northeast Atlantic that occurred from 2006 to 2010. This timeframe included the most recent, complete data and as a result, Miller and

⁸ Also see sea turtle species status reviews and recovery plans at the following websites: <http://www.nmfs.noaa.gov/pr/listing/reviews.htm#species>; <http://www.nmfs.noaa.gov/pr/recovery/plans.htm#turtles>

Shepard (2011) is considered to represent the most accurate predictor of annual Atlantic sturgeon interactions in the Northeast gillnet and bottom trawl fisheries (NMFS 2013).

Based on the findings of Miller and Shepard (2011), NMFS (2013) estimated that the annual bycatch of Atlantic sturgeon is 1,239 sturgeon in gillnet gear. Miller and Shepard (2011) observed Atlantic sturgeon interactions in gillnet gear with small (< 5.5 inches), large (5.5 to 8 inches), and extra-large mesh (>8 inches) sizes. Although Atlantic sturgeon were observed to interact with gillnet gear with various mesh sizes, Miller and Shepard (2011) concluded that, based on NEFOP observed sturgeon mortalities, gillnet gear, in general, posed a greater risk of mortality to Atlantic sturgeon than did other fishing gear types (e.g., trawl gear). For instance, estimated mortality rates in gillnet gear were 20.0%, while those in otter trawl gear were 5.0% (Miller and Shepard 2011; NMFS 2013). Similar conclusions were reached in Stein et al. (2004b) and ASMFC (2007) reports. However, an important consideration to these findings is that observed mortality is considered a minimum of what occurs and therefore, the conclusions reached by Stein et al. (2004b), ASMFC (2007), and Miller and Shepard (2011) are not reflective of the total mortality associated with gillnet gear. To date, total Atlantic sturgeon mortality associated with gillnet gear remains uncertain.

Bottom Longline Gear: Based on information provided by the Northeast Fisheries Observer Program (https://www.nefsc.noaa.gov/fsb/take_reports/nefop.html; NMFS NEFSC FSB 2015, 2016, 2017, 2018), there has been no confirmed injury or mortality, or documented interactions, in general, with bottom longline gear and Atlantic sturgeon. Based on this information, bottom longline gear is not expected to pose an interaction risk to Atlantic sturgeon and therefore, is not expected to be source of injury or mortality to this species.

6.3.3.4 Atlantic Salmon Interactions

Gillnet Gear: There have been a low number of observed Atlantic salmon interactions with fisheries and various gear types. According to the Biological Opinion issued by NMFS Greater Atlantic Regional Fisheries Office on December 16, 2013, NMFS Northeast Fisheries Science Center's (NEFSC) Northeast Fisheries Observer and At-Sea Monitoring Programs documented a total of 15 individual salmon incidentally caught on over 60,000 observed commercial fishing trips from 1989 through August 2013 (NMFS 2013; Kocik *et al.* 2014). Specifically, Atlantic salmon were observed bycaught in gillnet (11/15) and bottom otter trawl gear (4/15), with 10 of the incidentally caught salmon listed as "discarded" and five reported as mortalities (Kocik (NEFSC), pers. comm (February 11, 2013) in NMFS 2013). The genetic identity of these captured salmon is unknown; however, the NMFS 2013 Biological Opinion considers all 15 fish to be part of the GOM Distinct Population Segment, although some may have originated from the Connecticut River restocking program (i.e., those caught south of Cape Cod, Massachusetts). Since August 2013, there have been no additional Atlantic salmon observed in gillnet gear (NMFS NEFSC FSB 2015, 2016, 2017, 2018).

The above information, specifically the very low number of observed Atlantic salmon interactions in gillnet and trawl gear reported in the Northeast Fisheries Observer Program's database (which includes At-Sea Monitoring data), suggests that interactions with Atlantic salmon are rare events (NMFS 2013; Kocik *et al.* 2014; NMFS NEFSC FSB 2015, 2016, 2017);

however, it is important to recognize that observer program coverage is not 100 percent. As a result, it is likely that some additional interactions with Atlantic salmon have occurred, but have not been observed or reported.

Bottom Longline Gear: Based on information provided by the Northeast Fisheries Observer Program (https://www.nefsc.noaa.gov/fsb/take_reports/nefop.html; NMFS NEFSC FSB 2015, 2016, 2017, 2018), there has been no confirmed injury or mortality, or documented interactions, in general, with bottom longline gear and Atlantic salmon. Based on this information, bottom longline gear is not expected to pose an interaction risk to Atlantic salmon and therefore, is not expected to be source of injury or mortality to this species.

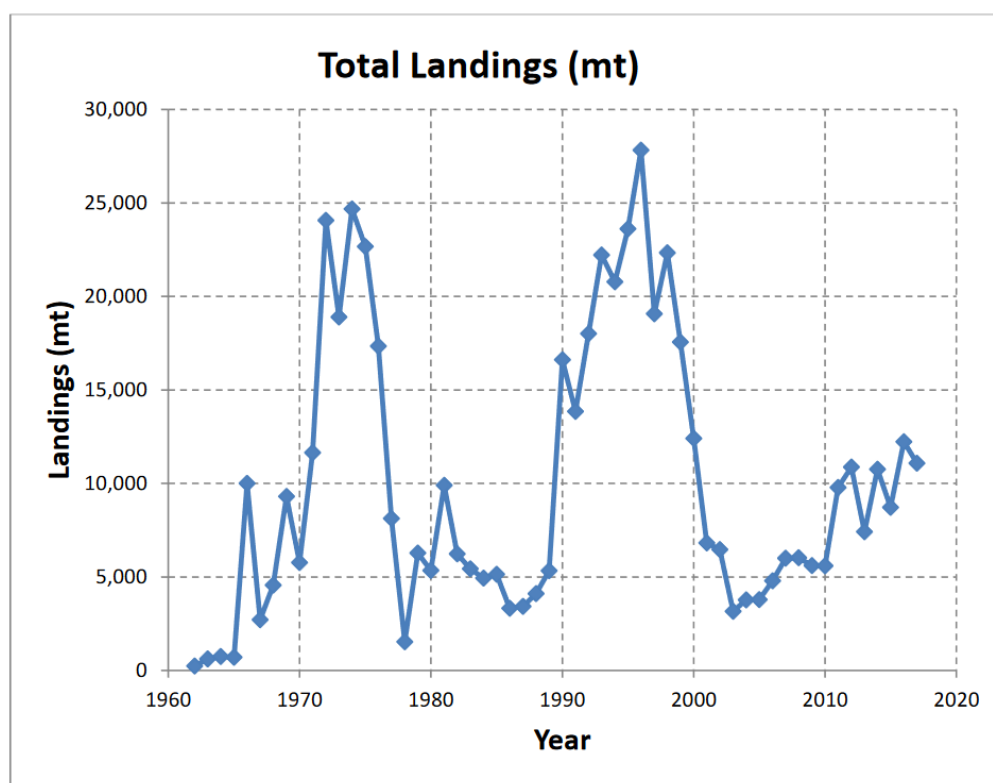
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6.4 Human Communities

A detailed description of historical fisheries for spiny dogfish was presented in Section 2.3 of the original FMP. The information presented in this section is intended to characterize recent fisheries trends. Since 2018 fishing year (May 2018-April 2019) data had not been finalized when this was written, calendar year data through 2017 is provided unless otherwise indicated. [This section will need some edits once the corrected VA data is fully available to staff.]

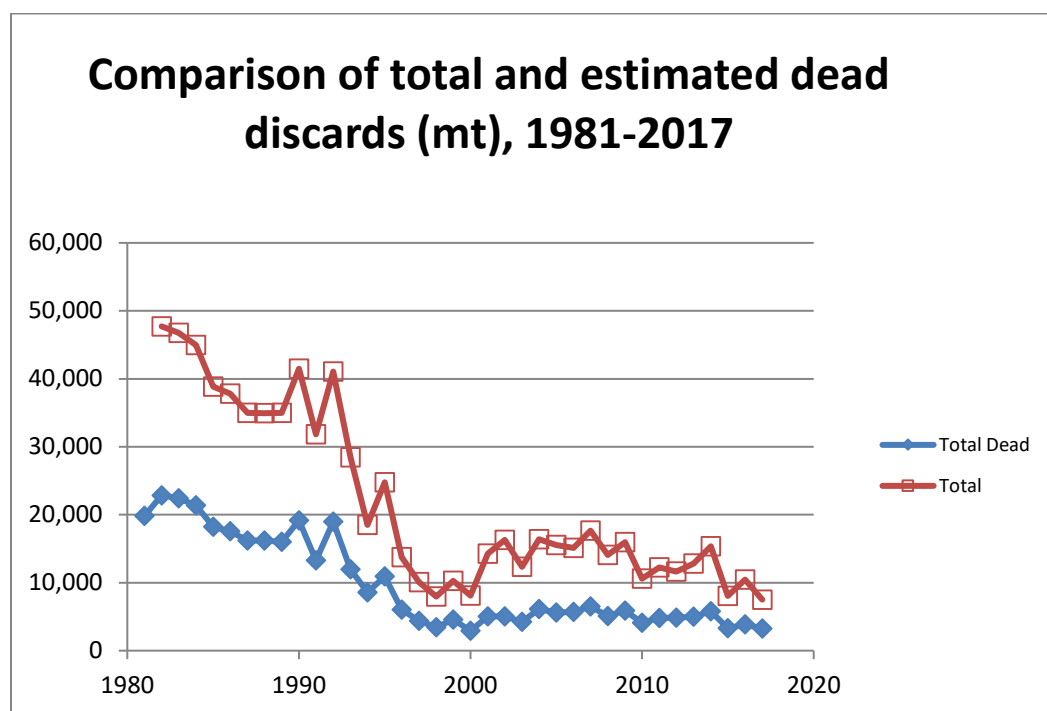
6.4.1 Spiny Dogfish Fishery

Landings and discards for spiny dogfish are provided in figures below. Landings show the peaks of the foreign fishery in the 1970s and domestic fishery in the 1990s before rebuilding began in the early 2000s.



Source: NEFSC 2018.

Figure 4. Estimated total landings (mt, live) of spiny dogfish in NAFO Areas 2 to 6, 1962-2017



Source: NEFSC 2018.

Figure 5. Estimated total and total dead discards in US, 1981-2017. Estimates for 1981 to 1989 are hindcast estimates rather than direct observations.

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Table 8. Total spiny dogfish landings (mt, live) in NAFO Areas 2 to 6, 1962-2017.

	United States				
Year	Commercial	Recreational	Canada	Distant Water Fleets	Total Landings
1962	235		0	0	235
1963	610		0	1	611
1964	730		0	16	746
1965	488		9	198	695
1966	578		39	9,389	10,006
1967	278		0	2,436	2,714
1968	158		0	4,404	4,562
1969	113		0	9,190	9,303
1970	106		19	5,640	5,765
1971	73		4	11,566	11,643
1972	69		3	23,991	24,063
1973	89		20	18,793	18,902
1974	127		36	24,513	24,676
1975	147		1	22,523	22,671
1976	550		3	16,788	17,341
1977	931		1	7,199	8,131
1978	828		84	622	1,534
1979	4,753		1,331	187	6,271
1980	4,085		660	599	5,344
1981	6,865	1,493	564	974	9,896
1982	5,411	70	389	364	6,234
1983	4,897	67		464	5,428
1984	4,450	91	2	391	4,935
1985	4,028	89	13	1,012	5,142
1986	2,748	182	20	368	3,318
1987	2,703	306	281	139	3,429
1988	3,105	359	1	647	4,112
1989	4,492	418	167	256	5,333
1990	14,731	179	1,309	393	16,611
1991	13,177	131	307	234	13,848
1992	16,858	215	868	67	18,008
1993	20,643	120	1,435	27	22,225
1994	18,798	155	1,820	2	20,774
1995	22,578	68	956	14	23,615
1996	27,136	25	431	236	27,827
1997	18,351	66	446	214	19,078
1998	20,628	39	1,055	607	22,329
1999	14,855	53	2,091	554	17,552
2000	9,257	5	2,741	402	12,405
2001	2,294	28	3,820	677	6,819
2002	2,199	205	3,584	474	6,462
2003	1,170	40	1,302	643	3,155
2004	982	105	2,362	330	3,778
2005	1,147	45	2,270	330	3,792
2006	2,249	94	2,439	10	4,792
2007	3,503	84	2,384	31	6,002
2008	4,108	214	1,572	131	6,025
2009	5,377	34	113	82	5,606
2010	5,440	21	6	127	5,594
2011	9,480	32	124	143	9,779
2012	10,660	19	65	137	10,881
2013	7,312	37	NA	61	7,410
2014	10,651	31	54	31	10,767
2015	8,663	39	1	23	8,726
2016	12,097	73	37	24	12,231
2017	10,949	81	49	0	11,079

Source: NEFSC 2018.

Coastwide Landings Relative to Limits (Quotas)

The table below provides the coastwide quotas and landings for the spiny dogfish fishery since the establishment of the FMP in 2000. Toward the end of the federal rebuilding schedule that ended in 2010, substantial increases in stock biomass allowed for an increase in the federal quota while still maintaining the rebuilding fishing mortality rate. Under the interstate FMP, quota increases began earlier in 2006 – 2008. Note that in 2010-2011, the commercial quota implemented in state waters was lower than for federal waters. Both quotas were based on the same technical advice, however, the state water quota reflects reductions for overages in accordance with Addendum 2 to the ISFMP. Similar accountability measures may be applied in federal waters in accordance with Amendment 2 to the federal FMP. Landings in recent years have not kept pace with the quota increases. The Advisory Panel (AP) has indicated that this is a very market-driven fishery, and that only by growing demand for spiny dogfish will processors be able to take additional landings. See the AP Fishery Performance Report at <http://www.mafmc.org/ssc-meetings/2018/sept-11> for additional details.

Table 9. Summary of spiny dogfish landings relative to the quota(s) for fishing years 2000 - 2018.

Fishing year		Quota (M lb)		Landings (M lb)
Start May 1	End April 30	Federal	States'	
2000	2001	4.0	n/a	8.0
2001	2002	4.0	n/a	4.9
2002	2003	4.0	n/a	4.7
2003	2004	8.8	8.8	3.0
2004	2005	4.0	4.0	1.5
2005	2006	4.0	4.0	2.5
2006	2007	6.0	6.0	6.3
2007	2008	6.0	6.0	6.4
2008	2009	8.0	8.0	9.0
2009	2010	12.0	12.0	11.7
2010	2011	15.0	14.4	14.2
2011	2012	20.0	19.5	*22.5
2012	2013	35.7	35.7	26.8
2013	2014	40.8	40.8	16.3
2014	2015	49.0	49.0	22.8
2015	2016	50.6	50.6	20.8
2016	2017	40.4	40.4	25.1
2017	2018	39.1	39.1	16.4
2018	2019	38.2	38.2	n/a

* Total CFDBS landings (20.3 M pounds) plus 2.2 M pounds undocumented landings discovered/reported by MADMF

Landings by Gear

Certain commercial gear types are associated with the retention of spiny dogfish in federal waters. The catch of spiny dogfish by gear in 2017 is provided by gear type. Spiny dogfish landings came mostly from gillnets (70%) and bottom longline (22%). While it is not clear from the landings data, based on observer data it appears that much of what is recorded as set gillnets in weighout data is actually sink drift gillnets.

Table 10. Commercial gear types associated with spiny dogfish harvest in 2017 (Calendar Year) from dealer weighout “AA” tables.

Gear	Pounds 2017	Percent 2017
Sink Gill Net	12,456,879	64%
Bottom Longline	4,219,665	22%
Trawl	1,013,859	5%
Other Gillnet	795,333	4%
Other/Unknown	960,402	5%
Total	19,446,138	100%

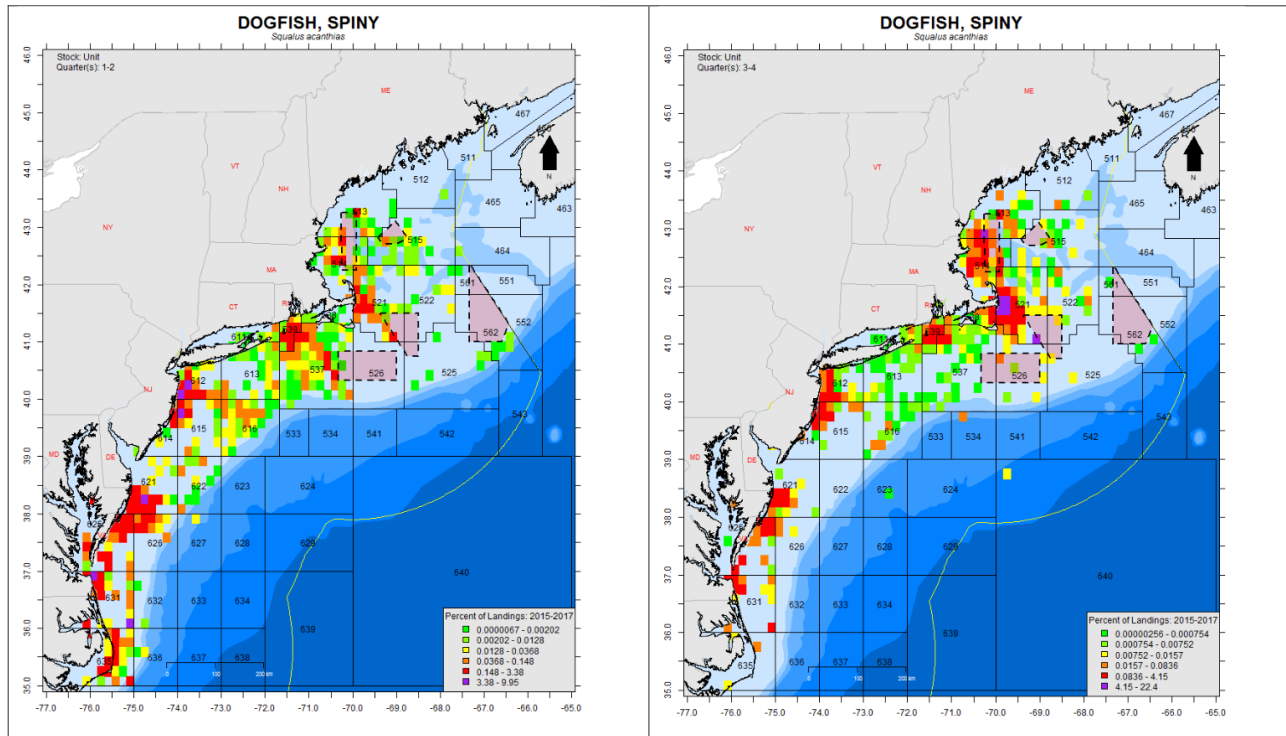
Source: Dealer Weighout AA Tables, Preliminary

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Landings by Area

NMFS Science Center staff generated the maps below illustrating commercial landings for spiny dogfish 2015-2017 by half years (Jan-Jun and Jul-Dec). Landings were reported via Dealer reports. Data have been restricted to dealer trips matched to a Vessel Trip Report (VTR) (ALEVEL=A) to ensure gear and area information is as accurate as possible.

Figure 6. Spiny Dogfish Commercial Landings 2015-2017



Notes: Commercial landings (dealer reports) for spiny dogfish from 2015-2017. Data have been restricted to dealer trips matched to a Vessel Trip Report (VTR) (ALEVEL=A) to ensure gear and area information is as accurate as possible. Landings from quarters 1 and 2 are on the left (85.25% of the total landings reported for these quarters) and landings from quarters 3 and 4 are in the right panel (74.48 of total landings for these quarters). Northeast Fisheries Science Center statistical areas are represented by numbered polygons and bathymetry is depicted in blue shading. Groundfish closed areas (dashed borders), and the Exclusive Economic Zone (yellow line) have been overlaid. Data queried on August 09, 2018.

Canadian Commercial Spiny Dogfish Landings

Recent landings have been low – see Table 8.

Recreational Landings

As previously stated, no significant directed recreational fishery exists for spiny dogfish. Some retention of recreationally caught spiny dogfish does occur, but most are released. The assessment includes both retained and discarded recreationally-caught spiny dogfish. A 20% discard rate is assumed for released fish. Recreational mortality has ranged from approximately 0.6 – 2.2 million pounds over the last five years (2013-2017).

Permit Activity

According to unpublished NMFS permit file data, 2,254 vessels had active spiny dogfish permits (open access) at the end of 2017, while 244 of these vessels contributed to overall landings. Total NMFS 2017 weighout database landings were about 19.4 million pounds, of which 76% came from federally-licensed vessels and 24% came from vessels without federal permits. 56 dealers bought spiny dogfish in 2017, with the top 10 dealers buying 67% of the dogfish landed.

Landings by State

Commercial harvest has historically been dominated by Massachusetts except for a period in the mid-2000s when Virginia's landings were close to Massachusetts'. State-by-state landings since 2007 are influenced by the regional allocation of commercial quota through the ASMFC's Interstate FMP. Currently, that FMP allocates 58% of the annual quota to a northern region (Maine –Connecticut), and the remaining 42% among states from New York – North Carolina (NY 2.707%; NJ 7.644%; DE 0.896%; MD 5.920%; VA 10.795%, NC 14.036%). 2015-2017 landings by state are provided in the table below.

Table 11. 2015-2017 Spiny Dogfish Landings by State.

YEAR	CT	MA	MD	ME+NH+ Other	NC	NJ	NY	RI	VA	Total
2015	34,400	7,849,795	1,140,724	944,165	3,835,242	1,910,056	29,835	528,559	2,796,559	19,069,335
2016	33,128	14,365,312	1,381,015	756,283	2,320,523	3,607,489	39,064	670,682	3,495,086	26,668,582
2017	56,429	9,575,485	1,968,561	858,130	378,458	2,376,382	52,355	360,330	3,820,008	19,446,138

Source: NMFS Commercial Fisheries Database

Landings by Season

Previously, under the federal FMP, the annual commercial quota was allocated seasonally to two half-year periods. Period 1 (May 1 – Oct 31) was allocated 57.9% of the quota and Period 2 (Nov 1-April 30) was allocated 42.1% of the quota. This allocation scheme was implemented during rebuilding in order to match seasonal availability of the resource with the historic geographic landings patterns. Spiny dogfish migratory behavior generally makes them available to the northern end of the fishery (i.e., MA) during summer/fall and to the southern end of the fishery (i.e., (VA and NC) during the winter. Beginning with the 2015 fishing year has only been an annual quota. Landings by month for 2015-2017 are provided in the table below.

Table 12. 2015-2017 Spiny Dogfish Landings by Month

Will be added once corrected VA data is available.

Source: NMFS Commercial Fisheries Database

6.4.2 Commercial Fishery Value

Nominal fishery value data is provided in the table below for the fishing year periods. Unpublished NMFS dealer reports indicate that the total ex-vessel value of commercially landed spiny dogfish in in fishing year 2017 (May 2017-April 2018) was about \$3.96 million and the approximate price/pounds of spiny dogfish was \$0.17. While nominal price has remained relatively even, when inflation is taken into account there has been price erosion from 2000-2017 (see figures below). (NEEDS TO BE UPDATED ONCE VA DATA IS CHANGED)

Table 13. Ex-vessel value (nominal) of commercially landed spiny dogfish, Maine - North Carolina combined, 2000-2017 Fishing Years

Year	Value
2001	\$1,095,703
2002	\$937,186
2003	\$377,702
2004	\$227,919
2005	\$471,115
2006	\$1,410,628
2007	\$1,339,569
2008	\$2,187,030
2009	\$2,530,634
2010	\$2,967,935
2011	\$4,396,309
2012	\$5,309,847
2013	\$2,362,673
2014	\$3,906,324
2015	\$3,437,612
2016	\$5,851,171
2017	\$2,932,494

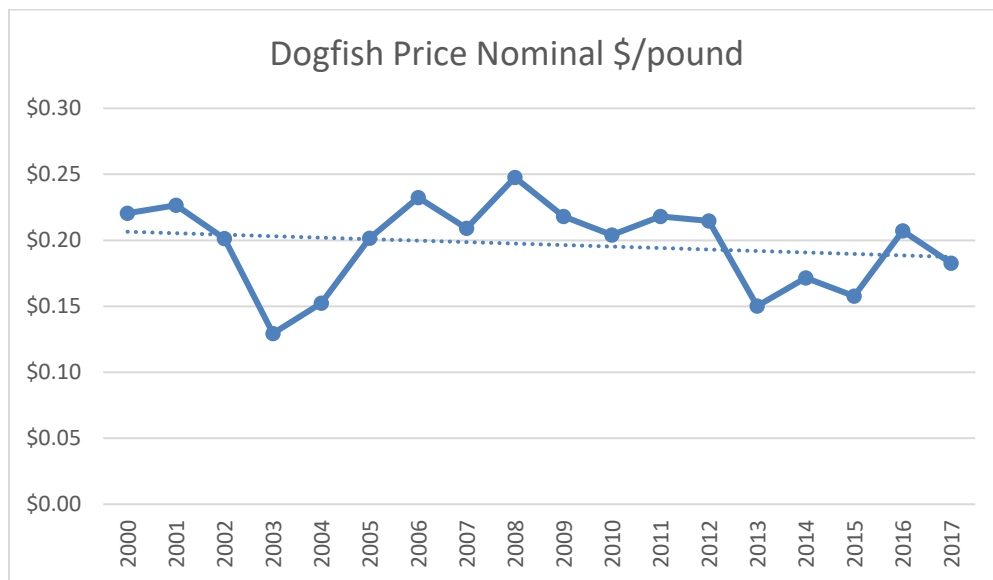


Figure 7. U.S. Spiny Dogfish fishing year ex-vessel prices (Nominal)

Source: Unpublished NMFS dealer reports

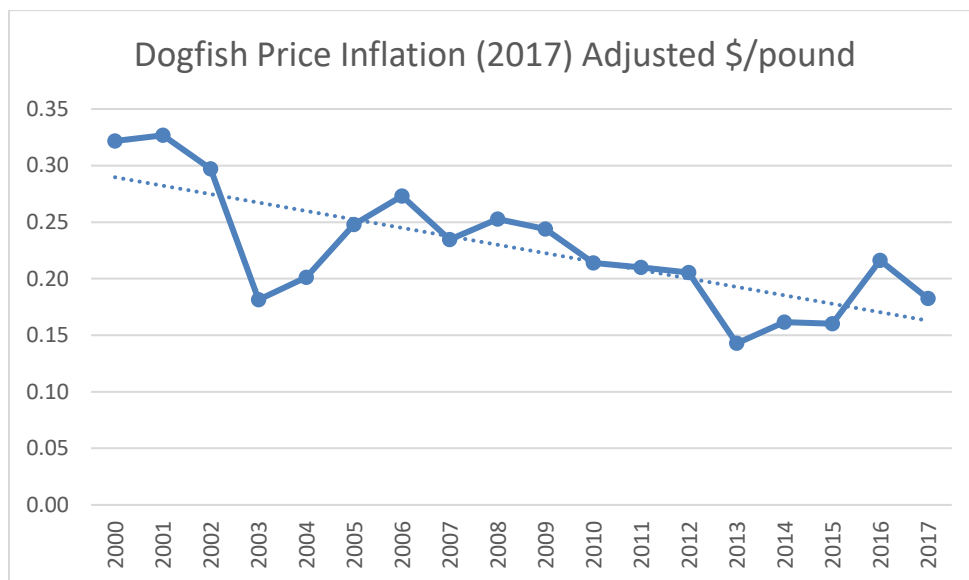


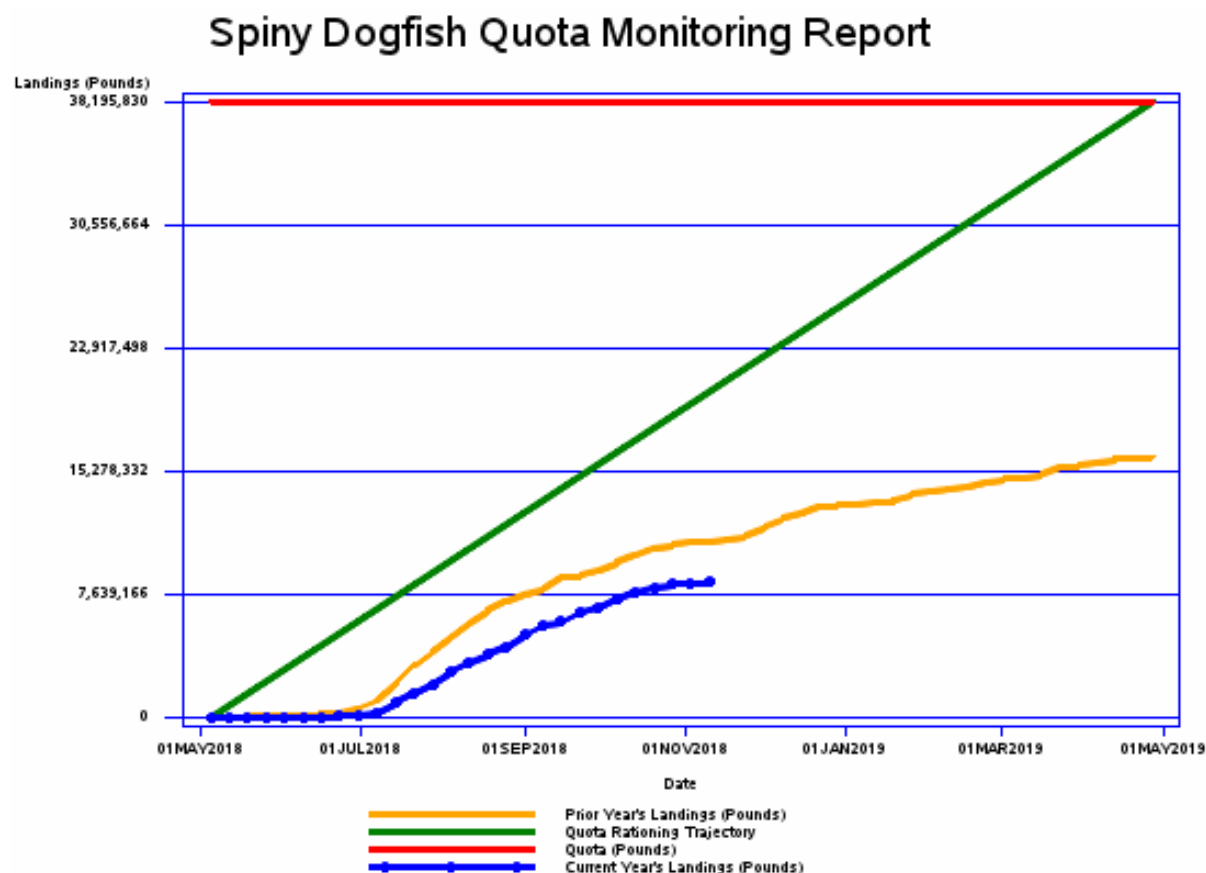
Figure 8. U.S. Spiny Dogfish fishing year ex-vessel prices (Producer Price Index adjusted, 2017 dollars)

Source: Unpublished NMFS dealer reports

Current Fishing Year

The 2018 fishing year (blue line in figure below), while incomplete, is proceeding similarly but with less landings than the 2017 fishing year (orange line in figure below). 22% of the quota was landed through November 10, 2018, which is about half way through the fishing year. 2018 fishing year landings to date are about 23% lower than the 2017 fishing year landings at a similar point.

Figure 9. 2017 (orange) and 2018 (blue/current) Spiny Dogfish Fishing Year Preliminary Quota Performance.



6.4.4 Port and Community Description

U.S. fishing communities directly involved in the harvesting or processing of dogfish are found in coastal states from Maine through North Carolina. The top ports for spiny dogfish landings are listed below. A complete set of port profiles is online at:

<http://www.nefsc.noaa.gov/read/socialsci/communityProfiles.html>

Table 14. Top 10 commercial spiny dogfish ports for 2015-2017 (in descending order). All of these ports had spiny dogfish landings valued at >\$100,000 average/year.

1. Chatham, MA
2. Virginia Beach, VA
3. Barnegat Light, NJ
4. Gloucester, MA
5. Point Pleasant, NJ
6. Ocean City, MD
7. Chincoteague, VA
8. Hatteras, NC
9. Seabrook, NH

Source: Unpublished NMFS dealer reports

*Community Profiles available at NMFS' communities page at: http://www.nefsc.noaa.gov/read/socialsci/community_profiles/

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7.0 ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF IMPACTS

This section presents an analysis of the impacts of the proposed actions on the Valued Ecosystem Components (VECs – as described in Section 6). The management alternatives are summarized below for ease of reference, and detailed in Section 5.

Alternative #1: No Action

For the 2018 fishing year, the year preceding the measures proposed via this action and representing no action due to rollover provisions in the FMP and regulations, the domestic spiny dogfish Acceptable Biological Catch (ABC), Annual Catch Limit (ACL), and Annual Catch Target (ACT) were 49,758,333 pounds. Accounting for Canadian catch, recreational catch, and discards resulted in a commercial quota of 38,195,822 pounds.

Alternative #2: Preferred Measures

For the 2019-2021 fishing years, the domestic spiny dogfish specifications would be as described in the table below:

Table 15. Proposed Spiny Dogfish Specifications

Specifications	Basis	2019 (pounds)	2019 (mt)	2020 (pounds)	2020 (mt)	2021 (pounds)	2021 (mt)
OFL (from SSC)	Projected Catch at Fmsy	0	0	na	na	na	na
ABC (from SSC)	Council Risk Policy	28,470,497	12,914	31,142,499	14,126	35,368,761	16,043
Canadian Landings	= 2017 estimate	108,027	49	108,027	49	108,027	49
Domestic ABC	= ABC – Canadian Landings	28,362,470	12,865	31,034,473	14,077	35,260,734	15,994
ACL	= Domestic ABC	28,362,470	12,865	31,034,473	14,077	35,260,734	15,994
Mgmt Uncert Buffer	Ave pct overage since 2011	0	0	0	0	0	0
ACT	= ACL - mgmt uncert buffer	28,362,470	12,865	31,034,473	14,077	35,260,734	15,994
U.S. Discards	=3 year average 15-16-17	7,661,064	3,475	7,661,064	3,475	7,661,064	3,475
TAL	ACT – Discards	20,701,406	9,390	23,373,409	10,602	27,599,671	12,519
U.S. Rec Landings	= 2017 estimate	178,574	81	178,574	81	178,574	81
Comm Quota	TAL – Rec Landings	20,522,832	9,309	23,194,835	10,521	27,421,096	12,438

The alternatives under consideration are fully described in section 5. Related to the specifications, the key determinant of biological impacts on the FMP's managed resources (spiny dogfish) is how much fish can be caught, i.e. the ABCs and ACLs for spiny dogfish. In recent years the fishery has not caught the entire quotas. Thus even the lower quotas may not be constraining. To the degree that extra effort is used to expand catch, impacts on non-target species, habitat, and protected resources could increase even under the no action or a reduction in ABCs/ACLs/quotas. Conversely, for the same reasons (primarily market) that catch has been lower than the quotas, catch and effort, and related impacts, could decrease from recent levels. Rather than repeat this concept for every resource, this document acknowledges that under any of the proposed alternatives effort and related impacts could increase or decrease for reasons

other than the specifications. Accordingly, the focus of analysis is on the relative upper limits or other constraints imposed (or removed) by the various alternatives considered in this action.

For habitat, protected resource, and non-target species impacts, the key determinant is not so much the catch itself but the amount and character of the related effort. A decrease in effort may result in positive impacts as a result of fewer encounters and/or fewer habitat impacts from fishing gear, while an increase in effort may result in a negative impact. Similar effort likely results in similar impacts compared to the status quo.

National Oceanic and Atmospheric Administration Administrative Order 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action and it includes the possibility of introducing or spreading a nonindigenous species. This potential impact does not fit into the sections below so it is addressed in this introduction. There is no evidence or indication that these fisheries have ever resulted or would ever result in the introduction or spread of nonindigenous species.

In evaluating the likely environmental effects of the proposed management measure alternatives, the direct and indirect effects of approving any of the measures will result from either continuation of or deviation from the activity of the current fishery. In other words, the impacts of the alternatives considered in this document will be to either, 1) maintain existing effects of the fishery, 2) change the magnitude and/or direction of those effects, or 3) generate new, previously unseen fishery effects. The last of these outcomes is considered highly unlikely since there are no new types of activities being authorized through this action. The action would simply adjust the amount of spiny dogfish that may be taken by the existing commercial fishery over the course of the upcoming fishing years (annual commercial quotas).

The direct and indirect effects of the proposed alternatives are examined with respect to five valued ecosystem components (VECs). Specifically, these include:

7.1 - Managed Resource (i.e., the spiny dogfish stock)

7.2 - Non-Target Fish Species

7.3 – Habitat

7.4 - Protected Resources

7.5 - Human Communities

When the impacts are relatively simple to describe and compare impacts may be discussed together in text. When impacts are less simple to describe and compare they may be addressed with a separate section for each alternative.

7.1 Biological Impacts on Managed Species

Any amount of fishing will lower the population of a fish stock, but in the context of fishery management, a negative impact would be something that causes a population to go substantially below target levels, which are generally near the biomass that produces maximum sustainable yield.

Alternative 1 No action = Status Quo for specifications: ABC of 49.9 million pounds and quota of 38.2 million pounds.

No action could result in overfishing, which would prevent the stock from reaching optimal levels and/or further depress stock size, potentially eventually resulting in an overfished condition. As such, no action could have a negative impact on spiny dogfish.

Alternative 2 - (Preferred) – Dogfish Specifications for 2019-2021 fishing years set based on lower SSC-recommended ABCs of 28.5 million pounds (2019), 31.1 million pounds (2020), and 35.4 million pounds; quotas of 20.5 million pounds (2019), 23.2 million pounds (2020), and 27.4 million pounds (2021).

Compared to the no action, the new proposed spiny dogfish ABC and associated specifications should have a low positive effect on the spiny dogfish stock by restricting catches to biologically appropriate levels that avoid overfishing and allow the stock to gradually increase to the target stock size, while still allowing a moderate amount of fishing mortality.

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7.2 Impacts on non-Target Fish Species

Alternative 1 No action = Status Quo for specifications: ABC of 49.9 million pounds and quota of 38.2 million pounds.

Section 6 addresses the non-target species encountered by the spiny dogfish fishery. Given discards and landings are tracked for ABC/ACL accountability of federally-managed species, and for stock assessments generally, non-target impacts should be low negative for no action and similar to previous years. While there are several encountered-species that are overfished, subject to overfishing, or depleted (Atlantic halibut, Atlantic cod, and American shad), the observed discarded quantities are relatively low so impacts should be low.

Alternative 2 - (Preferred) – Dogfish Specifications for 2019-2021 fishing years set based on lower SSC-recommended ABCs of 28.5 million pounds (2019), 31.1 million pounds (2020), and 35.4 million pounds; quotas of 20.5 million pounds (2019), 23.2 million pounds (2020), and 27.4 million pounds (2021).

If the quota is decreased compared to no action/the status quo, then it is possible that there could be some decrease in the extent of *directed* dogfish fishing and positive impacts for non-target fish species. However, given the lower quotas would allow approximately similar scales of landings as recent years, impacts would be low positive.

7.3 Habitat Impacts

The word “habitat” encompasses essential fish habitat (EFH) for the purposes of this analysis. The gears most commonly used in directed fishing for spiny dogfish are gillnets and bottom longline and these gear types are not generally associated with negative habitat impacts (Stevenson et al. 2004 p 125), so there would be neutral impacts expected from no action/the status quo (Alternative 1) or the preferred alternative (Alternative 2).

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7.4 Impacts on Protected Resources

Alternative 1 No action = Status Quo for specifications: ABC of 49.9 million pounds and quota of 38.2 million pounds.

The fishery uses several gear types, some of which may have protected species interactions as described in section 6.3. MMPA Protected and/or ESA listed species no-action impacts are further discussed below.

No-action MMPA Species Impacts

The spiny dogfish fishery overlaps with the distribution of marine mammals (cetaceans and pinnipeds) and has regular interactions. As a result, marine mammal interactions are likely (see section 6.3); however, ascertaining the risk of an interaction and the resultant potential impacts of the No Action on marine mammals are difficult and somewhat uncertain, as quantitative analysis has not been performed. However, we have considered, to the best of our ability, available information on marine mammal interactions with commercial fisheries, of which, the spiny dogfish fishery is a component (Hayes et al. 2018). Aside from large whale species (e.g., North Atlantic right, humpback, and fin), harbor porpoise, and several stocks of bottlenose dolphin, there has been no indication that takes of marine mammals in commercial fisheries have exceeded the potential biological removal (PBR) or exceeded levels which would threaten the sustainability these species (Hayes et al. 2018).⁹ Although the information presented in Hayes et al. 2018 is a collective representation of commercial fisheries interactions with marine mammals, and does not address the effects of the spiny dogfish fishery specifically, the information does demonstrate that to date, operation of the spiny dogfish fishery, or any other fishery, has not resulted in a collective level of take that threatens the continued existence of marine mammal populations.

In conjunction with the above, additional analysis on the impacts of the operation of fisheries in the northeast region have also been conducted by NMFS, pursuant to section 7 of the ESA, for ESA-listed species of marine mammals. In 2013, a Biological Opinions (Opinion) was issued on the operation of seven commercial fisheries, including the spiny dogfish fishery. NMFS concluded that the operation of these seven FMPs may affect, but will not jeopardize the continued existence of any ESA listed species of marine mammals. Since issuance of this Opinion, there has been no indication that these fisheries have changed in any significant manner such that levels of take have gone above and beyond those considered by NMFS in its assessment of fisheries affects to listed species. As a result, we do not expect risks or impacts to ESA-listed species of marine mammals under status quo conditions to be different from those already considered by NMFS (NMFS 2013) and therefore, as concluded by NMFS, do not expect the continued operation of the spiny dogfish fishery under status quo conditions to jeopardize the continued existence of any ESA listed species of marine mammals (NMFS 2013).

⁹ Although several species of large whales, harbor porpoise, and several stocks of bottlenose dolphin have experienced levels of take that exceeded each species PBR, take reduction plans have been implemented and are currently in place to reduce bycatch in the fisheries affecting these species (large whales: Atlantic Large Whale Take Reduction Plan; Harbor Porpoise Take Reduction Plan; Bottlenose Dolphins Take Reduction Plan; see section 6.2 for further details)

Based on this information, and the fact that there is continual monitoring of marine mammal species bycatch, and that measures exist that reduce serious injury and mortality to marine mammal species, it is not expected that the No Action will introduce any new risks or additional takes to non-ESA listed marine mammal species that have not already been considered by NMFS to date and therefore, is not expected to affect the continued existence marine mammals. For these reasons, no action is expected to have low negative impacts on marine mammals, similar to past years.

No-action ESA Listed Species Impacts

The spiny dogfish fishery overlaps with ESA listed species' distributions. As a result, ESA listed species interactions are possible (see section 6.3); however, ascertaining the risk of an interaction and the resultant potential impacts of the No Action on ESA-listed species are difficult and somewhat uncertain, as quantitative analysis has not been performed. However, we have considered, to the best of our ability, how the fishery has operated in regards to listed species since 2013, when NMFS issued a Biological Opinion (Opinion) on the operation of seven commercial fisheries, including the spiny dogfish fishery (NMFS 2013). Specifically, we have focused on available information on ESA-listed species interactions with commercial fisheries, of which, the spiny dogfish fishery is a component (NMFS 2013; see section 6.4). The Opinion issued on December 16, 2013, included an incidental take statement authorizing the take of specific numbers of ESA listed species of sea turtles, Atlantic salmon, and Atlantic sturgeon. The spiny dogfish fishery is currently covered by the incidental take statement authorized in NMFS 2013 Opinion.

The 2013 biological opinion concluded that the spiny dogfish fishery may affect, but not jeopardize the continued existence of any ESA listed species. No action would retain status quo operating conditions in the FMP and therefore, changes in fishing effort or behavior would not be expected. As a result, no action is not expected to result in the introduction of any new risks or additional takes to ESA listed species that have not already been considered and authorized by NMFS to date (NMFS 2013). Further, the spiny dogfish fishery has not resulted in the exceedance of NMFS authorized take of any ESA listed species from 2013 to the present. Thus as concluded in the NMFS 2013 Opinion, No Action / the Status Quo is not expected to result in levels of take that would jeopardize the continued existence of ESA listed species. For these reasons, the no action (Alternative 1) is expected to have low negative impacts on ESA-listed species, similar to past years.

Alternative 2 - (Preferred) – Dogfish Specifications for 2019-2021 fishing years set based on lower SSC-recommended ABCs of 28.5 million pounds (2019), 31.1 million pounds (2020), and 35.4 million pounds; quotas of 20.5 million pounds (2019), 23.2 million pounds (2020), and 27.4 million pounds (2021).

Alternative 2 proposes to decrease the commercial quota for spiny dogfish compared to no action. As such, and because the spiny dogfish stock should be relatively stable given its life history, fishing effort is likely to remain similar to status quo conditions or potentially decrease; the latter potentially equates to less fishing time, and therefore, gear being present in the water for a shorter overall duration. Protected species interactions with gear, regardless of listing status, are greatly influenced by the amount of gear, and the duration of time gear is in the water, so any

decrease in either of these factors will reduce the potential for protected species interactions and therefore, reduce the potential for serious injury or mortality to these species. While interactions and takes may still occur under Alternative 2, impacts to protected species are not expected to be any greater than those under status quo conditions, and in fact, as described above, may be less than status quo conditions. As a result, relative to the no action, Alternative 2 is likely to have similar to low positive impacts on protected species.

7.5 Socioeconomic Impacts

Alternative 1 No action = Status Quo for specifications: ABC of 49.9 million pounds and quota of 38.2 million pounds.

Due to the year to year variation in catch and effort in the spiny dogfish fishery, it is difficult to quantify human community impacts but the current fishery supports a number of vessels and dealers, as described in Section 6.4, and provides a variety of jobs related directly to fishing and also in associated support services. Thus the overall socioeconomic impacts from the status quo should be positive in the short run. While catches have been unconstrained by quotas and below a level associated with overfishing, catches at the status-quo ABC level could cause overfishing, which could lead to negative impacts in the long run.

Alternative 2 - (Preferred) – Dogfish Specifications for 2019-2021 fishing years set based on lower SSC-recommended ABCs of 28.5 million pounds (2019), 31.1 million pounds (2020), and 35.4 million pounds; quotas of 20.5 million pounds (2019), 23.2 million pounds (2020), and 27.4 million pounds (2021).

Landings in the most recent three full fishing years were approximately 20.8 million pounds (2015), 25.1 million pounds (2016), and 16.4 million pounds (2017). Landings in the 2018 fishing year to date (November 10) were trending about 23% below even 2017. As such, it is possible that even the lowest proposed quota (20.5 million in 2019) would not be binding on the fishery. However, landings in the 2016 fishing year were about 25.1 million pounds, so in a worse-case scenario it appears the preferred alternative could cause up to 4.6 million pounds less landings in 2019 (25.1-20.5) and up to 1.9 million pounds less landings in 2020 (25.1-23.2), at least compared to the 2016 fishing year. Assuming a constant recent price of \$0.17 per pound, these would translate into potential forgone revenues of approximately \$0.8 million in 2019 and \$0.3 million in 2020. However, if the fishery were to reverse the most recent trend and achieve the quota and close, it would still likely be generating more revenues than the most recent full fishing year (2017).

By effectively constraining the fishery to the ABC, the stock is expected to grow and provide quotas higher than all recent (i.e. last three years) landings by 2021. Taking these factors into account, compared to no action, the overall socioeconomic impacts of the preferred alternative (Alternative 2) appear low negative in the short run and low positive in the long run.

7.6 Cumulative Effects Analysis

TO BE ADDED (Not expected to be significant)

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8.0 WHAT LAWS APPLY TO THE ACTIONS CONSIDERED IN THIS DOCUMENT?

8.1 Magnuson-Stevens Fishery Conservation and Management Act

8.1.1 NATIONAL STANDARDS

Section 301 of the Magnuson-Stevens Fishery Conservation and Management Act requires that fishery management plans contain conservation and management measures that are consistent with the ten National Standards:

In General. – Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the...national standards for fishery conservation and management.

(1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The proposed action would prevent overfishing, thus helping to achieve optimum yield in the long run.

(2) Conservation and management measures shall be based upon the best scientific information available.

The data sources considered and evaluated during the development of this action include, but are not limited to: permit data, landings data from vessel trip reports, information from resource trawl surveys, sea sampling (observer) data, data from the dealer weighout purchase reports, peer-reviewed assessments and original literature, and descriptive information provided by fishery participants and the public. To the best of the Council's knowledge these data sources constitute the best scientific information available. All analyses based on these data have been (or will be) reviewed by National Marine Fisheries Service and the public prior to a final decision.

(3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The fishery management plan addresses management throughout the range of the species in U.S. waters, in accordance with the jurisdiction of U.S. law.

(4) Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among

various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

There is nothing in the proposed action that would be expected to discriminate between residents of different States.

(5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

There is no allocation proposed and the proposed measures should allow for efficient operation of the fishery.

(6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Changes in fisheries occur continuously, both as the result of human activity (for example, new technologies or shifting market demand) and natural variation (for example, oceanographic perturbations). In order to provide the greatest flexibility possible for future management decisions, the fishery management plan includes a framework adjustment mechanism with an extensive list of possible framework adjustment measures that can be used to quickly adjust the plan as conditions in the fishery change.

(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

As always, the Council considered the costs and benefits associated with the management measures proposed in the action when developing this action. This action should not create any duplications related to managing the spiny dogfish resource.

(8) Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

The human community impacts of the action are described above in Section 7.5. While the lower quotas may constrain landings to a small degree in the short run, the lower quotas should avoid overfishing and facilitate higher quotas in the long run.

(9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

The Magnuson-Stevens Act defines “bycatch” as fish that are harvested in a fishery, but are not retained (sold, transferred, or kept for personal use), including economic discards and regulatory discards. Incidentally landed catch are fish, other than the target species, that are harvested while fishing for a target species and retained and/or sold. The proposed actions should not increase bycatch.

(10) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

Fishing is a dangerous occupation; participants must constantly balance the risks imposed by weather against the economic benefits. According to the National Standard guidelines, the safety of the fishing vessel and the protection from injury of persons aboard the vessel are considered the same as “safety of human life at sea.” The safety of a vessel and the people aboard is ultimately the responsibility of the master of that vessel. Each master makes many decisions about vessel maintenance and loading and about the capabilities of the vessel and crew to operate safely in a variety of weather and sea conditions. This national standard does not replace the judgment or relieve the responsibility of the vessel master related to vessel safety. Nothing in this action is expected to negatively impact safety at sea.

8.1.2 OTHER REQUIRED PROVISIONS OF THE MAGNUSON-STEVENSON ACT

Section 303 of the MSA contains 15 additional required provisions for FMPs, which are listed and discussed below. Nothing in this action is expected to contravene any of these required provisions.

(1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are-- (A) necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery; (B) described in this subsection or subsection (b), or both; and (C) consistent with the National Standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law

The spiny dogfish FMP has evolved over time through multiple Amendments and currently uses Acceptable Biological Catch (ABC) recommendations from the Council's Scientific and Statistical Committee to sustainably manage the fishery. Under the umbrella of limiting catch to the Acceptable Biological Catch, a variety of other management and conservation measures have been developed to meet the goals of the fishery management plan and remain consistent with the National Standards. The current measures are codified in the Code of Federal Regulations (50 C.F.R. § 648 Subpart B - <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=1e9802ffddb05d0243d9c657fade956c&rgn=div5&view=text&node=50>

[:12.0.1.1.5&idno=50](#)) and summarized at

<http://www.greateratlantic.fisheries.noaa.gov/regs/info.html>. This action proposes ABCs that should be sustainable. As such, the existing and proposed management measures should continue to promote the long-term health and stability of the fisheries consistent with the MSA.

(2) contain a description of the fishery, including, but not limited to, the number of vessels involved, the type and quantity of fishing gear used, the species of fish involved and their location, the cost likely to be incurred in management, actual and potential revenues from the fishery, any recreational interest in the fishery, and the nature and extent of foreign fishing and Indian treaty fishing rights, if any

Every Amendment to this Fishery Management Plan provides this information. This document also updates this information as appropriate in Section 6.

(3) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery, and include a summary of the information utilized in making such specification

This provision is addressed via assessments that are conducted through a peer-reviewed process at the NMFS Northeast Fisheries Science Center. The available information is summarized in every Amendment and Specifications document – see Section 6. Full assessment reports are available at: <http://www.nefsc.noaa.gov/saw/>.

(4) assess and specify-- (A) the capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield specified under paragraph (3); (B) the portion of such optimum yield which, on an annual basis, will not be harvested by fishing vessels of the United States and can be made available for foreign fishing; and (C) the capacity and extent to which United States fish processors, on an annual basis, will process that portion of such optimum yield that will be harvested by fishing vessels of the United States

Given sufficient demand the vessels and processors of the U.S. have the capacity to fully harvest the available quotas.

(5) specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, and charter fishing in the fishery, including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, number of hauls, and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors

Previous Amendments have specified the data that must be submitted to NMFS in the form of vessel trip reports, vessel monitoring, and dealer transactions.

(6) consider and provide for temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fishery;

except that the adjustment shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery

There are no such requests pending, but the plan contains provisions for framework actions to make modifications regarding access/permitting if necessary.

(7) describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat

Section 6 of this document summarizes essential fish habitat (EFH), and links are provided to more detailed information. The principal gear types used in this fishery are not associated with substantial adverse habitat impacts.

(8) in the case of a fishery management plan that, after January 1, 1991, is submitted to the Secretary for review under section 304(a) (including any plan for which an amendment is submitted to the Secretary for such review) or is prepared by the Secretary, assess and specify the nature and extent of scientific data which is needed for effective implementation of the plan

The preparation of this action included a review of the scientific data available to assess the impacts of all alternatives considered. No additional data was deemed needed for effective implementation of the plan.

(9) include a fishery impact statement for the plan or amendment (in the case of a plan or amendment thereto submitted to or prepared by the Secretary after October 1, 1990) which shall assess, specify, and describe the likely effects, if any, of the conservation and management measures on-- (A) participants in the fisheries and fishing communities affected by the plan or amendment; and (B) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants;

Section 7 of this document provides an assessment of the likely effects on fishery participants and communities from the considered actions.

(10) specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or the Secretary has determined is approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery

The FMP is designed such that new overfished/overfishing reference points are automatically incorporated once accepted as best available scientific information. If the fishery is declared overfished or if overfishing is occurs, an Amendment would be undertaken to implement effective corrective measures.

(11) establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent

practicable and in the following priority-- (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided

NMFS implemented an omnibus amendment to implement a new standardized reporting methodology since the previous methodology was invalidated by court order. See <http://www.greateratlantic.fisheries.noaa.gov/mediacenter/2013/09/draftsbrmamendment.html> for details.

(12) assess the type and amount of fish caught and released alive during recreational fishing under catch and release fishery management programs and the mortality of such fish, and include conservation and management measures that, to the extent practicable, minimize mortality and ensure the extended survival of such fish

The spiny dogfish fishery is primarily commercial and there are no specific catch and release fishery management programs.

(13) include a description of the commercial, recreational, and charter fishing sectors which participate in the fishery and, to the extent practicable, quantify trends in landings of the managed fishery resource by the commercial, recreational, and charter fishing sectors

Every Amendment to the FMP provides this information. This document also updates this information as appropriate in Section 6.

(14) to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery.

No rebuilding plans are active (or necessary).

(15) establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.

The annual specifications process addresses this requirement. Acceptable Biological Catch recommendations from the Council's Scientific and Statistical Committee are designed to avoid overfishing and form the upper bounds on catches. There are a variety of proactive and reactive accountability measures for these fisheries, fully described at: <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=1e9802ffddb05d0243d9c657fade956c&rgn=div5&view=text&node=50:12.0.1.1.5&idno=50#50:12.0.1.1.5.2>.

8.1.3 DISCRETIONARY PROVISIONS OF THE MAGNUSON-STEVENSON ACT

Section 303b of the Magnuson-Stevens Act contains 14 additional discretionary provisions for Fishery Management Plans. They may be read in the Magnuson-Stevens Act, available at

http://www.fisheries.noaa.gov/sfa/laws_policies/msa/2007_imp_archive/index.html.

Given the limited scope of this action, there are no impacts related to such provisions.

8.1.4 ESSENTIAL FISH HABITAT ASSESSMENT

The specifications under the preferred alternatives proposed in this action are not expected to result in substantial changes in effort, and the relevant gear types are not likely to cause substantial adverse habitat impacts. Therefore, the Council concluded in section 7 of this document that the proposed specifications will have no additional adverse impacts on EFH that are more than minimal. Thus no mitigation is necessary.

8.2 NEPA

8.2.1 Finding of No Significant Impact (FONSI)

National Oceanic and Atmospheric Administration Administrative Order 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 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 Administrative Order 216-6 criteria and Council on Environmental Quality's context and intensity criteria. These include:

1. Can the proposed action reasonably be expected to cause both beneficial and adverse impacts that overall may result in a significant effect, even if the effect will be beneficial?

As described in Section 7 of this document, the proposed action may result in lower, but not significantly lower, fishery revenues. Also as described in Section 7 of this document, there are not expected to be other impacts that are significant, either beneficial or adverse, for target species, non- target species, protected resources, or habitat.

2. Can the proposed action reasonably be expected to significantly affect public health or safety?

As described in Section 7 of this document, the proposed action should not substantially alter the manner in which the industry conducts fishing activities. Therefore, the proposed

action is not expected to adversely impact public health or safety (also see the original EA).

3. Can the proposed action reasonably be expected to result in significant impacts to unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?

Although there are shipwrecks present in the area where fishing occurs, including some registered on the National Register of Historic Places, vessels typically avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear. As described in Section 7 of this document, the proposed action should not substantially alter the manner in which the industry conducts fishing activities for the target species. Therefore, it is not likely that the preferred alternative would adversely affect the historic resources listed above.

4. Are the proposed action's effects on the quality of the human environment likely to be highly controversial?

The proposed action is based on measures contained in the FMP that have been in place for many years. In addition, the scientific information upon which the annual quotas are based has been peer reviewed and is the most recent information available (see Section 6). Thus, the effects of this action are not expected to be highly controversial.

5. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

While there is always a degree of variability in the year to year performance of the relevant fisheries, as described in Section 7 of this document, the proposed action should not substantially alter the way the industry conducts fishing activities for the target species. As a result, the effects on the human environment of the proposed action are not highly uncertain nor do they involve unique or uncertain risks.

6. Can the proposed action reasonably be expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

The proposed action modifies existing measures and the modifications have been proposed and evaluated consistent with the existing fishery management plan and therefore is neither likely to establish a precedent for future actions with significant effects nor to represent a decision in principle about a future consideration.

7. Is the proposed action related to other actions that when considered together will have individually insignificant but cumulatively significant impacts?

The impacts of the preferred alternatives on the biological, physical, and human environment are described in Section 7 of this document. The overall interaction of the

proposed action with other past, present and reasonably foreseeable future actions, including non-fishing activities, is not expected to result in significant cumulative impacts on the biological, physical, and human components of the environment.

8. Can the proposed action reasonably be expected 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?

Although it is possible that historic or cultural resources such as shipwrecks could be present, vessels try to avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear. Therefore, it is not likely that the preferred alternative would result in substantial impacts to unique areas.

9. Can the proposed action reasonably be expected to have a significant impact on endangered or threatened species, or their critical habitat as defined under the Endangered Species Act of 1973?

The proposed action is not expected to substantially alter overall fishing operations, lead to a substantial increase of fishing effort that could affect these species, or alter the spatial and/or temporal distribution of current fishing effort (see Section 7 of this document) in a manner that would increase interaction rates with protected species.

In a memorandum dated October 17, 2017, GARFO's Protected Resources Division reinitiated consultation on the Batched Biological Opinion that applies to this fishery. As part of the reinitiation, it was determined that allowing these fisheries to continue during the reinitiation period will not violate ESA sections 7(a)(2) and 7(d) because it will not increase the likelihood of interactions with protected species above the amount that was previously considered in the 2013 Batched Biological Opinion. Therefore, conducting the proposed action during the reinitiation period would not be likely to jeopardize the continued existence of any whale, sea turtle, Atlantic salmon, or sturgeon species. As described in section 6, the proposed action is not likely to adversely affect any designated critical habitat.

10. Can the proposed action reasonably be expected to threaten a violation of Federal, state, or local law or requirements imposed for environmental protection?

As described in Section 7 of this document, overall fishing effort is not expected to substantially increase in magnitude under the proposed action. In addition, the proposed action is not expected to substantially alter fishing methods, activities, or the spatial and/or temporal distribution of fishing effort. Thus, it is not expected that they would threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment. The proposed action has been found to be consistent with other applicable laws as described in this Section.

11. Can the proposed action reasonably be expected to adversely affect stocks of marine mammals as defined in the Marine Mammal Protection Act?

The spiny dogfish fishery has the potential to interact with multiple marine mammal species. As described in Section 7 of this document, relevant fishing effort is not expected to substantially increase in magnitude under the proposed action. In addition, the proposed action is not expected to substantially alter fishing methods, activities, or the spatial and/or temporal distribution of fishing effort. Therefore, this action is not expected to adversely affect stocks of marine mammals as defined in the Marine Mammal Protection Act.

12. Can the proposed action reasonably be expected to adversely affect managed fish species?

As described in Section 7 of this document, the proposed action is not expected to jeopardize the sustainability of any target species affected by the action. The preferred alternatives are consistent with the FMP and best available scientific information. As such, the proposed action is expected to ensure the long term sustainability of harvests. The proposed action is not expected to jeopardize the sustainability of any non-target species (see section 7 of this document) because the proposed action is not expected to result in substantial increases in relevant overall fishing effort. In addition, the proposed action is not expected to substantially alter fishing methods or the temporal and/or spatial distribution of fishing activities. Therefore, none of the proposed actions are expected to jeopardize the sustainability of non-target species.

13. Can the proposed action reasonably be expected to adversely affect essential fish habitat as defined under the Magnuson-Stevens Fishery Conservation and Management Act?

The specifications under the preferred alternatives proposed in this action are not expected to result in substantial changes in effort, and the relevant gear types are not likely to cause substantial adverse habitat impacts. Therefore, the Council concluded in Section 7 of this document that the proposed specifications will have no additional adverse impacts on EFH that are more than minimal.

14. Can the proposed action reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

Overall fishing effort is not expected to substantially increase in magnitude under the proposed action (see Section 7 of this document). In addition, the proposed action is not expected to substantially alter fishing methods, activities, or the spatial and/or temporal distribution of fishing effort. Thus, it is not expected that the action would adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems.

15. Can the proposed action reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

Fishing effort is not expected to substantially increase in magnitude under the proposed action (see Section 7 of this document). In addition, the proposed action is not expected to substantially alter fishing methods, activities or the spatial and/or temporal distribution of fishing effort. Therefore, the proposed action is not expected to have a substantial impact on biodiversity or ecosystem function (e.g. food webs) within the affected area.

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

There is no evidence or indication that these fisheries have ever resulted or would ever result in the introduction or spread of nonindigenous species (also see the original EA).

NEPA FONSI DETERMINATION (TO BE DETERMINED)

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for this action, it is hereby determined that these proposed MSB FMP action will not significantly impact the quality of the human environment as described above and in the supporting 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.

Michael Pentony

Date

Greater Atlantic Regional Administrator, NOAA

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8.3 Marine Mammal Protection Act

The various species which inhabit the management unit of this FMP that are afforded protection under the Marine Mammal Protection Act of 1972 (MMPA) are described in Section 6. None of the proposed specifications are expected to significantly alter fishing methods or activities or result in substantially increased effort. The Council has reviewed the impacts of the proposed specifications on marine mammals and concluded that the management actions proposed are consistent with the provisions of the MMPA and would not alter existing measures to protect the species likely to inhabit the management units of the subject fisheries. For further information on the potential marine mammal impacts of the fishery and the proposed management action, see Sections 6 and 7 of this Environmental Assessment.

8.4 Endangered Species Act

Section 7 of the ESA 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 Council has concluded that the proposed specifications and the prosecution of the associated fisheries are not likely to result in jeopardy to any ESA-listed species under NOAA Fisheries Service jurisdiction, or alter or modify any critical habitat, based on the analysis in this document. For further information on the potential impacts of the fisheries and the proposed management action on endangered species, see Sections 6 and 7 of this document.

NMFS reinitiated consultation on seven fisheries, including this FMP and finalized a biological opinion in December 2013 (<http://www.greateratlantic.fisheries.noaa.gov/protected/section7/bo/actbo.html>). NMFS determined that:

“After reviewing..., it is our biological opinion that the proposed action may adversely affect, but is not likely to jeopardize, the continued existence of North Atlantic right whales, humpback whales, fin whales, and sei whales, or loggerhead (specifically, the NWA DPS), leatherback, Kemp’s ridley, and green sea turtles, any of the five DPSs of Atlantic sturgeon, or GOM DPS Atlantic salmon. It is also our biological opinion that the proposed action is not likely to adversely affect hawksbill sea turtles, shortnose sturgeon, smalltooth sawfish DPS, *Acroporid* corals, Johnson’s seagrass, sperm whales, blue whales, designated critical habitat for right whales in the Northwest Atlantic, or designated critical habitat for GOM DPS Atlantic salmon.”

8.5 Administrative Procedures Act

Section 553 of the Administrative Procedure Act establishes procedural requirements applicable to informal rulemaking by Federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process, and to give the

public adequate notice and opportunity for comment. At this time, the Council is not requesting any abridgement of the rulemaking process for this action.

8.6 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to control and, to the extent possible, minimize the paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. This action does not propose to modify any existing collections, or to add any new collections; therefore, no review under the Paperwork Reduction Act is necessary.

8.7 Coastal Zone Management Act

Section 307(c)(1) of the Federal Coastal Zone Management Act of 1972 requires that all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. Pursuant to the Coastal Zone Management Act regulations at 15 CFR 930.35, a negative determination may be made if there are no coastal effects and the subject action: (1) Is identified by a state agency on its list, as described in ' 930.34(b), or through case-by-case monitoring of unlisted activities; or (2) which is the same as or is similar to activities for which consistency determinations have been prepared in the past; or (3) for which the Federal agency undertook a thorough consistency assessment and developed initial findings on the coastal effects of the activity. Accordingly, NMFS has determined that this action would have no effect on any coastal use or resources of any state. Letters documenting the NMFS negative determination, along with this document, were (or will be) sent to the coastal zone management program offices of the states of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. A list of the specific state contacts and a copy of the letters are available upon request.

8.8 Section 515 (Data Quality Act)

Pursuant to NOAA guidelines implementing section 515 of Public Law 106-554 (the Data Quality Act), all information products released to the public must first undergo a Pre-Dissemination Review to ensure and maximize the quality, objectivity, utility, and integrity of the information (including statistical information) disseminated by or for Federal agencies. The following section addresses these requirements.

Utility

The information presented in this document should be helpful to the intended users (the affected public) by presenting a clear description of the purpose and need of the proposed action, the measures proposed, and the impacts of those measures. A discussion of the reasons for selecting the proposed action is included so that intended users may have a full understanding of the proposed action and its implications, as well as the Council's rationale.

Until a proposed rule is prepared and published, this document is the principal means by which the information contained herein is available to the public. The information provided in this document is based on the most recent available information from the relevant data sources. The development of this document and the decisions made by the Council to propose this action are the result of a multi-stage public process. Thus, the information pertaining to management measures contained in this document has been improved based on comments from the public, the fishing industry, members of the Council, and NMFS.

The Federal Register notice that announces the proposed rule and the final rule and implementing regulations will be made available in printed publication, on the website for the Greater Atlantic Regional Fisheries Office, and through the Regulations.gov website. The Federal Register documents will provide metric conversions for all measurements.

Integrity

Prior to dissemination, information associated with this action, independent of the specific intended distribution mechanism, is safeguarded from improper access, modification, or destruction, to a degree commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information. All electronic information disseminated by NOAA Fisheries adheres to the standards set out in Appendix III, Security of Automated Information Resources, of OMB Circular A-130; the Computer Security Act; and the Government Information Security Act. All confidential information (e.g., dealer purchase reports) is safeguarded pursuant to the Privacy Act; Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business, and financial information); the Confidentiality of Statistics provisions of the Magnuson-Stevens Act; and NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics.

Objectivity

For purposes of the Pre-Dissemination Review, this document is considered to be a Natural Resource Plan. Accordingly, the document adheres to the published standards of the Magnuson-Stevens Act; the Operational Guidelines, FMP Process; the EFH Guidelines; the National Standard Guidelines; and NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act.

This information product uses information of known quality from sources acceptable to the relevant scientific and technical communities. Stock status (including estimates of biomass and fishing mortality) reported in this product are based on either assessments subject to peer-review through the Stock Assessment Review Committee or on updates of those assessments prepared by scientists of the Northeast Fisheries Science Center. Landing and revenue information is based on information collected through the Vessel Trip Report and Commercial Dealer databases. Information on catch composition, by tow, is based on reports collected by the NOAA Fisheries observer program and incorporated into the sea sampling or observer database systems. These reports are developed using an approved, scientifically valid sampling process. In addition to these sources, additional information is presented that has been accepted and published in peer-reviewed journals or by scientific organizations. Original analyses in this document were prepared using data from accepted sources, and the analyses have been reviewed by members of the Spiny Dogfish Monitoring Committee or other NMFS staff with expertise on the subject matter.

Despite current data limitations, the conservation and management measures proposed for this action were selected based upon the best scientific information available. The analyses conducted in support of the proposed action were conducted using information from the most recent complete calendar years, generally through 2017 except as noted. The data used in the analyses provide the best available information on the number of seafood dealers operating in the northeast, the number, amount, and value of fish purchases made by these dealers. Specialists (including professional members of plan development teams, technical teams, committees, and Council staff) who worked with these data are familiar with the most current analytical techniques and with the available data and information relevant to these fisheries.

The policy choices are clearly articulated in Section 5 of this document as well as the management alternatives considered in this action. The supporting science and analyses, upon which the policy choices are based, are described in Sections 6 and 7 of this document. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency.

The review process used in preparation of this document involves the responsible Council, the Northeast Fisheries Science Center, the Greater Atlantic Regional Fisheries 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 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 action proposed in this document and clearance of any rules prepared to implement resulting regulations is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

8.9 Regulatory Flexibility Analysis

The purpose of the Regulatory Flexibility Act is to reduce the impacts of burdensome regulations and recordkeeping requirements on small businesses. To achieve this goal, the Regulatory Flexibility Act requires Federal agencies to describe and analyze the effects of proposed regulations, and possible alternatives, on small business entities. This document contains an Initial Regulatory Flexibility Analysis, found at the end of this section, which includes an assessment of the effects that the proposed action and other alternatives are expected to have on small entities.

8.10 Executive Order (E.O.) 12866 (Regulatory Planning and Review)

To enhance planning and coordination with respect to new and existing regulations, this Executive Order requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be significant. The end of this section includes the Regulatory Impact Review, which includes an assessment of the costs and benefits of the proposed action, in accordance with the guidelines established by Executive Order 12866. The analysis is anticipated to show that this action is not a significant regulatory action because it will not affect the economy or a sector of the economy in a material way.

8.11 Executive Order (E.O.) 13132 (Federalism)

This Executive Order established nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. The Executive Order also lists a series of policy making criteria to which Federal agencies must adhere when formulating and implementing policies that have federalism implications. However, no federalism issues or implications have been identified relative to the measures proposed measures. This action does not contain policies with federalism implications sufficient to warrant preparation of an assessment under Executive Order 13132. The affected states have been closely involved in the development of the proposed management measures through their representation on the Council (all affected states are represented as voting members of at least one Regional Fishery Management Council). No comments were received from any state officials relative to any federalism implications that may be associated with this action

8.12 Initial Regulatory Flexibility Analysis and Regulatory Impact Review

To be added after NEFMC meeting.

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9.0 SELECTED REFERENCES AND BACKGROUND DOCUMENTS (NOT YET FULLY UPDATED)

- ASMFC. 2007. Estimation of Atlantic Sturgeon Bycatch in Coastal Atlantic Commercial Fisheries of New England and the Mid-Atlantic. Special Report to the ASMFC Atlantic Sturgeon Management Board.
- ASMFC. 2017. 2017 Atlantic sturgeon benchmark stock assessment and peer review report. October 18, 2017. 456 pp.
- ASSRT. 2007. Status Review of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*). Prepared by the Atlantic Sturgeon Status Review Team for the National Marine Fisheries Service, National Oceanic and Atmospheric Administration. February 23, 2007.
- Beanlands, G.E., and P. N. Duinker. 1984. Ecological framework adjustment for environmental impact assessment. *Journal of Environmental Management*. 8:3
- Dadswell, M. 2006. A review of the status of Atlantic sturgeon in Canada, with comparisons to populations in the United States and Europe. *Fisheries* 31:218-229.
- Dovel, W. L., and T. J. Berggren. 1983. Atlantic sturgeon of the Hudson estuary, New York. *New York Fish and Game Journal* 30:140–172.
- Dunton, K.J., A. Jordaan, K.A. McKown, D.O. Conover, and M.G. Frisk. 2010. Abundance and distribution of Atlantic sturgeon (*Acipenser oxyrinchus*) within the Northwest Atlantic Ocean determined from five fishery-independent surveys. *Fish. Bull.* 108:450-465.
- Hayes et al 2017. US Atlantic and Gulf of Mexico Marine Mammal Stock Assessments - 2017: (second edition). Available at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>.
- Holland, B. F., Jr., and G. F. Yelverton. 1973. Distribution and biological studies of anadromous fishes offshore North Carolina. N.C. Dep. Nat. Econ. Res. Spec. Sci. Rep. 24. 132 pp.
- Kocik, J., C. Lipsky, T. Miller, P. Rago, and G. Shepherd. 2013. An Atlantic Sturgeon Population Index for ESA Management Analysis. Northeast Fisheries Science Center Reference Document 13-06. Available online at: <http://www.nefsc.noaa.gov/nefsc/publications/>
- Kynard, B., and M. Horgan. 2002a. Ontogenetic behavior and migration of Atlantic sturgeon, *Acipenser oxyrinchus oxyrinchus*, and shortnose sturgeon, *A.*

- brevirostrum*, with notes on social behavior. *Environmental Biology of Fishes* 63:137–150.
- Laney, R.W., J.E. Hightower, B.R. Versak, M.F. Mangold, W.W. Cole Jr., and S.E. Winslow. 2007. Distribution, habitat use, and size of Atlantic sturgeon captured during cooperative winter tagging cruises, 1988-2006. In *Anadromous sturgeons: habitats, threats, and management* (J. Munro, D. Hatin, J.E. Hightower, K. McKown, K.J. Sulak, A.W. Kahnle, and F. Caron (eds.)), p. 167-182. *Am. Fish. Soc. Symp.* 56, Bethesda, MD.
- Laney, R.W. 1997. The relationship of submerged aquatic vegetation (SAV) ecological value to species managed by the Atlantic States Marine Fisheries Commission (ASMFC): summary for the ASMFC SAV Subcommittee. pp. 11-35 in C.D. Stephan and T.E. Bigford, eds. *Atlantic Coastal Submerged Aquatic Vegetation: a review of its ecological role, anthropogenic impacts, state regulation, and value to Atlantic coastal fish stocks*. Atlantic States Marine Fisheries Commission, Washington, D.C. *Habitat Management Series* #1.
- Orphanides, C.D., and J.M. Hatch. 2017. Estimates of cetacean and pinniped bycatch in the 2015 New England sink and Mid-Atlantic gillnet fisheries. *US Dept Commer, Northeast Fish Sci Cent Ref Doc.* 17-18; 21p.
- MAFMC. 2011. Amendment 2 to the Spiny Dogfish Fishery Management Plan (Omnibus ACL/AM Amendment). Dover, DE. 552 p. + append.
- _____. 2006. Framework 1 to the Spiny Dogfish Fishery Management Plan (Multi-year Management Measures). Dover, DE. 23 p.
- _____. 1999. Spiny Dogfish Fishery Management Plan (includes Final Environmental Impact Statement and Regulatory Impact Review).
- Murray, K.T. 2006. Estimated average annual bycatch of loggerhead sea turtles in the U.S. Mid-Atlantic bottom other trawl gear, 1996-2004. *U.S. Commerce Northeast Fish. Sci. Cent. Ref. Doc.* 06-19, 26 pp.
- Murray, K. 2018. Estimated bycatch of sea turtles in sink gillnet gear. *NOAA Technical Memorandum. NMFS-NE-242.* 20p.
- NMFS. 1998. Endangered Species Act Section 7 consultation, biological opinion and conference. Consultation in accordance with Section 7(a) of the Endangered Species Act Regarding the Federal Monkfish Fishery. National Marine Fisheries Service, Northeast Regional Office, Gloucester, MA. December 21, 1998.

- NMFS 2009. National Marine Fisheries Service (NMFS). 2009c. Correspondence between ENTRIX, Inc and the Northeast Fisheries Science Center regarding impacts to sea turtles from fishing gear.
- NMFS 2013. Biological Opinion for Northeast Multispecies, Monkfish, Spiny Dogfish, Atlantic Bluefish, Northeast Skate Complex, Mackerel/Squid/Butterfish, and Summer Flounder/Scup/Black Sea Bass Fisheries. Available at <https://www.greateratlantic.fisheries.noaa.gov/protected/section7/bo/actbo.html>.
- NMFS. 2014. NMFS-Greater Atlantic Region (GARFO). Memo to the record: Determination regarding reinitiation of Endangered Species Act section 7 consultation on 12 GARFO fisheries and two Northeast Fisheries Science Center funded fisheries research surveys due to critical habitat designation for loggerhead sea turtles. Memo issued September 17, 2014.
- NMFS 2015. Northeast Fisheries Science Center Fisheries Statistics Branch (NEFSC FSB). Northeast Fisheries Observer Program: Incidental Take Reports. Omnibus data request + supplemental data for 2014 from http://www.nefsc.noaa.gov/fsb/take_reports/nefop.html.
- NMFS. 2015a. Endangered Species Act Section 4(b)(2) Report: Critical Habitat for the North Atlantic Right Whale (*Eubalaena glacialis*). Prepared by National Marine Fisheries Service Greater Atlantic Regional Fisheries Office and Southeast Regional Office, December 2015. http://www.greateratlantic.fisheries.noaa.gov/regs/2016/January/16narwchsection4_b__2_report012616.pdf
- NMFS. 2015b. North Atlantic Right Whale (*Eubalaena glacialis*). Source Document for the Critical Habitat Designation: A review of information pertaining to the definition of “critical habitat” Prepared by National Marine Fisheries Service Greater Atlantic Regional Fisheries Office and Southeast Regional Office, July 2015.
- NMFS 2017. Northeast Fisheries Observer Program: Incidental Take Reports. Omnibus data request + supplemental data for 2016 from http://www.nefsc.noaa.gov/fsb/take_reports/nefop.html.
- NMFS 2018. Northeast Fisheries Observer Program: Incidental Take Reports. Omnibus data request + supplemental data for 2017 from http://www.nefsc.noaa.gov/fsb/take_reports/nefop.html.

- NEFSC 2011. Update on the Status of Spiny Dogfish in 2011 and Initial Evaluation of Alternative Harvest Strategies. 44 p. Unpubl. Report.
- NEFSC 2018. Update on the Status of Spiny Dogfish in 2018 and Projected Harvests at the Fmsy Proxy and Pstar of 40%. Available at <http://www.mafmc.org/ssc-meetings/2018/sept-11>.
- _____. 2002. Workshop on the effects of fishing gear on marine habitats off the northeastern United States, October 23-25, 2001, Boston, Massachusetts. U.S. Natl. Mar. Fish. Serv. Northeast Fish. Cent. Woods Hole Lab. Ref. Doc. 02-01. 86 p.
- _____. 1998. Report of the 26th Northeast Regional Stock Assessment Workshop: Stock Assessment Review Committee Consensus Summary of Assessments. NEFSC Ref. Doc. 98-03.
- Rago, P.J. and K.A. Sosebee. 2010. Biological Reference Points for Spiny Dogfish . Northeast Fish Sci Cent Ref Doc. 10-06; 52 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, <http://www.nefsc.noaa.gov/publications/crd/crd1006/>
- Rago, P.J. and K.A. Sosebee. 2015. Update of Landings and Discards of Spiny Dogfish in 2014. Available at: <http://www.mafmc.org/ssc-meetings/2014/september-17-18-2014>
- Rago, P.J. and K.A. Sosebee. 2015. Evaluation of Alternative Smoothing Options for Spiny Dogfish Abundance Estimates. Available at <http://www.mafmc.org/ssc-meetings/2015/nov-24>.
- Stein, A. B., K. D. Friedland, and M. Sutherland. 2004. Atlantic sturgeon marine bycatch and mortality on the continental shelf of the Northeast United States. North American Journal of Fisheries Management 24: 171-183.
- Stevenson, D.K., L.A. Chiarella, C.D. Stephan, R.N. Reid, K. Wilhelm, J.E. McCarthy and M. Pentony. 2004. Characterization of the fishing practices and marine benthic ecosystems of the Northeast U.S. shelf, and an evaluation of the potential effects of fishing on essential fish habitat. NOAA Technical Memorandum NMFS-NE-181, 179 p.

10.0 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.

Additional (final) copies of this EA can be obtained via the MAFMC website at www.mafmc.org or by request at the following address:

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New England Council Members

- David Pierce, Vice-Chair
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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, Greater Atlantic Regional Office,
Gloucester MA
Northeast Fisheries Science Center, Woods Hole, MA
Atlantic States Marine Fisheries Commission