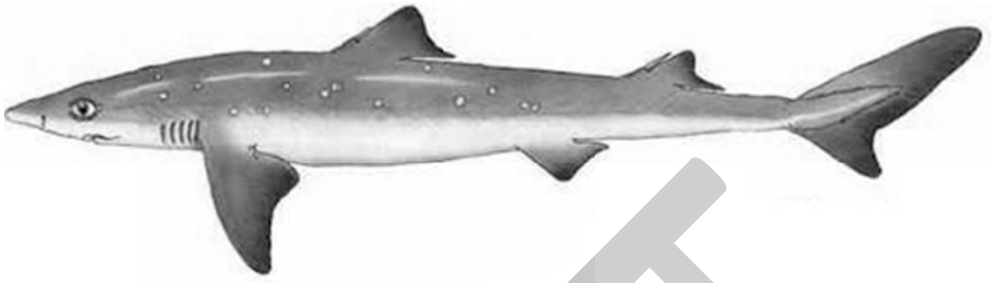
Northeast Multispecies Fishery Management Plan

Cape Cod Spiny Dogfish Exemption



DRAFT Environmental Assessment

Regulatory Impact Review

Initial Regulatory Flexibility Analysis

Prepared by the

National Marine Fisheries Service

Northeast Regional Office

55 Great Republic Drive

Gloucester, MA 01930-2298

October 3, 2012

1.0 EXECUTIVE SUMMARY

The Regional Administrator (RA) of the Northeast Region of the National Marine Fisheries Service (RA) has the authority to review and approve exempted fishery requests if data show that they meet the requirements dictated by the Northeast (NE) multispecies fishery regulations (50 CFR 648.80). Representatives from the NE multispecies fleet submitted two separate exempted fishery request to the RA in December 2011, requesting that the RA consider an exempted fishery for spiny dogfish in a portion of the Gulf of Maine (GOM) and Inshore Georges Bank (GB) when fishing with gillnet, longline, and handline gear (Figure 1).

For an exempted fishery to be approved it must be shown, using the best available data, that the bycatch of regulated multispecies in the proposed fishery will be less than 5% of the total catch. Data from the Northeast Fisheries Observer Program (NEFOP) and at-sea monitors (ASM) were compiled and analyzed with reference to groundfish vessels using gillnet, longline, and handline gear in the area requested. Upon initial review of the requested exempted fishery, it was clear that the original request would not meet the requirements for an exempted fishery. However, a large grouping of trips that were below the 5% threshold did emerge just to the east of Cape Cod, MA. Therefore, NMFS developed and considered three alternatives, including a No Action alternative (Figure 2). Alternative 1 would allow fishing in this area between June through December for longline and gillnet gear and June through August for handline gear. Alternative 2 analyzes an exemption for longline, gillnet, and handline gear in the area year-round. Data from 2010 and 2011 show that if Alternative 1 is selected, it is likely that bycatch of regulated species (primarily Atlantic cod, pollock, Atlantic halibut, windowpane flounder, winter flounder, and haddock) would be below the 5% threshold for all trips that would occur under this exemption.

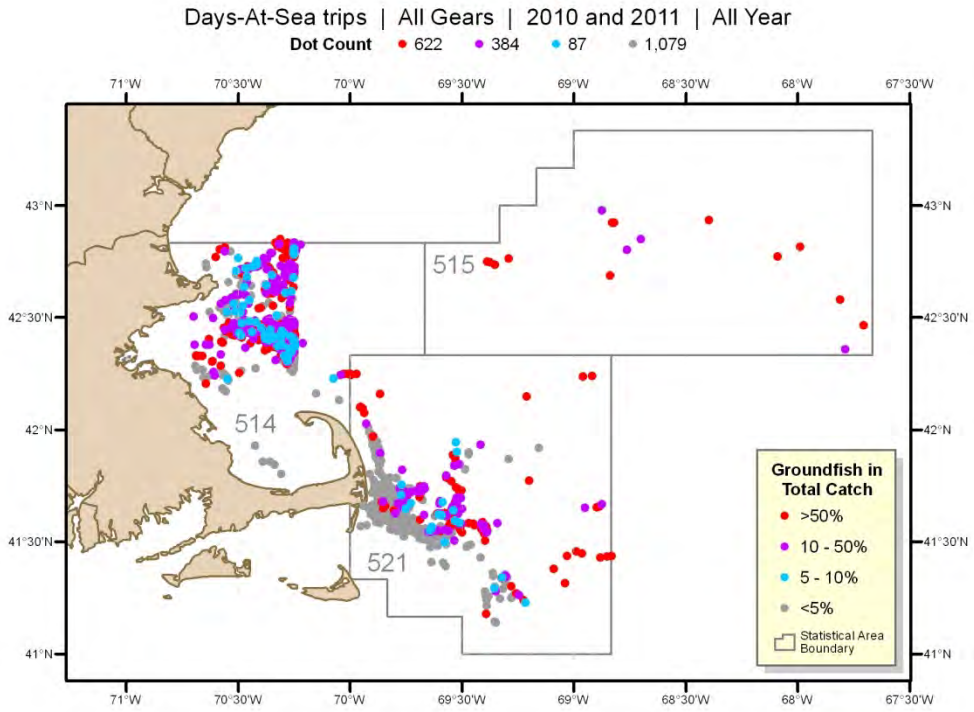


Figure 1. Requested Areas for Spiny Dogfish Exempted Fishery.

2.0 CONTENTS

2.1 TABLE OF CONTENTS

2.2 LIST OF TABLES

2.3 LIST OF FIGURES

BACKGROUND

The primary statute governing the management of fishery resources in the U.S. EEZ is the Magnuson-Stevens Fishery Conservation and Management Act (MSA). In New England, the New England Fishery Management Council (Council) is responsible for developing fishery management plans (FMPs) that comply with the MSA and other applicable laws. The NE multispecies complex specifies the management measures for twelve regulated groundfish species, i.e., large mesh species (cod, haddock, yellowtail flounder, pollock, plaice, witch flounder, white hake, windowpane flounder, Atlantic halibut, winter flounder, redfish, and Atlantic wolffish) and ocean pout, off the New England and Mid-Atlantic coasts. Some of these species are sub-divided into individual stocks that are attributed to different geographic areas. Both commercial and recreational fishermen harvest these species. The FMP has been updated through a series of amendments and framework adjustments.

Regulations implementing Amendment 7 to the NE Multispecies FMP became effective on July 1, 1996 (61 FR 27710, May 31, 1996). These regulations implemented a comprehensive set of measures to control fishing mortality and rebuild stocks of regulated multispecies and included a bycatch control measure that applies to the Gulf of Maine (GOM)/Georges Bank (GB) Regulated Mesh Areas (RMAs) and the SNE RMA. A vessel may not fish in these areas unless it is fishing under a NE multispecies or a scallop day-at-sea (DAS) allocation, is fishing on a sector trip, is fishing with exempted gear, is fishing under the NE multispecies open access Handgear or Party/Charter permit restrictions, or is fishing in an exempted fishery. The procedure for adding, modifying, or deleting fisheries from the list of exempted fisheries is found in 50 CFR 648.80. A fishery may be exempted by the RA, after consultation with the Council, if the RA determines, based on available data or information, that the bycatch of regulated species is, or can be reduced to, less than 5 percent by weight of the total catch and such exemption will not jeopardize the fishing mortality objectives of the FMP.

Representatives from the NE multispecies fleet submitted two separate exempted fishery request to the RA in December 2011, requesting that the RA consider an exempted fishery for spiny dogfish in a portion of the Gulf of Maine (GOM) and Inshore Georges Bank (GB) when fishing with gillnet, longline, and handline gear (Figure 1). The original requests asked that the RA consider an exempted fishery for spiny dogfish using large mesh gillnets in statistical areas 521, 514, and 515 from May 1 to December 15 of each year. The second request asked for a year-round exemption for large mesh and extra-large mesh gillnet, longline, and handline gear in statistical areas 514 and 521. Currently, unless in an existing exempted fishery, NE multispecies sector and common pool vessels targeting spiny dogfish are required to be on a declared groundfish trip. For these trips, sector vessels are charged a discard rate that is based on NEFOP and ASM discard data for groundfish trips. This discard data is used to calculate discard rates that are applied to unobserved fishing trips. A given discard rate is established for each discard strata, i.e., sector, area fished, and gear type. Because "target species" is not part of each discard stratum, vessels that are targeting spiny dogfish are being charged the same discard rate as all of the vessels that are targeting NE multispecies in that stratum. This can lead to elevated discard rates of groundfish for vessels targeting spiny dogfish, which the sectors claim has created an economic burden for sector fishermen, particularly for the "choke stocks," i.e., a stock of fish for

which the sector has a small amount of Annual Catch Entitlement (ACE), either because of a low catch history for that stock or due to a small annual catch limit (ACL) for the stock.

Because of these concerns, representatives from the NE multispecies fishery requested that NMFS add an exempted fishery for spiny dogfish in several statistical areas when fishing with gillnet, longline, and handline gear, specifying the months that the fishery would occur, based on low bycatch of groundfish that they observe for this fishery. Thus, the purpose of this action is to exempt vessels targeting spiny dogfish in a certain area and during a certain time of year from the requirement of the NE multispecies regulations and provide vessels unfettered access to the spiny dogfish fishery, while ensuring little impact to regulated multispecies. In order to properly consider the exemption request, the Regional Office conducted an analysis of regulated species bycatch in the spiny dogfish fishery for the areas and months requested. The analysis included data from the NEFOP and ASM observers for limited access NE multispecies trips that were using the requested gears. The results of the analysis are discussed in detail below.

3.0 PURPOSE AND NEED FOR ACTION

The purpose of this action is to allow vessels fishing with gillnet, longline, and handline gear to prosecute the spiny dogfish fishery without being subject to the NE multispecies regulations during a time and in an area that has been determined to have less than five percent of catch that is regulated groundfish species. This action is needed to reduce the economic hardship on groundfish sectors due to the inordinately high discard rate (a rate that is indicative of trips where groundfish is caught in large numbers) that is applied to these trips that typically do not catch more than 5 percent groundfish. In addition, this action would relieve a hardship on common pool vessels that are required to use DAS in order to target spiny dogfish.

4.0 PROPOSED ACTION AND ALTERNATIVES

4.1 ALTERNATIVE 1 (PREFERRED ALTERNATIVE)

Alternative 1 proposes to implement an exempted fishery for vessels targeting spiny dogfish in an area just east of Cape Cod from June through December for vessels using longline and gillnet gear with a mesh size of 6.5-inches or larger, and for vessels using handline gear from June through August. This area would be referred to as the Cape Cod Spiny Dogfish Exemption Area. Under this exemption, vessels would not be subject to the DAS and reporting requirements of the NE multispecies fishery, i.e. the requirement to use a vessel monitoring system and make a declaration.

Table 1. Spiny Dogfish Quota and Possession Limits FY 2012.

2012 Commercial Quota = 35.694 million lb

Quota Period	Allocation (lb)	Possession Limit (lb)
1. May 1–Oct 31	20,667,000	3,000
2. Nov 1–Apr 30	15,027,000	3,000

Cape Cod Spiny Dogfish Exemption Area

The proposed Cape Cod Spiny Dogfish Exemption Area for Alternative 1 is defined by the straight lines connecting the following coordinates in the order stated (Figure 2):

Point	N. Latitude	W. Longitude
Point_1	42°00’	70°00’
Point_2	42°00’	69°47.5’
Point_3	41°40’	69°47.5’
Point_4	41°29.5’	69°35.5’
Point_5	41°29.5’	69°23’
Point_6	41°26’	69°20’
Point_7	41°20’	69°20’
Point_8	41°20’	(1)
Point_9	(2)	70°00’
Point_10	(3)	70°00’
Point_11	(4)	70°00’
Point_1	42°00’	70°00’

(1) The eastern coastline of Nantucket, MA at 41°20’N. lat.
(2) The northern coastline of Nantucket, MA at 70°00’W. long.
(3) The southern coastline of Cape Cod, MA at 70°00’W. long., then along the eastern coastline of Cape Cod, MA to Point_11
(4) The northern coastline of Cape Cod, MA at 70°00’W. long.

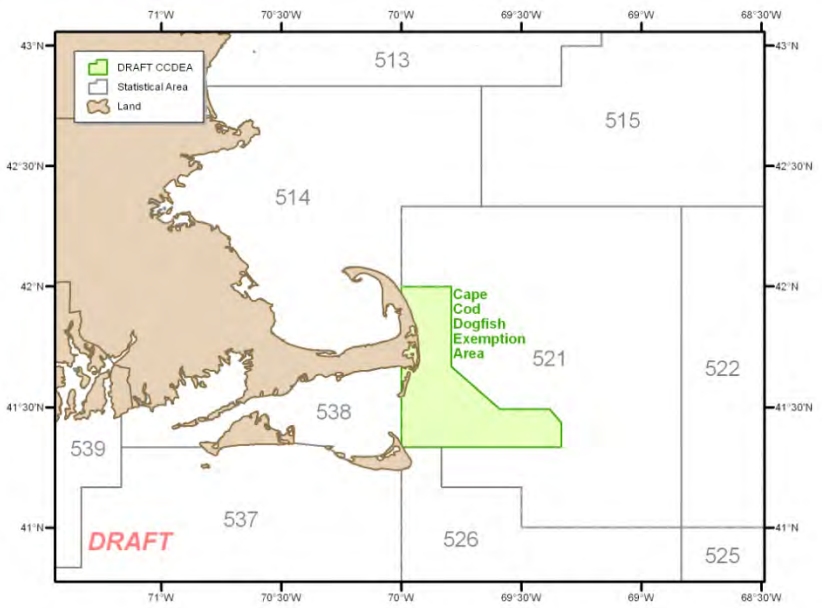


Figure 2. Cape Cod Spiny Dogfish Exemption Area.

The annual spiny dogfish quota is divided into two seasons to help maintain fishing of spiny dogfish throughout the year (Table 1). All spiny dogfish landings, whether from Federal or state waters, are counted toward the quota. If NMFS determines that a period's quota will be caught, NMFS will notify Federal spiny dogfish permit holders that vessels may not possess, fish for, or land spiny dogfish for the remainder of the quota period.

4.2 ALTERNATIVE 2

Alternative 2 proposes to implement an exempted fishery for vessels targeting spiny dogfish using gillnets with 6.5-inch mesh or larger, longline gear, and handline gear in the Cape Cod Spiny Dogfish Exemption Area (Figure 2) year-round. Under this exemption, vessels are no longer subject to the requirements of the NE multispecies fishery, including DAS and reporting requirements. The area and gears involved under this alternative are the same as Alternative 1. However, Alternative 1 would only allow vessels targeting spiny dogfish in the area from June through December for vessels using longline and gillnet gear with a mesh size of 6.5-inches or larger, and for vessels using handline gear from June through August, while Alternative 2 proposes to allow these vessels to fish year-round.

4.3 NO ACTION ALTERNATIVE

Under the No Action alternative, spiny dogfish vessels would continue to be required to be on a NE multispecies trip in order to land spiny dogfish in these areas. Since these vessels would need to be on a NE multispecies trip, common pool and sector vessels would be attributed a groundfish discard rate consistent with all other similar groundfish trips.

There are two existing exempted fisheries for spiny dogfish using gillnet gear, one in portions of statistical area 514 and 513 from the months of July through August of each year, and another in Southern New England (SNE) from May through October of each year. Under the no action alternative, vessels would still be able to access these exempted fisheries without the requirement to be on a NE multispecies trip.

4.4 ALTERNATIVES CONSIDERED, BUT REJECTED

The initial requests asked that the RA consider an exempted fishery for spiny dogfish using large mesh and extra-large mesh gillnet, longline, and handline gear in statistical areas 514, 515 and 521 year-round exemption. To analyze this, NMFS compiled NEFOP and ASM observer data of declared groundfish trips using gillnet, longline, and handline gear in statistical areas 521, 514, and 515. There were no months in any of the statistical areas where the catch of regulated NE multispecies did not exceed the 5% threshold required by the regulations to allow the RA to approve an exempted fishery (Table 2, Figure 3). Therefore, the initial request was considered as an alternative and was rejected.

Table 2. Mults DAS and Sector Trips, All Gear, All months, 2010 & 2011

	Stat. Area 514			Stat. Area 515			Stat. Area 521		
Month	# Trips	# > 5%	Avg. Ratio	# Trips	# > 5%	Avg. Ratio	# Trips	# > 5%	Avg. Ratio
January	137	131	85.91%	4	4	89.00%	12	10	59.08%
February	135	129	86.01%	3	3	94.20%	1	1	99.22%
March	111	109	86.92%	8	8	74.41%	1	1	25.34%
April	0	0	0.00%	5	5	74.33%	0	0	0.00%
May	219	188	51.58%	9	9	55.92%	4	2	14.32%
June	218	170	38.55%	7	7	29.17%	125	28	8.94%
July	272	151	18.25%	14	9	39.31%	323	94	14.58%
August	312	170	25.14%	8	7	49.26%	374	63	10.00%
September	120	104	54.81%	9	9	62.64%	204	74	26.64%
October	215	180	47.23%	5	5	77.21%	122	47	24.84%
November	162	139	62.20%	4	4	96.93%	52	25	36.81%
December	251	227	67.70%	1	1	90.16%	16	12	54.60%
Grand Total	**2152**	**1698**	**50.72%**	**77**	**71**	**60.84%**	**1234**	**357**	**17.60%**

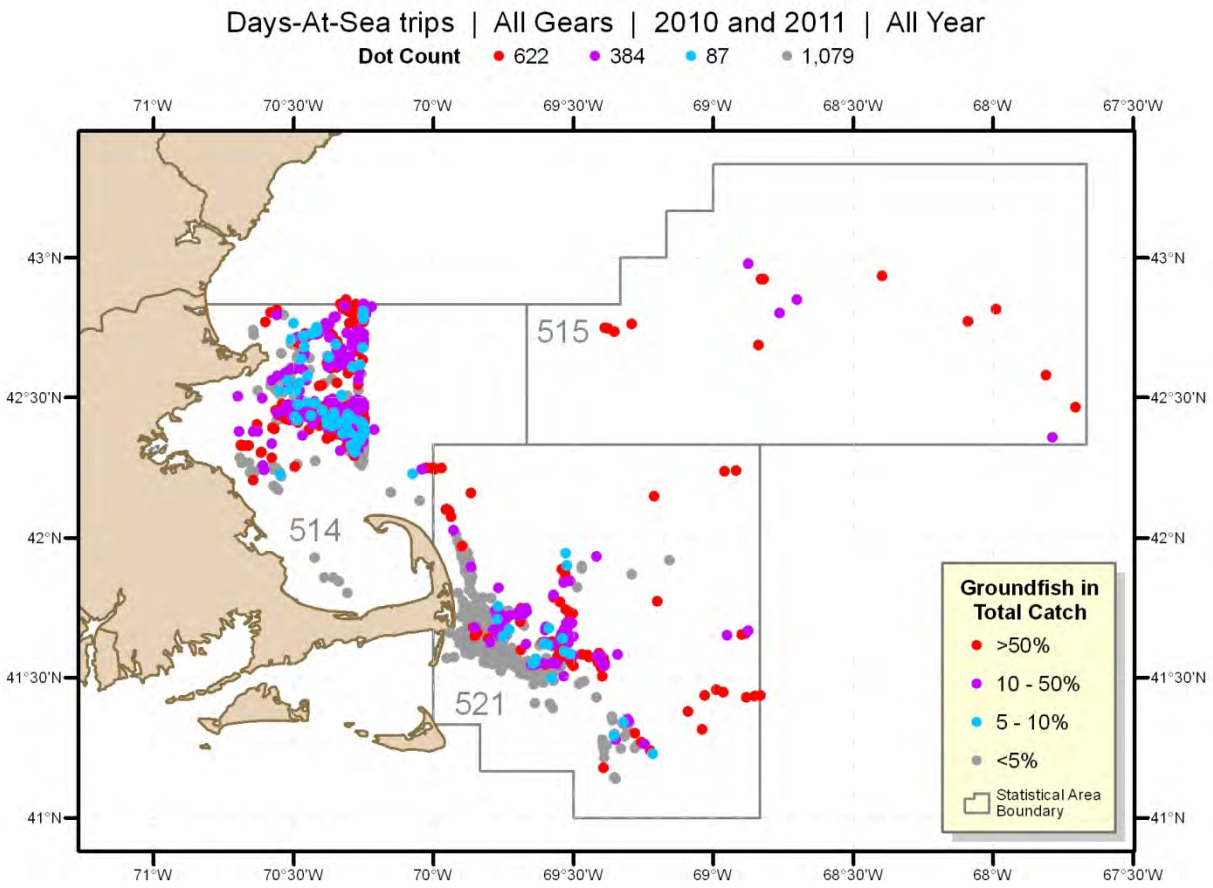


Figure 3. Avg. percentage of regulated NE multispecies in requested areas using gillnet, longline, and handline gear

5.0 AFFECTED ENVIRONMENT

The following section includes a description of the various resources and entities likely to be affected in the area of this proposed action. This description borrows heavily from the affected environment sections of the EA prepared for Framework Adjustment (FW) 47 to the NE Multispecies FMP. There has been little change in the biological or physical components of the environment since the implementation of Amendment 16 to the NE Multispecies FMP, other than changes in stock status.

5.1 PHYSICAL ENVIRONMENT

5.1.1.1 Gulf of Maine

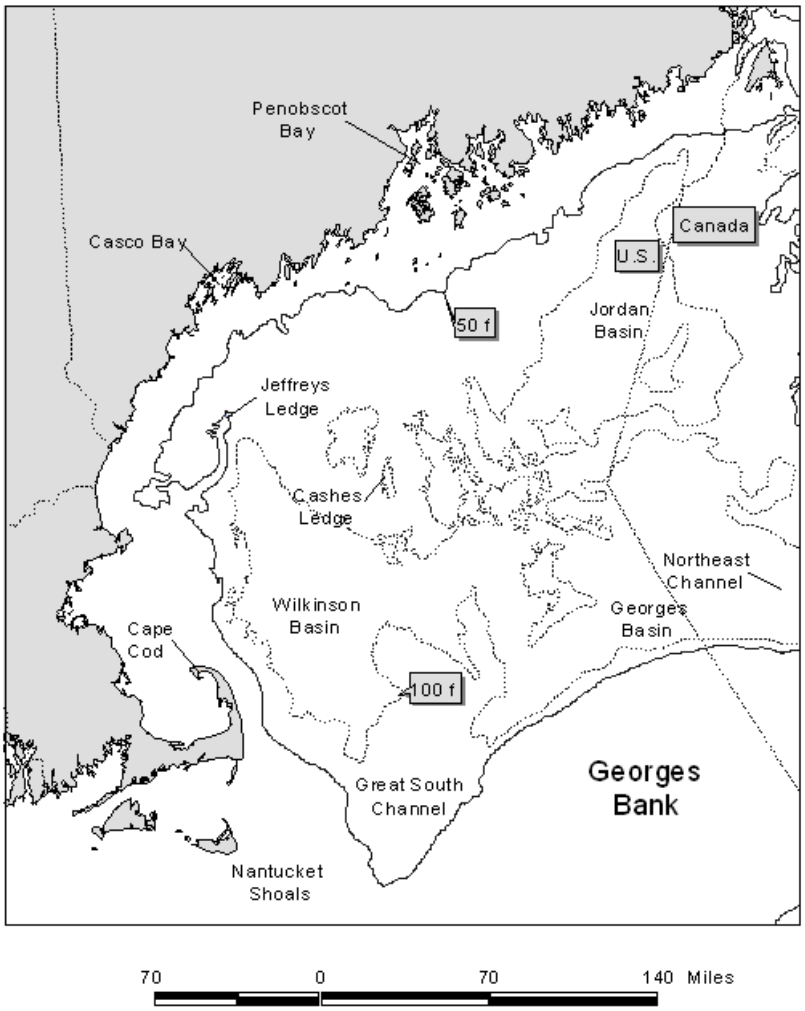


Figure 4. Gulf of Maine

The Gulf of Maine is an enclosed coastal sea, bounded on the east by Browns Bank, on the north by the Nova Scotian (Scotian) Shelf, on the west by the New England states, and on the south by Cape Cod and Georges Bank (Figure 4). The Gulf of Maine is a boreal environment and is characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. There are 21 distinct basins separated by ridges, banks, and swells. Depths in the basins exceed 250 m, with a maximum depth of 350 m in Georges Basin, just north of Georges Bank. High points within the Gulf of Maine include irregular ridges, such as Cashes Ledge, which peaks at 9 m below the surface.

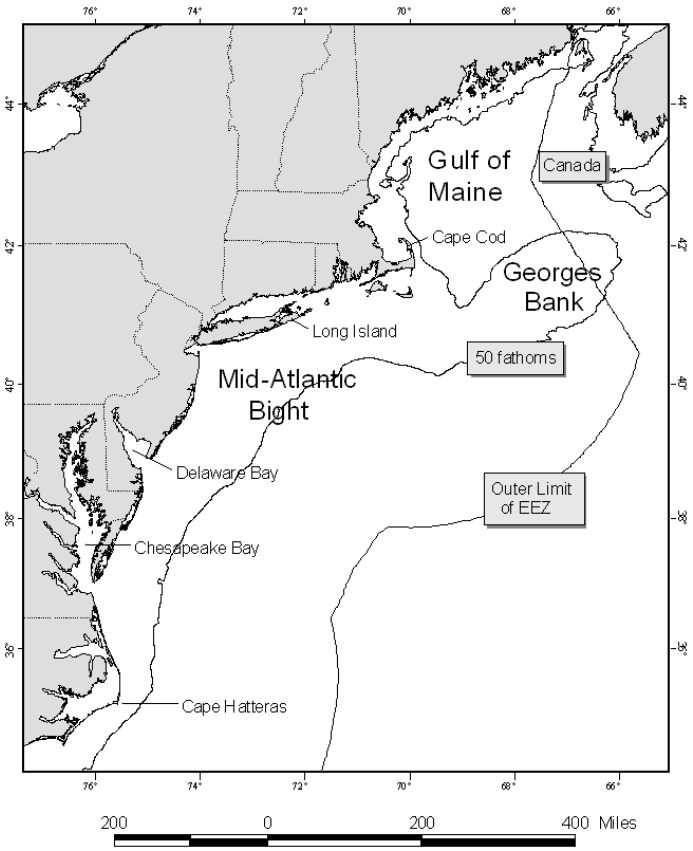


Figure 5. Northeast U.S. Shelf Ecosystem

The Gulf of Maine is an enclosed coastal sea that was glacially derived and is characterized by a system of deep basins, moraines, and rocky protrusions (Stevenson et al. 2004). The Gulf of Maine is topographically diverse from the rest of the continental border of the U.S. Atlantic coast (Stevenson et al. 2004). Very fine sediment particles created and eroded by the glaciers have collected in thick deposits over much of the seafloor of the Gulf of Maine, particularly in its deep basins. These mud deposits blanket and obscure the irregularities of the underlying bedrock, forming topographically smooth terrains. In the rises between the basins, other materials are usually at the surface. Unsorted glacial till covers some morainal areas, sand predominates on some high areas, and gravel,[1] sometimes with boulders, predominates others. Bedrock is the predominant substrate along the western edge of the Gulf of Maine, north of Cape Cod in a narrow band out to a depth of about 60 m. Mud predominates in coastal valleys and basins that often abruptly border rocky substrates. Gravel, often mixed with shell, is common adjacent to bedrock outcrops and in fractures in the rock. Gravel is most abundant at depths of 20 to 40 m, except off eastern Maine where a gravel-covered plain exists to depths of at least 100 m. Sandy

[1] The term "gravel," as used in this analysis, is a collective term that includes granules, pebbles, cobbles, and boulders in order of increasing size. Therefore, the term "gravel" refers to particles larger than sand and generally denotes a variety of "hard bottom" substrates.

areas are relatively rare along the inner shelf of the western Gulf of Maine, but are more common south of Casco Bay, especially offshore of sandy beaches.

The geologic features of the Gulf of Maine coupled with the vertical variation in water properties (e.g. salinity, depth, temperature) combine to provide a great diversity of habitat types that support a rich biological community. To illustrate this, a brief description of benthic invertebrates and demersal (i.e., bottom-dwelling) fish that occupy the Gulf of Maine is provided below. Additional information is provided in Stevenson et al. (2004), which is incorporated by reference.

The most common groups of benthic invertebrates in the Gulf of Maine reported by Theroux and Wigley (1998) in terms of numbers collected were annelid worms, bivalve mollusks, and amphipod crustaceans. Biomass was dominated by bivalves, sea cucumbers, sand dollars, annelids, and sea anemones. Watling (1998) identified seven different bottom assemblages that occur on the following habitat types:

- Sandy offshore banks: fauna are characteristically sand dwellers with an abundant interstitial component;
- Rocky offshore ledges: fauna are predominantly sponges, tunicates, bryozoans, hydroids, and other hard bottom dwellers;
- Shallow (< 60 m) temperate bottoms with mixed substrate: fauna population is rich and diverse, primarily comprised of polychaetes and crustaceans;
- Primarily fine muds at depths of 60 to 140 m within cold Gulf of Maine Intermediate Water[2]: fauna are dominated by polychaetes, shrimp, and cerianthid anemones;
- Cold deep water, muddy bottom: fauna include species with wide temperature tolerances which are sparsely distributed, diversity low, dominated by a few polychaetes, with brittle stars, sea pens, shrimp, and cerianthids also present;
- Deep basin, muddy bottom, overlaying water usually 7 to 8°C: fauna densities are not high, dominated by brittle stars and sea pens, and sporadically by a tube-making amphipods; and
- Upper slope, mixed sediment of either fine muds or mixture of mud and gravel, water temperatures always greater than 8°C: upper slope fauna extending into the Northeast Channel.

Two studies (Gabriel 1992, Overholtz and Tyler 1985) reported common[3] demersal fish species by assemblages in the Gulf of Maine and Georges Bank:

[2] Maine Intermediate Water is described as a mid-depth layer of water that preserves winter salinity and temperatures, and is located between more saline Maine bottom water and the warmer, stratified Maine surface water. The stratified surface layer is most pronounced in the deep portions of the western Gulf of Maine.

[3] Other species were listed as found in these assemblages, but only the species common to both studies are listed.

- Deepwater/Slope and Canyon: offshore hake, blackbelly rosefish, Gulf stream flounder;
- Intermediate/Combination of Deepwater Gulf of Maine-Georges Bank and Gulf of Maine-Georges Bank Transition: silver hake, red hake, goosefish (monkfish);
- Shallow/Gulf of Maine-Georges Bank Transition Zone: Atlantic Cod, haddock, pollock;
- Shallow water Georges Bank-southern New England: yellowtail flounder, windowpane flounder, winter flounder, winter skate, little skate, longhorn sculpin;
- Deepwater Gulf of Maine-Georges Bank: white hake, American plaice, witch flounder, thorny skate; and
- Northeast Peak/Gulf of Maine-Georges Bank Transition: Atlantic cod, haddock, pollock.

5.1.1.2 Georges Bank

Georges Bank is a shallow (3 to 150 m depth), elongate (161 km wide by 322 km long) extension of the continental shelf that was formed during the Wisconsinian glacial episode (Figure 5). It is characterized by a steep slope on its northern edge and a broad, flat, gently sloping southern flank and has steep submarine canyons on its eastern and southeastern edges. It is characterized by highly productive, well-mixed waters and strong currents. The Great South Channel lies to the west. Natural processes continue to erode and rework the sediments on Georges Bank. It is anticipated that erosion and reworking of sediments by the action of rising sea level as well as tidal and storm currents reduces the amount of sand and cause an overall coarsening of the bottom sediments (Valentine and Lough 1991).

Bottom topography on eastern Georges Bank is characterized by linear ridges in the western shoal areas; a relatively smooth, gently dipping seafloor on the deeper, easternmost part; a highly energetic peak in the north with sand ridges up to 30 m high and extensive gravel pavement; and steeper and smoother topography incised by submarine canyons on the southeastern margin. The central region of Georges Bank is shallow, and the bottom is characterized by shoals and troughs, with sand dunes superimposed within. The area west of the Great South Channel, known as Nantucket Shoals, is similar in nature to the central region of Georges Bank. Currents in these areas are strongest where water depth is shallower than 50 m. Sediments in this region include gravel pavement and mounds, some scattered boulders, sand with storm-generated ripples, and scattered shell and mussel beds. Tidal and storm currents range from moderate to strong, depending upon location and storm activity.

Oceanographic frontal systems separate water masses of the Gulf of Maine and Georges Bank from oceanic waters south of Georges Bank. These water masses differ in temperature, salinity, nutrient concentration, and planktonic communities, which influence productivity and may influence fish abundance and distribution.

Georges Bank has been historically characterized by high levels of both primary productivity and fish production. The most common groups of benthic invertebrates on Georges Bank in terms of numbers collected were amphipod crustaceans and annelid worms, and overall biomass was dominated by sand dollars and bivalves (Theroux and Wigley 1998). Using the same database,

four macrobenthic invertebrate assemblages that occur on similar habitat type were identified (Theroux and Grosslein 1987):

- The Western Basin assemblage is found in comparatively deepwater (150 to 200 m) with relatively slow currents and fine bottom sediments of silt, clay, and muddy sand. Fauna are comprised mainly of small burrowing detritivores and deposit feeders, and carnivorous scavengers.
- The Northeast Peak assemblage is found in variable depth and current strength and includes coarse sediments, consisting mainly of gravel and coarse sand with interspersed boulders, cobbles, and pebbles. Fauna tend to be sessile (coelenterates, brachiopods, barnacles, and tubiferous annelids) or free-living (brittle stars, crustaceans, and polychaetes), with a characteristic absence of burrowing forms.
- The Central Georges Bank assemblage occupies the greatest area, including the central and northern portions of Georges Bank in depths less than 100 m. Medium-grained shifting sands predominate this dynamic area of strong currents. Organisms tend to be small to moderately large with burrowing or motile habits. Sand dollars are most characteristic of this assemblage.
- The Southern Georges Bank assemblage is found on the southern and southwestern flanks at depths from 80 to 200 m, where fine-grained sands and moderate currents predominate. Many southern species exist here at the northern limits of their range. Dominant fauna include amphipods, copepods, euphausiids, and starfish.

Common demersal fish species in Georges Bank are offshore hake, blackbelly rosefish, Gulf Stream flounder, silver hake, red hake, goosefish (monkfish), Atlantic cod, haddock, pollock, yellowtail flounder, windowpane flounder, winter flounder, winter skate, little skate, longhorn sculpin, white hake, American plaice, witch flounder, and thorny skate.

5.1.1.3 Southern New England/Mid-Atlantic Bight

The Mid-Atlantic Bight includes the shelf and slope waters from Georges Bank south to Cape Hatteras, and east to the Gulf Stream (Figure 5). The northern portion of the Mid-Atlantic Bight is sometimes referred to as southern New England and generally includes the area of the continental shelf south of Cape Cod from the Great South Channel to Hudson Canyon. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, North Carolina. The shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope (100 to 200 m water depth) at the shelf break. In both the Mid-Atlantic Bight and on Georges Bank, numerous canyons incise the slope, and some cut up onto the shelf itself (Stevenson et al. 2004). Like the rest of the continental shelf, the topography of the Mid-Atlantic Bight was shaped largely by sea level fluctuations during past ice ages. Since that time, currents and waves have modified this basic structure.

The sediment type covering most of the shelf in the Mid-Atlantic Bight is sand, with some relatively small, localized areas of sand-shell and sand-gravel. On the slope, silty sand, silt, and clay predominate. Permanent sand ridges occur in groups with heights of about 10 m, lengths of 10 to 50 km and spacing of 2 km. The sand ridges are usually oriented at a slight angle towards shore, running in length from northeast to southwest. Sand ridges are often covered with smaller similar forms such as sand waves, megaripples, and ripples. Sand waves are usually found in

patches of 5 to 10 with heights of about 2 m, lengths of 50 to 100 m, and 1 to 2 km between patches. The sand waves are usually found on the inner shelf and are temporary features that form and re-form in different locations, especially in areas like Nantucket Shoals where there are strong bottom currents. Because tidal currents southwest of Nantucket Shoals and southeast of Long Island and Rhode Island slow significantly, there is a large mud patch on the seafloor where silts and clays settle out.

Artificial reefs are another significant Mid-Atlantic Bight habitat, formed much more recently on the geologic time scale than other regional habitat types. These localized areas of hard structure have been formed by shipwrecks, lost cargoes, disposed solid materials, shoreline jetties and groins, submerged pipelines, cables, and other materials (Steimle and Zetlin 2000). In general, reefs are important for attachment sites, shelter, and food for many species. In addition, fish predators, such as tunas, may be attracted by prey aggregations or may be behaviorally attracted to the reef structure. Estuarine reefs, such as blue mussel beds or oyster reefs, are dominated by epibenthic organisms, as well as crabs, lobsters, and sea stars. These reefs are hosts to a multitude of fish, including gobies, spot, bass (black sea and striped), perch, toadfish, and croaker. Coastal reefs are comprised of either exposed rock, wrecks, kelp, or other hard material, and these are generally dominated by boring mollusks, algae, sponges, anemones, hydroids, and coral. These reef types also host lobsters, crabs, sea stars, and urchins, as well as a multitude of fish, including black sea bass, pinfish, scup, cunner, red hake, gray triggerfish, black grouper, smooth dogfish, and summer flounder. These epibenthic organisms and fish assemblages are similar to the reefs farther offshore, which are generally comprised of rocks and boulders, wrecks, and other types of artificial reefs. There is less information available for reefs on the outer shelf, but the fish species associated with these reefs include tilefish, white hake, and conger eel.

The benthic inhabitants of this primarily sandy environment are dominated in terms of numbers by amphipod crustaceans and bivalve mollusks. Biomass is dominated by mollusks (70 percent) (Theroux and Wigley 1998). Pratt (1973) identified three broad faunal zones related to water depth and sediment type:

The “sand fauna” zone is dominated by polycheates and was defined for sandy sediments (1 percent or less silt) that are at least occasionally disturbed by waves, from shore out to a depth of about 50 m.

The “silty sand fauna” zone is dominated by amphipods and polychaetes and occurs immediately offshore from the sand fauna zone, in stable sands containing a small amount of silt and organic material.

Silts and clays become predominant at the shelf break and line the Hudson Shelf Valley supporting the “silt-clay fauna.”

Rather than substrate as in the Gulf of Maine and Georges Bank, latitude and water depth are considered to be the primary factors influencing demersal fish species distribution in the Mid-Atlantic Bight area. The following assemblages were identified by Colvocoresses and Musick (1984) in the Mid-Atlantic subregion during spring and fall.

Northern (boreal) portions: hake (white, silver, red), goosefish (monkfish), longhorn sculpin, winter flounder, little skate, and spiny dogfish;

Warm temperate portions: black sea bass, summer flounder, butterfish, scup, spotted hake, and northern searobin;

Water of the inner shelf: windowpane flounder;

Water of the outer shelf: fourspot flounder; and

Water of the continental slope: shortnose greeneye, offshore hake, blackbelly rosefish, and white hake.

5.1.2 Gear Effects

The groundfish fleet fishes for target species with a number of gear types: trawl, gillnet, and hook and line gear (including jigs, handline, and non-automated demersal longlines). This section discusses the characteristics of each of the gear types as well as the typical impacts to the physical habitat associated with each of these gear types.

5.1.2.1 Gear Types

The characteristics of typical gear types used by the multispecies fishery are summarized in Table 3.

Table 3. Descriptions of the gear types used by the multispecies fishery

Gear Type	Trawl	Sink/ Anchor Gillnets	Bottom Longlines	Hook and Line
Total Length	Varies	90 m long per net.	~450 m.	Varies
Lines	N/A	Leadline and floatline with webbing (mesh) connecting	Mainline is parachute cord. Gangions (lines from mainline to hooks) are 15 inches long, 3 to 6 inches apart, and made of shrimp twine	One to several with mechanical line fishing
Nets	Rope or large-mesh size, depends upon target Species	Monofilament, mesh size depends on the target species (groundfish nets minimum mesh size of 6.5 inches	No nets, but 12/0 circle hooks are required.	No nets, but single to multiple hooks, "umbrella rigs"
Anchoring	N/A	22 lb (9–11 kg) Danforth-style anchors are required at each end of the net string	20-24lb (9-11kg) anchors, anchored at each end, using pieces of railroad track, sash weights, or Danforth anchors, depending on currents	No anchoring, but sinkers used (stones, lead)
Frequency/ Duration of Use	Tows last for several hours	Frequency of trending changes from daily (when targeting groundfish) to semi-weekly (when targeting monkfish and skate)	Usually set for a few hours at a time	Depends upon cast/target species

5.1.2.2 Trawl Gear

Trawls are classified by their function, bag construction, or method of maintaining the mouth opening. Function may be defined by the part of the water column where the trawl operates (e.g., bottom) or by the species that it targets (Hayes 1983). Mid-water trawls are designed to catch pelagic species in the water column and do not normally contact the bottom. Bottom trawls are designed to be towed along the seafloor and to catch a variety of demersal fish and invertebrate species.

The mid-water trawl is used to capture pelagic species throughout the water column. The mouth of the net typically ranges from 110 m to 170 m and requires the use of large vessels (Sainsbury 1996). Successful mid-water trawling requires the effective use of various electronic aids to find the fish and maneuver the vessel while fishing (Sainsbury 1996). Tows typically last for several hours and catches are large. The fish are usually removed from the net while it remains in the water alongside the vessel by means of a suction pump. In some cases, the fish are removed from the net by repeatedly lifting the cod end aboard the vessel until the entire catch is in the hold.

Three general types of bottom trawl are used in the Northeast Region, but bottom otter trawls account for nearly all commercial bottom trawling activity. There is a wide range of otter trawl types used in the Northeast as a result of the diversity of fisheries and bottom types encountered in the region (NREFHSC 2002). The specific gear design used is often a result of the target species (whether found on or off the bottom) as well as the composition of the bottom (smooth versus rough and soft versus hard). A number of different types of bottom otter trawl used in the Northeast are specifically designed to catch certain species of fish, on specific bottom types, and at particular times of year. Bottom trawls are towed at a variety of speeds, but average about 5.6 km/hour (3 knots). Use of this gear in the Northeast is managed under several federal FMPs. Bottom trawling is also subject to a variety of state regulations throughout the region.

A flatfish trawl is a type of bottom otter trawl designed with a low net opening between the headrope and the footrope and more ground rigging on the sweep. This type of trawl is designed so that the sweep follows the contours of the bottom, and to get fish like flounders - that lie in contact with the seafloor - up off the bottom and into the net. It is used on smooth mud and sand bottoms. A high-rise or fly net with larger mesh has a wide net opening and is used to catch demersal fish that rise higher off the bottom than flatfish (NREFHSC 2002).

Bottom otter trawls that are used on "hard" bottom (i.e., gravel or rocky bottom), or mud or sand bottom with occasional boulders, are rigged with rockhopper gear. The purpose of the "ground gear" in this case is to get the sweep over irregularities in the bottom without damaging the net. The purpose of the sweep in trawls rigged for fishing on smooth bottoms is to herd fish into the path of the net (Mirarchi 1998).

The raised-footrope trawl was designed to provide vessels with a means of continuing to fish for small-mesh species without catching groundfish. Raised-footrope trawls fish about 0.5 to 0.6 m above the bottom (Carr and Milliken 1998). Although the doors of the trawl still ride on the bottom, underwater video and observations in flume tanks have confirmed that the sweep in the raised-footrope trawl has much less contact with the seafloor than the traditional cookie sweep that it replaces (Carr and Milliken 1998).

5.1.2.3 Gillnet Gear

The fishery also uses individual sink/anchor gillnets which are about 90 m long and are usually fished as a series of 5 to 15 nets attached end-to-end. A vast majority of “strings” consist of 10 gillnets. Gillnets typically have three components: the leadline, webbing and floatline. In New England, leadlines are approximately 30 kilogram (kg)/net. Webs are monofilament, with the mesh size depending on the species of interest. Nets are anchored at each end using materials such as pieces of railroad track, sash weights, or Danforth anchors, depending on currents. Anchors and leadlines have the most contact with the bottom. For New England groundfish, frequency of tending ranges from daily to semiweekly (NREFHSC 2002).

A bottom gillnet is a large wall of netting equipped with floats at the top and lead weights along the bottom. Bottom gillnets are anchored or staked in position. Fish are caught while trying to

pass through the net mesh. Gillnets are highly selective because the species and sizes of fish caught are dependent on the mesh size of the net. Bottom gillnets are used to catch a wide range of species. Bottom gillnets are fished in two different ways, as "standup" and "tiedown" nets (Williamson 1998). Standup nets are typically used to catch Atlantic cod, haddock, pollock, and hake and are soaked (duration of time the gear is set) for 12 to 24-hours. Tiedown nets are used to catch flounders and monkfish and are left in the water for 3 to 4 days. Other species caught in bottom gillnets in are spiny dogfish and skates.

5.1.2.4 Hook and Line Gear

5.1.2.4.1 Hand Lines/Rod and Reel

The simplest form of hook-and-line fishing is the hand line, which may be fished using a rod and reel or simply "by hand". The gear consists of a line, sinker (weight), gangion, and at least one hook. The line is typically stored on a small spool and rack and varies in length and the sinkers vary from stones to cast lead. The hooks can vary from single to multiple arrangements in "umbrella" rigs. An attraction device must be used with the hook, usually consisting of a natural bait or an artificial lure. Hand lines can be carried by currents until retrieved or fished in such as manner as to hit bottom and bounce (Stevenson et al. 2004). Hand lines and rods and reels are used in the Northeast Region to catch a variety of demersal species.

5.1.2.4.2 Mechanized Line Fishing

Mechanized line-hauling systems have been developed to allow smaller fishing crews to work more lines, and to use electrical or hydraulic power to work the lines on the spools. The reels, also called "bandits", are mounted on the vessel bulwarks with the mainline wound around a spool. The line is taken from the spool over a block at the end of a flexible arm and each line may have a number of branches and baited hooks.

Jigging machines are used to jerk a line with several unbaited hooks up in the water to snag a fish in its body and is commonly used to catch squid. Jigging machine lines are generally fished in waters up to 600 m (1970 ft) deep. Hooks and sinkers can contact the bottom, depending upon the way the gear is used and may catch a variety of demersal species.

5.1.2.5 Longlines

Another gear type that is used by the fishery are bottom longlines which are a long length of line, often several miles long, to which short lengths of line ("gangions") carrying baited hooks are attached. Longlining is undertaken for a wide range of bottom species. Bottom longlines typically have up to six individual longlines strung together for a total length of more than 450 m and are deployed with 9 to 11 kg anchors. The mainline is a parachute cord. Gangions are typically 40 centimeters (cm) long and 1 to 1.8 m apart and are made of shrimp twine. These longlines are usually set for a few hours at a time (NREFHSC 2002).

When fishing with hooks, all hooks must be 12/0 circle hooks. A "circle hook" is, defined as a hook with the point turned back towards the shank and the barbed end of the hook is displaced (offset) relative to the parallel plane of the eyed-end or shank of the hook when laid on its side. The design of circle hooks enables them to be employed to reduce the damage to habitat features that would occur with use of other hook shapes (NREFHSC 2002).

5.1.2.6 Gear Interaction with Habitat

Historically, commercial fishing in the region has been conducted using hook and line, longline, gillnets and trawls. For decades, trawls have been intensively used throughout the region and have accounted for the majority of commercial fishing activity in the multispecies fishery off New England.

A source of information for various gear types that relates specifically to the Northeast region is the report of a "Workshop on the Effects of Fishing Gear on Marine Habitats off the Northeastern U.S." sponsored by the NEFMC and Mid-Atlantic Fishery Management Council (MAFMC) in October 2001 (NEFSC 2002). A panel of invited fishing industry members and experts in the fields of benthic ecology, fishery ecology, geology, and fishing gear technology convened for the purpose of assisting the NEFMC, MAFMC, and NMFS with: 1) evaluating the existing scientific research on the effects of fishing gear on benthic habitats; 2) determining the degree of impact from various gear types on benthic habitats in the Northeast; 3) specifying the type of evidence that is available to support the conclusions made about the degree of impact; 4) ranking the relative importance of gear impacts on various habitat types; and 5) providing recommendations on measures to minimize those adverse impacts. The panel was provided with a summary of available research studies that summarized information relating to the effects of bottom otter trawls, bottom gillnets, and longlines. Relying on this information plus professional judgment, the panel identified the effects and the degree of impact of these gears on mud, sand, and gravel/rock habitats.

Additional information is provided in this report on the recovery times for each type of impact for each gear type in mud, sand, and gravel habitats ("gravel" includes other hard-bottom habitats). This information made it possible to rank these three substrates in terms of their vulnerability to the effects of bottom trawling, although other factors such as frequency of disturbance from fishing and from natural events are also important. In general, impacts from trawling were determined to be greater in gravel/rock habitats with attached epifauna. Impacts on biological structure were ranked higher than impacts on physical structure. Effects of trawls on major physical features in mud (deep water clay-bottom habitats) and gravel bottom were described as permanent, and impacts to biological and physical structure were given recovery times of months to years in mud and gravel. Impacts of trawling on physical structure in sand were of shorter duration (days to months) given the exposure of most continental shelf sand habitats to strong bottom currents and/or frequent storms.

According to the panel, impacts of sink gillnets and longlines on sand and gravel habitats would result in low degree impacts (NEFSC 2002). Duration of impacts to physical structures from these gear types would be expected to last days to months on soft mud but could be permanent on hard bottom clay structures along the continental slope. Impacts to mud would be caused by gillnet lead lines and anchors. Physical habitat impacts from sink gillnets and longlines on sand would not be expected.

The contents of a second expert panel report, produced by the Pew Charitable Trusts and entitled "Shifting Gears: Addressing the Collateral Impacts of Fishing Methods in U.S. Waters" (Morgan and Chuenpagdee 2003), was also summarized in Amendment 13. This group evaluated the habitat effects of 10 different commercial fishing gears used in U.S. waters. The report concluded that bottom trawls have relatively high habitat impacts, bottom gillnets and pots and

traps have low to medium impacts, and bottom longlines have low impacts. As in the International Council for Exploration of the Sea (ICES) and National Research Council (NRC) reports, individual types of trawls and dredges were not evaluated. The impacts of bottom gillnets, traps, and longlines were limited to warm or shallow water environments with rooted aquatic vegetation or "live bottom" environments (e.g., coral reefs).

5.1.3 Spiny Dogfish EFH

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 designation definitions by life history stage for spiny dogfish are available at the following website: http://www.nero.noaa.gov/hcd/list.htm.

5.1.4 Non-target Species EFH

Habitats provide living things with the basic life requirements of nourishment and shelter, ultimately providing for both individual and population growth. The fishery resources of a region are influenced by the quantity and quality of available habitat. Depth, temperature, substrate, circulation, salinity, light, dissolved oxygen, and nutrient supply are important parameters of a given habitat which, in turn, determine the type and level of resource population that the habitat supports. Table 4 briefly summarizes the habitat requirements for each of the 12 groundfish species managed by the Northeast Multispecies (large-mesh) FMP, some of which consist of multiple stocks within the Northeast Multispecies FMP. Information for this table was extracted from the original FMP and profiles available from NMFS (Clark 1998). Essential fish habitat information for egg, juvenile and adult life stages for these species was compiled from Stevenson et al. 2004 (Table 4). Note that EFH for the egg stage was included for species that have a demersal egg stage (winter flounder and ocean pout); all other species' eggs are found either in the surface waters, throughout the water column, or are retained inside the parent until larvae hatch. The egg habitats of these species are therefore not generally subject to interaction with gear and are not listed in Table 4.

Table 4 Summary of geographic distribution, food sources, essential fish habitat features, and commercial gear used to catch each species in the Northeast Multispecies Fishery Management Unit

Species	Geographic Region of the Northwest Atlantic	Food Source	Essential Fish Habitat		Commercial Fishing Gear Used
			Water Depth	Substrate	
Atlantic cod	Gulf of Maine, Georges Bank and southward	Omnivorous (invertebrates and fish)	(J): 25-75 m (82-245 ft) (A): 10-150 m (33-492 ft)	(J): Cobble or gravel bottom substrates (A): Rocks, pebbles, or gravel bottom substrate	Otter trawl, longlines, gillnets
Haddock	southwestern Gulf of Maine and shallow waters of Georges Bank	Benthic feeders (amphipods, polychaetes, echinoderms), bivalves, and some fish	(J): 35-100 m (115– 28 ft) (A): 40-150 m (131-492 ft)	(J): Pebble and gravel bottom substrates (A): Broken ground, pebbles, smooth hard sand, smooth areas between rocky patches	Otter trawl, longlines, gillnets
Acadian redfish	Gulf of Maine, deep portions of Georges Bank and Great South Channel	Crustaceans	(J): 25-400 m (82-1,312 ft) (A): 50-350 m (164–1,148 ft)	(J): Bottom habitats with a substrate of silt, mud, or hard bottom (A): Same as for (J)	Otter trawl
Pollock	Gulf of Maine, extends to Georges Bank, and the northern part of Mid-Atlantic Bight	Juvenile feed on crustaceans, adults also feed on fish and mollusks	(J): 0-250 m (0-820 ft) (A): 15-365 m (49-1,198 ft)	(J): Bottom habitats with aquatic vegetation or substrate of sand, mud, or rocks (A): Hard bottom habitats including artificial reefs	Otter trawl, gillnets

Species	Geographic Region of the Northwest Atlantic	Food Source	Essential Fish Habitat		Commercial Fishing Gear Used
			Water Depth	Substrate	
Ocean Pout	Gulf of Maine, Cape Cod Bay, Georges Bank, southern New England, middle Atlantic south to Delaware Bay	Juveniles feed on amphipods and polychaetes. Adults feed mostly on echinoderms as well as on mollusks and crustaceans	(E): <50 m (<164 ft)	(E): Bottom habitats, generally hard bottom sheltered nests, holes, or crevices where juveniles are guarded.	Otter trawl
			(L): <50 m (<164 ft)	(L): Hard bottom nesting areas	
			(J): <80 m (262 ft)	(J): Bottom habitat, often smooth areas near rocks or algae	
			(A): <110 m (361 ft)	(A): Bottom habitats; dig depressions in soft sediments	
Atlantic Halibut	Gulf of Maine, Georges Bank	Juveniles feed on annelid worms and crustaceans, adults mostly feed on fish	(J): 20-60 m (66-197 ft)	(J): Bottom habitat with a substrate of sand, gravel, or clay	Otter trawl, longlines
			(A):100-700 m (328-2,297 ft)	(A): Same as for (J)	
White hake	Gulf of Maine, Georges Bank, southern New England	Juveniles feed mostly on polychaetes and crustaceans; adults feed mostly on crustaceans, squids, and fish	(J): 5-225 m (16-738 ft)	(J): Bottom habitat with seagrass beds or substrate of mud or fine-grained sand	Otter trawl, gillnets
			(A): 5-325 m (16-1,066 ft)	(A): Bottom habitats with substrate of mud or fine grained sand	
Yellowtail flounder	Gulf of Maine, southern New England, Georges Bank	Amphipods and polychaetes	(J): 20-50 m (66-164 ft)	(J): Bottom habitats with substrate of sand or sand and mud	Otter trawl
			(A): 20-50 m (66-164 ft)	(A): Same as for (J)	

Species	Geographic Region of the Northwest Atlantic	Food Source	Essential Fish Habitat		Commercial Fishing Gear Used
			Water Depth	Substrate	
American plaice	Gulf of Maine, Georges Bank	Polychaetes, crustaceans, mollusks, echinoderms	(J): 45-150 m (148-492 ft)	(J): Bottom habitats with fine grained sediments or a substrate of sand or gravel	Otter trawl
			(A): 45–175 m (148-574 ft)	(A): Same as for (J)	
Witch flounder	Gulf of Maine, Georges Bank, Mid-Atlantic Bight/southern New England	Mostly polychaetes (worms), echinoderms	(J): 50-450 m (164-1,476 ft)	(J): Bottom habitats with fine grained substrate	Otter trawl
			(A): 25-300 m (82-984 ft)	(A): Same as for (J)	
Winter flounder	Gulf of Maine, Georges Bank, Mid-Atlantic Bight/southern New England	Polychaetes, crustaceans	(E): <5 m (16 ft)	(E): Bottom habitats with a substrate of sand, muddy sand, mud, and gravel	Otter trawl, gillnets
			(J): 0.1-10 m (0.3-32 ft) (1-50 m age 1+) (3.2-164 ft)	(J): Bottom habitats with a substrate of mud or fine grained sand	
			(A): 1-100 m (3.2-328 ft)	(A): Bottom habitats including estuaries with substrates of mud, sand, gravel	
Atlantic wolffish Proposed in Amendment 16	Gulf of Maine & Georges Bank	Mollusks, brittle stars, crabs, and sea urchins	(J): 40-240 m (131.2-787.4 ft)	J): Rocky bottom and coarse sediments	Otter trawl, longlines, and gillnets
			(A): 40-240 m (131.2-787.4 ft)	(A): Same as for (J)	
Windowpane flounder	Gulf of Maine, Georges Bank, Mid-Atlantic Bight/southern New England	Juveniles mostly crustaceans; adults feed on crustaceans and fish	(J): 1-100 m (3.2-328 ft)	(J): Bottom habitats with substrate of mud or fine grained sand	Otter trawl
			(A): 1-75 m (3.2-574 ft)	(A): Same as for (J)	

Note: Species life stages are summarized by letter in parentheses following species name. A = adult; E = egg; J = juvenile; m = meter.

5.1.5 Essential Fish Habitat (EFH)

EFH is defined by the Sustainable Fisheries Act of 1996 as "[t]hose waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The environment that could potentially be affected by the Preferred Alternatives has been identified as EFH for benthic life stages of species that are managed under the Northeast Multispecies FMP; Atlantic sea scallop; monkfish; deep-sea red crab; northeast skate complex; Atlantic herring; summer flounder, scup, and black sea bass; tilefish; squid, Atlantic mackerel, and butterfish; Atlantic surfclam and ocean quahog FMPs. EFH for the species managed under these FMPs includes a wide variety of benthic habitats in state and Federal waters throughout the Northeast U.S. Shelf Ecosystem. EFH descriptions of the general substrate or bottom types for all the benthic life stages of the species managed under these FMPs are summarized in Table 14. Full descriptions and maps of EFH for each species and life stage (except Atlantic wolffish) are available on the NMFS Northeast Region website at http://www.nero.noaa.gov/hcd/index2a.htm. In general, EFH for species and life stages that rely on the seafloor for shelter (e.g., from predators), reproduction, or food is vulnerable to disturbance by bottom tending gear. The most vulnerable habitat is more likely to be hard or rough bottom with attached epifauna.

5.2 BIOLOGICAL ENVIRONMENT

5.2.1 Target Species

5.2.1.1 Description of the Fisheries

The management unit for spiny dogfish is all spiny dogfish in U.S. waters of the western Atlantic Ocean. The commercial fishery is fully described in Section 2.3 of the FMP (MAFMC 1999). No significant recreational fishery exists for this stock. An overview of the stock and associated commercial fishery landings is provided below.

5.2.1.2 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. 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 6 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.

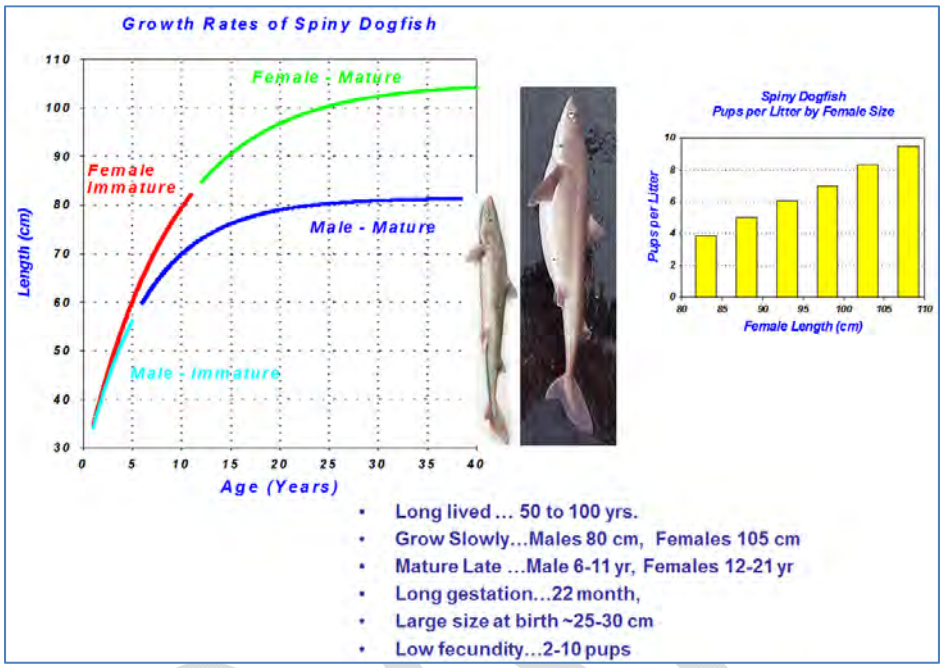


Figure 6. Summary of biological characteristics spiny dogfish relevant to the species' commercial fisheries exploitation (from Rago 2010 unpubl.).

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 lb). 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. The rebuilding program was highly successful and in 2010 the Northeast Regional Office (NERO) of NMFS communicated the *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 ½ Bmsy). For spiny dogfish, Bmsy (proxy) is the spawning stock biomass that maximizes recruitment (SSBmax) in a Ricker type (dome-shaped) stock-recruitment model. SSBmax is estimated to be 159,288 mt (351 M lb) with ½ of that target corresponding to the biomass threshold (79,644 mt; 175.5 M lb). In September 2011, the Northeast Fisheries Science Center (NEFSC) updated their assessment of the spiny dogfish stock using catch data (2010), and results from the 2011 trawl survey. The updated estimate of SSB for 2011 is 169,415 mt (373.496 M lb), about 6% above SSB_{max} (159,288 mt). In updating the assessment, the NEFSC estimated a *100% probability that the stock is not overfished*.

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 (Fmsy). The updated fishing mortality reference point provided by the NEFSC is $F_{msy} = 0.2439$. All accountable sources of removals contribute to the estimate of fishing mortality (F) under the current assessment. For the most recent assessment year (2010), these include U.S. commercial landings (12.346 M lb), Canadian commercial landings (6 mt), U.S. dead discards (8.997 M lb), and U.S. recreational landings (46,297 lb). Total removals in 2010 were approximately 21.330 M lb corresponding to an F estimate of 0.09, well below $F_{msy} = 0.2439$. In updating the assessment, the NEFSC estimated a *100% probability that overfishing was not occurring* ($F_{2010} < F_{threshold}$).

5.2.1.3 Commercial Fishery Landings

Calendar year harvest estimates from 1989 -2010 are provided in Table 5 and Figure 7. These include landings from U.S. commercial and recreational sectors as well as the Canadian commercial fishery. A thorough characterization of the historic (pre-FMP) fishery for spiny dogfish is given in Section 2.3 of the FMP (MAFMC 1999).

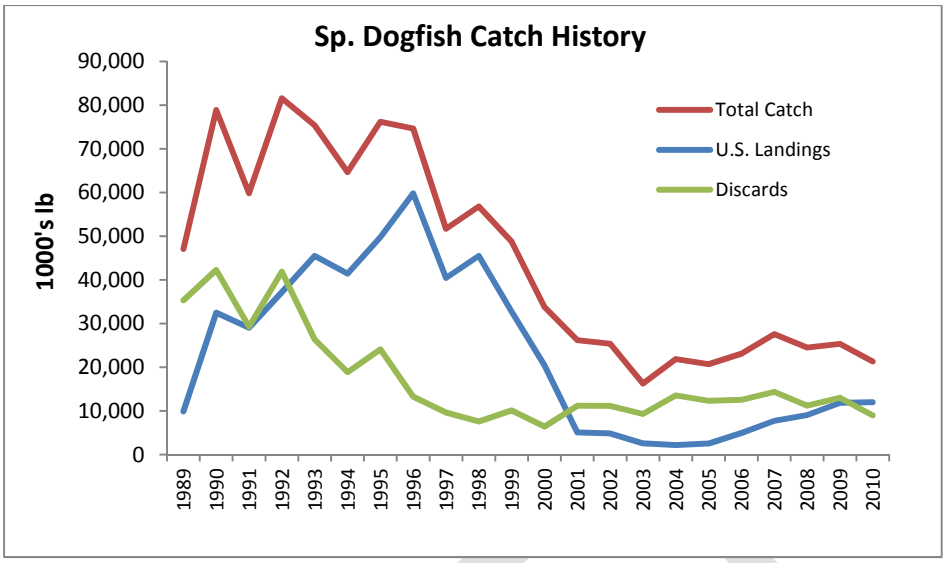


Figure 7. History of spiny dogfish landings and discards and total catch from 1989 – 2010. From NMFS 2011.

Table 5. Landings of spiny dogfish (1,000s lb) in the Northwest Atlantic Ocean for calendar years 1989 to 2010.

Year	US Comm	US Rec	Canada	Total (NW Atl.Stock)
1989	9,903	922	368	11,193
1990	32,476	395	2,886	35,757
1991	29,050	289	677	30,016
1992	37,166	474	1,914	39,554
1993	45,510	265	3,164	48,939
1994	41,442	342	4,012	45,796
1995	49,776	150	2,108	52,034
1996	59,825	55	950	60,830
1997	40,457	146	983	41,586

1998	45,477	86	2,326	47,889
1999	32,750	117	4,610	37,477
2000	20,408	11	6,043	26,462
2001	5,057	62	8,422	13,541
2002	4,848	452	7,901	13,201
2003	2,579	88	2,870	5,537
2004	2,165	231	5,207	7,603
2005	2,529	99	5,004	7,632
2006	4,958	207	5,377	10,542
2007	7,723	185	5,256	13,164
2008	9,057	472	3,466	12,995
2009	11,854	75	249	12,178
2010	12,347	35	13	12,395

Source: NMFS Commercial Fisheries Database, MRFSS data, and NAFO data.

Coastwide Landings Relative to Limits (Quotas)

Table 6 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 in 2009 to 12 M lb while still maintaining the rebuilding fishing mortality rate. Under the interstate FMP, quota increases began earlier in 2006 – 2008 (Table 6). 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 will be applied in federal waters in accordance with Amendment 2 to the federal FMP.

Table 6. Jurisdictional (federal and state) quotas and coastwide landings for fishing years 2000 - 2011.

Fishing year (May 1 - Apr 30)	Quota (M lb)		Landings (M lb)
	Federal	States'	
2000	4.0	n/a	8.2
2001	4.0	n/a	5.1
2002	4.0	n/a	4.8
2003	4.0	8.8	3.2
2004	4.0	4.0	1.5
2005	4.0	4.0	2.6
2006	4.0	6.0	6.6
2007	4.0	6.0	6.5
2008	4.0	8.0	9.0
2009	12.0	12.0	11.8
2010	15.0	14.4	14.5
2011	20.0	19.5	-

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 FY2010 is given in Table 7. Spiny dogfish landings came mostly from sink gillnets (67.58%), bottom otter trawls (20.23%), hook and line (11.58%), as well as unknown or other gear (0.61%).

Table 7. Commercial gear types associated with spiny dogfish harvest in FY2010. Note that vessels with state issued permits only are not required to complete VTRs so total VTR landings are less than total dealer-reported landings.

Commercial Gear Type	Landings (lb)	Pct Total
GILL NET	6,943,668	67.58%
TRAWL, OTTER, BOTTOM	2,078,172	20.23%
HOOK AND LINE	1,189,466	11.58%
OTHER	63,064	0.61%
TOTAL	**10,274,370**	**100.00%**

Source: Vessel Trip Reports

Landings by Area

The Northeast Region is divided into 46 statistical areas for federal fisheries management (Figure 8). According to VTR data, six statistical areas collectively accounted for 73.04 % of spiny dogfish landings in 2010, with each contributing greater than 5.0 % of the total (Table 8). These areas also represented 73.5% of the trips that landed spiny dogfish suggesting that resource availability as expressed by catch per trip is fairly consistent through the range where harvest occurs.

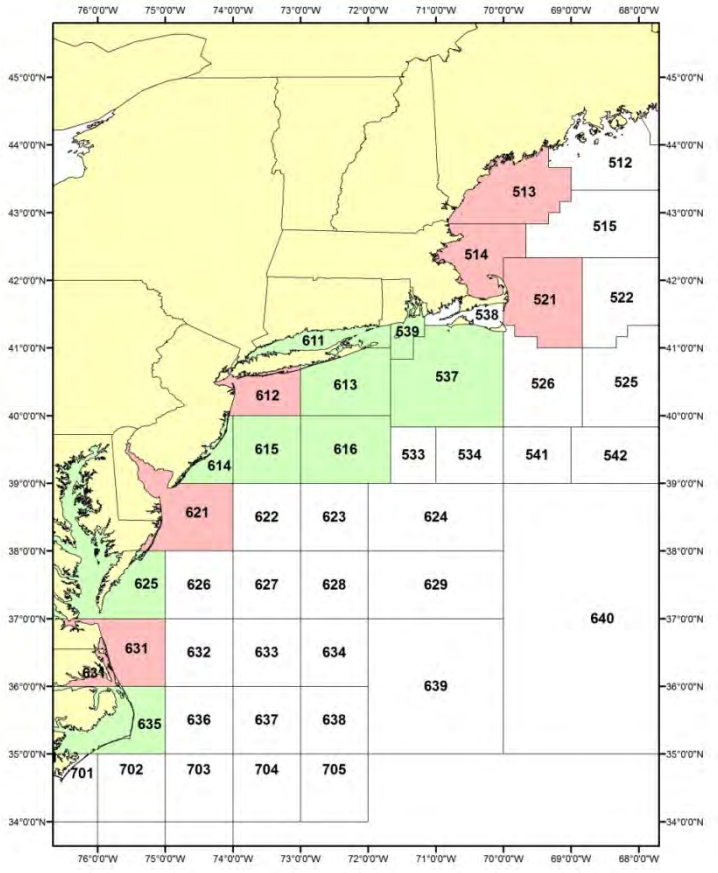


Figure 8. NMFS Northeast statistical areas. Shaded areas indicate where spiny dogfish harvest occurs. Red areas comprise 5% or more of harvest and green areas 1% to 5% of harvest.

Table 8. Statistical areas that accounted for at least 5 % of the spiny dogfish catch and/or trips in FY2010 VTR data. Shading (red or green) is provided for reference with Figure 6.

Statistical Area	Catch (%)	Trips (%)
514	26.91%	25.11%
521	17.21%	15.34%
513	15.56%	12.86%
631	4.25%	7.64%
612	5.96%	6.63%
621	3.60%	5.47%
537	4.67%	4.97%
539	4.01%	3.55%
635	1.94%	3.41%
615	2.61%	3.25%
613	3.04%	2.90%
616	1.81%	2.54%
625	1.76%	2.15%
611	2.31%	1.46%
614	1.09%	1.10%

Source: Vessel Trip Report database

Canadian Commercial Spiny Dogfish Landings

Historic Canadian commercial landings have been low relative to landings from the U.S. commercial fishery (Table 5). In 2001, following the implementation of the U.S. Federal FMP, Canadian landings exceeded U.S. landings for the first time. In 2008, Canadian landings were about 3.5 M lb, but in 2009 landings dropped precipitously to about 250,000 lb. In 2010, the increased availability of U.S. spiny dogfish continued to constrain demand for Canadian product (pers. comm. Barndollar[4] and Marder[5] 2011) even though Canada has allowed a directed fishery

[4] Steve Barndollar is on the MAFMC's Spiny Dogfish Advisory Panel and is the owner of Seatrade Int'l, one of the primary processors of U.S. and Canadian spiny dogfish on the Atlantic Coast. He attended the Spiny Dogfish Monitoring Committee meeting in September 2011.

under a 2,500 mt (5.512 M lb) quota with no trip limits. In 2010 Canadian landings dropped further to 13,000 lb.

Recreational Landings

As previously stated, no significant recreational fishery exists for spiny dogfish. Some retention of recreationally caught spiny dogfish does occur, however. Recreational landings by state for 2010 are provided in Table 9 below.

Table 9. Recreational landings (lb) of spiny dogfish by state for 2010.

State	Landings (lb)	Pct of Total
NORTH CAROLINA	16,052	46.43%
SOUTH CAROLINA	7,531	21.78%
NEW JERSEY	4,650	13.45%
DELAWARE	3,521	10.18%
MARYLAND	1,041	3.01%
NEW HAMPSHIRE	977	2.83%
MASSACHUSETTS	443	1.28%
VIRGINIA	359	1.04%
TOTAL	**34,574**	**100.00%**

Source: Marine Recreational Fisheries Statistical Survey Data

5.2.2 Protected Resources

There are numerous species that inhabit the environment within the Northeast Multispecies FMP and spiny dogfish FMP management units, and that therefore potentially occur in the operations area of the groundfish fishery and the spiny dogfish fishery, that are afforded protection under the Endangered Species Act of 1973 (ESA; i.e., for those designated as threatened or endangered) and/or the Marine Mammal Protection Act of 1972 (MMPA), and are under NMFS' jurisdiction. Seventeen species are classified as endangered or threatened under the ESA, three

[5] Brian Marder is the owner of Marder Trawling, Inc., a major processor of U.S. and Canadian spiny dogfish on the Atlantic Coast. He attended the Spiny Dogfish Monitoring Committee meeting in September 2011.

others are candidate species under the ESA, while the remainders are protected by the provisions of the MMPA.

5.2.2.1 Species Present in the Area

Table 10 lists the species, protected either by the ESA, the MMPA, or both, that may be found in the environment that would be utilized by the fishery. Table 10 also includes three candidate fish species as identified under the ESA. Candidate species are those petitioned species that are actively being considered for listing as endangered or threatened under the ESA, as well as those species for which NMFS has initiated an ESA status review that it has announced in the Federal Register.

Table 10. Species protected under the Endangered Species Act and Marine Mammal Protection Act that may occur in the operations area for the groundfish fishery.[a]

Species	Status
Cetaceans	
North Atlantic right whale (*Eubalaena glacialis*)	**Endangered**
Humpback whale (*Megaptera novaeangliae*)	**Endangered**
Fin whale (*Balaenoptera physalus*)	**Endangered**
Sei whale (*Balaenoptera borealis*)	**Endangered**
Blue whale (*Balaenoptera musculus*)	**Endangered**
Sperm whale (*Physeter macrocephalus*	**Endangered**
Minke whale (*Balaenoptera acutorostrata*)	**Protected**
Pilot whale (*Globicephala spp*.)	**Protected**
Risso's dolphin (*Grampus griseus*)	**Protected**
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	**Protected**
Common dolphin (*Delphinus delphis*)	**Protected**
Spotted dolphin (*Stenella frontalis*)	**Protected**
Bottlenose dolphin (*Tursiops truncatus*)[b]	**Protected**

Harbor porpoise (*Phocoena phocoena*)	**Protected**
Sea Turtles	
Leatherback sea turtle (*Dermochelys coriacea*)	**Endangered**
Kemp's ridley sea turtle (*Lepidochelys kempii*)	**Endangered**
Green sea turtle (*Chelonia mydas*)	**Endangered[c]**
Loggerhead sea turtle (*Caretta caretta*) Northwest Atlantic DPS	**Threatened**
Hawksbill sea turtle (*Eretmochelys imbricate*)	**Endangered**
Fish	
Shortnose sturgeon (*Acipenser brevirostrum*)	**Endangered**
Atlantic salmon (*Salmo salar*)	**Endangered**
Atlantic sturgeon *(Acipenser oxyrinchus)*	
Gulf of Maine DPS	**Threatened**
New York Bight DPS	**Endangered**
Chesapeake Bay DPS	**Endangered**
Carolina DPS	**Endangered**
South Atlantic DPS	**Endangered**
Cusk *(Brosme brosme)*	**Candidate**
Alewife (*Alosa pseudo harengus*)	**Candidate**
Blueback herring (*Alosa aestivalis*)	**Candidate**

Pinnipeds	
Harbor seal (*Phoca vitulina*)	**Protected**
Gray seal (*Halichoerus grypus*)	**Protected**
Harp seal (*Phoca groenlandicus*)	**Protected**
Hooded seal (*Cystophora cristata*)	**Protected**

Notes:
[a] MMPA-listed species occurring on this list are only those species that have a history of interaction with similar gear types within the action area of the Northeast Multispecies Fishery, as defined in the 2012 List of Fisheries.
[b] Bottlenose dolphin (*Tursiops truncatus*), Western North Atlantic coastal stock is listed as depleted.
[c] Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters.

Candidate species receive no substantive or procedural protection under the ESA; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed project. NMFS has initiated review of recent stock assessments, bycatch information, and other information for these candidate and proposed species. The results of those efforts are needed to accurately characterize recent interactions between fisheries and the candidate/proposed species in the context of stock sizes. Any conservation measures deemed appropriate for these species will follow the information reviews. Please note that once a candidate species (see Table 10) is proposed for listing the conference provisions of the ESA apply (see 50 CFR 402.10).

5.2.2.2 Species Potentially Affected

The multispecies and spiny dogfish fisheries have the potential to affect the sea turtle, cetacean, and pinniped species discussed below. A number of documents contain background information on the range-wide status of sea turtle and marine mammal species that occur in the area and are known or suspected of interacting with fishing gear (demersal gear including trawls, gillnets, and bottom longlines). These documents include sea turtle status reviews and biological reports (NMFS and USFWS 1995; Turtle Expert Working Group 1998, 2000, 2007, 2009; NMFS and USFWS 2007a, 2007b), recovery plans for ESA-listed cetaceans and sea turtles (NMFS 1991, 2005; NMFS and USFWS 1991a, 1991b; NMFS and USFWS 1992), the marine mammal stock assessment reports (e.g., Waring et al. 1995---2011), and other publications (e.g., Clapham et al. 1999, Perry et al. 1999, Best et al. 2001, Perrin et al. 2002).

5.2.2.2.1 Sea Turtles

Loggerhead, leatherback, Kemp's ridley, and green sea turtles occur seasonally in southern New England and Mid-Atlantic continental shelf waters north of Cape Hatteras, North Carolina. Turtles generally move up the coast from southern wintering areas as water temperatures warm in the spring (James et al. 2005, Morreale and Standora 2005, Braun-McNeill and Epperly 2004, Morreale and Standora 1998, Musick and Limpus 1997, Shoop and Kenney 1992, Keinath et al. 1987). A reversal of this trend occurs in the fall when water temperatures cool. Turtles pass Cape Hatteras by December and return to more southern waters for the winter (James et al. 2005,

Morreale and Standora 2005, Braun-McNeill and Epperly 2004, Morreale and Standora 1998, Musick and Limpus 1997, Shoop and Kenney 1992, Keinath et al. 1987). Hard-shelled species typically occur as far north as Cape Cod whereas the more cold-tolerant leatherbacks occur in more northern Gulf of Maine waters in the summer and fall (Shoop and Kenney 1992, STSSN database http://www.sefsc.noaa.gov/seaturtleSTSSN.jsp).

On March 16, 2010, NMFS and USFWS published a proposed rule (75 FR 12598) to divide the worldwide population of loggerhead sea turtles into nine DPSs, as described in the 2009 Status Review. Two of the DPSs were proposed to be listed as threatened and seven of the DPSs, including the Northwest Atlantic Ocean DPS, were proposed to be listed as endangered. NMFS and the USFWS accepted comments on the proposed rule through September 13, 2010 (June 2, 2010, 75 FR 30769). On March 22, 2011 (76 FR 15932), NMFS and USFWS extended the date by which a final determination on the listing action will be made to no later than September 16, 2011. This action was taken to address the interpretation of the existing data on status and trends and its relevance to the assessment of risk of extinction for the Northwest Atlantic Ocean DPS, as well as the magnitude and immediacy of the fisheries bycatch threat and measures to reduce this threat. New information or analyses to help clarify these issues were requested by April 11, 2011.

On September 22, 2011, NMFS and USFWS issued a final rule (76 FR 58868), determining that the loggerhead sea turtle is composed of nine DPSs (as defined in Conant et al., 2009) that constitute species that may be listed as threatened or endangered under the ESA. Five DPSs were listed as endangered (North Pacific Ocean, South Pacific Ocean, North Indian Ocean, Northeast Atlantic Ocean, and Mediterranean Sea), and four DPSs were listed as threatened (Northwest Atlantic Ocean, South Atlantic Ocean, Southeast Indo-Pacific Ocean, and Southwest Indian Ocean). Note that the Northwest Atlantic Ocean (NWA) DPS and the Southeast Indo-Pacific Ocean DPS were original proposed as endangered. The NWA DPS was determined to be threatened based on review of nesting data available after the proposed rule was published, information provided in public comments on the proposed rule, and further discussions within the agencies. The two primary factors considered were population abundance and population trend. NMFS and USFWS found that an endangered status for the NWA DPS was not warranted given the large size of the nesting population, the overall nesting population remains widespread, the trend for the nesting population appears to be stabilizing, and substantial conservation efforts are underway to address threats.

The September 2011 final rule also noted that critical habitat for the two DPSs occurring within the U.S. (NWA DPS and North Pacific DPS) will be designated in a future rulemaking. Information from the public related to the identification of critical habitat, essential physical or biological features for this species, and other relevant impacts of a critical habitat designation was solicited.

This proposed action only occurs in the Atlantic Ocean. As noted in Conant et al. (2009), the range of the four DPSs occurring in the Atlantic Ocean are as follows: NWA DPS – north of the equator, south of 60° N latitude, and west of 40° W longitude; Northeast Atlantic Ocean (NEA) DPS – north of the equator, south of 60° N latitude, east of 40° W longitude, and west of 5° 36' W longitude; South Atlantic DPS – south of the equator, north of 60° S latitude, west of 20° E

longitude, and east of 60° W longitude; Mediterranean DPS – the Mediterranean Sea east of 5° 36' W longitude. These boundaries were determined based on oceanographic features, loggerhead sightings, thermal tolerance, fishery bycatch data, and information on loggerhead distribution from satellite telemetry and flipper tagging studies. Sea turtles from the NEA DPS are not expected to be present over the North American continental shelf in U.S. coastal waters, where the proposed action occurs (P. Dutton, NMFS, personal communication, 2011). Previous literature (Bowen et al. 2004) has suggested that there is the potential, albeit small, for some juveniles from the Mediterranean DPS to be present in U.S. Atlantic coastal foraging grounds. These data should be interpreted with caution however, as they may be representing a shared common haplotype and lack of representative sampling at Eastern Atlantic rookeries. Given that updated, more refined analyses are ongoing and the occurrence of Mediterranean DPS juveniles in U.S. coastal waters is rare and uncertain, if even occurring at all, for the purposes of this assessment we are making the determination that the Mediterranean DPS is not likely to be present in the action area. Sea turtles of the South Atlantic DPS do not inhabit the action area of this subject fishery (Conant et al. 2009). As such, the remainder of this assessment will only focus on the NWA DPS of loggerhead sea turtles, listed as threatened.

In general, sea turtles are a long-lived species and reach sexual maturity relatively late (NMFS SEFSC 2001; NMFS and USFWS 2007a, 2007b, 2007c, 2007d). Sea turtles are injured and killed by numerous human activities (NRC 1990; NMFS and USFWS 2007a, 2007b, 2007c, 2007d). Nest count data are a valuable source of information for each turtle species since the number of nests laid reflects the reproductive output of the nesting group each year. A decline in the annual nest counts has been measured or suggested for four of five western Atlantic loggerhead nesting groups through 2004 (NMFS and USFWS 2007a), however, data collected since 2004 suggests nest counts have stabilized or increased (TEWG 2009). Nest counts for Kemp's ridley sea turtles as well as leatherback and green sea turtles in the Atlantic demonstrate increased nesting by these species (NMFS and USFWS 2007b, 2007c, 2007d).

5.2.2.2.2 Large Cetaceans

The most recent Marine Mammal Stock Assessment Report (SAR) (Waring et al. 2010) reviewed the current population trend for each of these cetacean species within U.S. Economic Exclusion Zone (EEZ) waters. The SAR also estimated annual human-caused mortality and serious injury. Finally, it described the commercial fisheries that interact with each stock in the U.S. Atlantic. The following paragraphs summarize information from the SAR.

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke whales) follow a general annual pattern of migration. They migrate from high latitude summer foraging grounds, including the Gulf of Maine and Georges Bank, to and latitude winter calving grounds (Perry et al. 1999, Kenney 2002). However, this is a simplification of species movements as the complete winter distribution of most species is unclear (Perry et al. 1999, Waring et al. 2011). Studies of some of the large baleen whales (right, humpback, and fin) have demonstrated the presence of each species in higher latitude waters even in the winter (Swingle et al. 1993, Wiley et al. 1995, Perry et al. 1999, Brown et al. 2002). Blue whales are most often sighted along the east coast of Canada, particularly in the Gulf of St. Lawrence. They occur only infrequently within the U.S. EEZ (Waring et al. 2002).

Available information suggests that the North Atlantic right whale population increased at a rate of 1.8 percent per year between 1990 and 2005. The total number of North Atlantic right whales is estimated to be at least 361 animals in 2005 (Waring et al. 2011). The minimum rate of annual human-caused mortality and serious injury to right whales averaged 2.8 mortality or serious injury incidents per year during 2004 to 2008 (Waring et al. 2011). Of these, fishery interactions resulted in an average of 0.8 mortality or serious injury incidents per year.

The North Atlantic population of humpback whales is conservatively estimated to be 7,698 (Waring et al. 2011). The best estimate for the GOM stock of humpback whale population is 847 whales (Waring et al. 2011). Based on data available for selected areas and time periods, the minimum population estimates for other western North Atlantic whale stocks are 3,269 fin whales, 208 sei whales (Nova Scotia stock), 3,539 sperm whales, and 6,909 minke whales (Waring et al. 2009). Current data suggest that the GOM humpback whale stock is steadily increasing in size (Waring 2011). Insufficient information exist to determine trends for these other large whale species.

Recent revisions to the Atlantic Large Whale Take Reduction Plan (ALWTRP) (72 FR 57104, October 5, 2007) continue to address entanglement risk of large whales (right, humpback, and fin whales, and acknowledge benefits to minke whales) in commercial fishing gear. The revisions seek to reduce the risk of death and serious injury from entanglements that do occur.

5.2.2.2.3 Small Cetaceans

There is anthropogenic mortality of numerous small cetacean species (dolphins, pilot whales, and harbor porpoise) in Northeast multispecies fishing gear. Seasonal abundance and distribution of each species off the coast of the Northeast U.S. varies with respect to life history characteristics. Some species such as white-sided dolphin and harbor porpoise primarily occupy continental shelf waters. Other species such as the Risso's dolphin occur primarily in continental shelf edge and slope waters. Still other species like the common dolphin and the spotted dolphin occupy all three habitats. Waring et al. (2009) summarizes information on the western North Atlantic stocks of each species.

5.2.2.2.4 Pinnipeds

Harbor seals have the most extensive distribution of the four species of seal expected to occur in the area. Harbor seals sighting have occurred far south as 30° N (Katona et al. 1993, Waring et al. 2009). Gray seals are the second most common seal species in U.S. EEZ waters. They occur primarily in waters off of New England (Katona et al. 1993; Waring et al. 2009). Pupping for both species occurs in both U.S. and Canadian waters of the western North Atlantic. Although there are at least three gray seal pupping colonies in U.S., the majority of harbor seal pupping likely occurs in U.S. waters and the majority of gray seal pupping likely occurs in Canadian waters. Observations of harp and hooded seals are less common in U.S. EEZ waters. Both species form aggregations for pupping and breeding off eastern Canada in the late winter/early spring. They then travel to more northern latitudes for molting and summer feeding (Waring et al. 2006). Both species have a seasonal presence in U.S. waters from Maine to New Jersey, based on sightings, stranding, and fishery bycatch information (Waring et al. 2009).

5.2.2.2.5 Atlantic Sturgeon

A status review for Atlantic sturgeon was completed in 2007 which indicated that five distinct population segments (DPS) of Atlantic sturgeon exist in the United States (ASSTR 2007). On October 6, 2010, NMFS proposed listing these five DPSs of Atlantic sturgeon along the U.S. East Coast as either threatened or endangered species (75 FR 61872 and 75 FR 61904). A final listing was published on February 6th, 2012 (77 FR 5880 and 75 FR 5914). The GOM DPS of Atlantic sturgeon has been listed as threatened, and the New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon have been listed as endangered. Atlantic sturgeon from any of the five DPSs could occur in areas where the multispecies fishery operates. Atlantic sturgeon have been captured in small mesh otter trawl gear, albeit less often than in large mesh otter trawl gear (Stein A. B. et al 2004a, ASMFC TC 2007).

Atlantic sturgeon is an anadromous species that spawns in relatively low salinity, river environments, but spends most of its life in the marine and estuarine environments from Labrador, Canada to the Saint Johns River, Florida (Holland and Yelverton 1973, Dovel and Berggen 1983, Waldman et al. 1996, Kynard and Horgan 2002, Dadswell 2006, ASSRT 2007). Tracking and tagging studies have shown that subadult and adult Atlantic sturgeon that originate from different rivers mix within the marine environment, utilizing ocean and estuarine waters for life functions such as foraging and overwintering (Stein et al. 2004a, Dadswell 2006, ASSRT 2007, Laney et al. 2007, Dunton et al. 2010). Fishery-dependent data as well as fishery-independent data demonstrate that Atlantic sturgeon use relatively shallow inshore areas of the continental shelf; primarily waters less than 50 m (Stein et al. 2004b, ASMFC TC 2007, Dunton et al. 2010). The data also suggest regional differences in Atlantic sturgeon depth distribution with sturgeon observed in waters primarily less than 20 m in the Mid-Atlantic Bight and in deeper waters in the Gulf of Maine (Stein et al. 2004b, ASMFC TC 2007, Dunton et al. 2010). Information on population sizes for each Atlantic sturgeon DPS is very limited. Based on the best available information, NMFS has concluded that bycatch, vessel strikes, water quality and water availability, dams, lack of regulatory mechanisms for protecting the fish, and dredging are the most significant threats to Atlantic sturgeon.

Comprehensive information on current abundance of Atlantic sturgeon is lacking for all of the spawning rivers (ASSRT 2007). Based on data through 1998, an estimate of 863 spawning adults per year was developed for the Hudson River (Kahnle et al. 2007), and an estimate of 343 spawning adults per year is available for the Altamaha River, GA, based on data collected in 2004-2005 (Schueller and Peterson 2006). Data collected from the Hudson River and Altamaha River studies cannot be used to estimate the total number of adults in either subpopulation, since mature Atlantic sturgeon may not spawn every year, and it is unclear to what extent mature fish in a non-spawning condition occur on the spawning grounds. Nevertheless, since the Hudson and Altamaha Rivers are presumed to have the healthiest Atlantic sturgeon subpopulations within the United States, other U.S. subpopulations are predicted to have fewer spawning adults than either the Hudson or the Altamaha (ASSRT 2007). It is also important to note that the estimates above represent only a fraction of the total population size as spawning adults comprise only a portion of the total population (e.g., this estimate does not include subadults and early life stages).

5.2.2.3 Species Not Likely to be Affected

NMFS has determined that the action being considered in this EA is not likely to adversely affect shortnose sturgeon, the Gulf of Maine distinct population segment (DPS) of Atlantic salmon, hawksbill sea turtles, blue whales, or sperm whales, all of which are listed as endangered species under the ESA. Further, the action considered in this EA is not likely to adversely affect North Atlantic right whale (discussed in Section 5.2.2.2.2) critical habitat. The following discussion provides the rationale for these determinations.

Shortnose sturgeon are benthic fish that mainly occupy the deep channel sections of large rivers. They occupy rivers along the western Atlantic coast from St. Johns River in Florida, to the Saint John River in New Brunswick, Canada. Although, the species is possibly extirpated from the Saint Johns River system. The species is anadromous in the southern portion of its range (i.e., south of Chesapeake Bay), while some northern populations are amphidromous (NMFS 1998).

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. Juvenile salmon in New England rivers typically migrate to sea in spring after a one- to three-year period of development in freshwater streams. They remain at sea for two winters before returning to their U.S. natal rivers to spawn (Kocik and Sheehan 2006). Results from a 2001-2003 post-smolt trawl survey in the nearshore waters of the Gulf of Maine indicate that Atlantic salmon post-smolts are prevalent in the upper water column throughout this area in mid to late May (Lacroix, Knox, and Stokesbury 2005). Therefore, commercial fisheries deploying small-mesh active gear (pelagic trawls and purse seines within 10 m of the surface) in nearshore waters of the Gulf of Maine may have the potential to incidentally take smolts. However, it is highly unlikely that the action being considered will affect the Gulf of Maine DPS of Atlantic salmon given that operation of the multispecies fishery does not occur in or near the rivers where concentrations of Atlantic salmon are likely to be found. Additionally, multispecies gear operates in the ocean at or near the bottom rather than near the surface where Atlantic salmon are likely to occur. Thus, this species will not be considered further in this EA.

North Atlantic right whales occur in coastal and shelf waters in the western North Atlantic (NMFS 2005). Section 5.2.3 discusses potential fishery entanglement and mortality interactions with North Atlantic right whale individuals. The western North Atlantic population in the U.S. primarily ranges from winter calving and nursery areas in coastal waters off the southeastern U.S. to summer feeding grounds in New England waters (NMFS 2005). North Atlantic Right Whales use five well-known habitats annually, including multiple in northern waters. These northern areas include the Great South Channel (east of Cape Cod); Cape Cod and Massachusetts Bays; the Bay of Fundy; and Browns and Baccaro Banks, south of Nova Scotia. NMFS designated the Great South Channel and Cape Cod and Massachusetts Bays as Northern Atlantic right whale critical habitat in June 1994 (59 FR 28793). NMFS has designated additional critical habitat in the southeastern U.S. Multispecies gear operates in the ocean at or near the bottom rather than near the surface. It is not known whether the bottom-trawl, or any other type of fishing gear, has an impact on the habitat of the Northern right whale (59 FR 28793). Mesh sizes used in the multispecies or spiny dogfish fisheries do not significantly impact the Northern right whale's planktonic food supply (59 FR 28793). Therefore, Northern right whale food sources in

areas designated as critical habitat would not be adversely affected by sectors. For these reasons, Northern right whale critical habitat will not be considered further in this EA.

The hawksbill turtle is uncommon in the waters of the continental U.S. Hawksbills prefer coral reefs, such as those found in the Caribbean and Central America. Hawksbills feed primarily on a wide variety of sponges, but also consume bryozoans, coelenterates, and mollusks. The Culebra Archipelago of Puerto Rico contains especially important foraging habitat for hawksbills. Nesting areas in the western North Atlantic include Puerto Rico and the Virgin Islands. There are accounts of hawksbills in south Florida and individuals have been sighted along the east coast as far north as Massachusetts; however, east coast sightings north of Florida are rare (NMFS 2009a). Operations in the NE multispecies and spiny dogfish fishery would not occur in waters that are typically used by hawksbill sea turtles. Therefore, it is highly unlikely that fishery operations would affect this turtle species.

Blue whales do not regularly occur in waters of the U.S. EEZ (Waring et al. 2002). In the North Atlantic region, blue whales are most frequently sighted from April to January (Sears 2002). No blue whales were observed during the Cetacean and Turtle Assessment Program surveys of the mid- and North Atlantic areas of the outer continental shelf (Cetacean and Turtle Assessment Program 1982). Calving for the species occurs in low latitude waters outside of the area where the sectors would operate. Blue whales feed on euphausiids (krill) that are too small to be captured in fishing gear. There were no observed fishery-related mortalities or serious injuries to blue whales between 1996 and 2000 (Waring et al. 2002). The species is unlikely to occur in areas where the sectors would operate, and sector operations would not affect the availability of blue whale prey or areas where calving and nursing of young occurs. Therefore, the Proposed Action would not be likely to adversely affect blue whales.

Unlike blue whales, sperm whales do regularly occur in waters of the U.S. EEZ. However, the distribution of the sperm whales in the U.S. EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring et al. 2007). Sperm whale distribution is typically concentrated east-northeast of Cape Hatteras in winter and shifts northward in spring when whales are found throughout the MA Bight (Waring et al. 2006). Distribution extends further northward to areas north of GB and the Northeast Channel region in summer and then south of New England in fall, back to the MA Bight (Waring et al. 1999). The average depth over which sperm whale sightings occurred during the Cetacean and Turtle Assessment Program surveys was 5,879 ft (1,792 m) (Cetacean and Turtle Assessment Program 1982). Female sperm whales and young males almost always inhabit open ocean, deep water habitat with bottom depths greater than 3,280 ft (1,000 m) and at latitudes less than 40° N (Whitehead 2002). Sperm whales feed on large squid and fish that inhabit the deeper ocean regions (Perrin et al. 2002). There were no observed fishery-related mortalities or serious injuries to sperm whales between 2001 and 2005 (Waring et al. 2007). Sperm whales are unlikely to occur in water depths where the the NE multispecies or spiny dogfish fisheries would operate, these fisheries would not affect the availability of sperm whale prey or areas where calving and nursing of young occurs. Therefore, the Proposed Action would not be likely to adversely affect sperm whales.

Although marine turtles and large whales could be potentially affected through interactions with fishing gear, NMFS has determined that the continued authorization of the multispecies fishery

would not have any adverse effects on the availability of prey for these species. Sea turtles feed on a variety of plants and animals, depending on the species. However, none of the turtle species are known to feed upon groundfish. Right whales and sei whales feed on copepods (Horwood 2002, Kenney 2002). The multispecies fishery will not affect the availability of copepods for foraging right and sei whales because copepods are very small organisms that will pass through multispecies fishing gear rather than being captured in it. Humpback whales and fin whales also feed on krill as well as small schooling fish such as sand lance, herring and mackerel (Aguilar 2002, Clapham 2002). Multispecies and spiny dogfish fishing gear operates on or very near the bottom. Fish species caught in multispecies gear are species that live in benthic habitat (on or very near the bottom) such as flounders. As a result, this gear does not typically catch schooling fish such as herring and mackerel that occur within the water column. Therefore, the continued authorization of the multispecies fishery or the approval of a seasonal exempted fishery for the spiny dogfish fishery off the coast of Cape Cod would not affect the availability of prey for foraging humpback or fin whales.

5.2.3 Interactions Between Gear and Protected Resources

NMFS categorizes commercial fisheries based on a two-tiered, stock-specific fishery classification system that addresses both the total impact of all fisheries on each marine mammal stock as well as the impact of individual fisheries on each marine mammal stock. NMFS bases the system on the numbers of animals per year that incur incidental mortality or serious injury due to commercial fishing operations relative to a marine mammal stock's Potential Biological Removal (PBR) level.[6] Tier 1 takes into account the cumulative mortality and serious injury to marine mammals caused by commercial fisheries. Tier 2 considers marine mammal mortality and serious injury caused by the individual fisheries. This EA uses Tier 2 classifications to indicate how each type of gear proposed for use in the Proposed Action may affect marine mammals (NMFS 2009b). Table 11 identifies the classifications used in the final List of Fisheries (for FY 2010 (75 FR 68468; November 8, 2010; NMFS 2010), which are broken down into Tier 2 Categories I, II, and III. A proposed List of Fisheries for FY 2012 was published on June 28, 2011 (76 FR 37716), but the List of Fisheries for FY 2012 has not yet been adopted and is not discussed further in this document.

[6] PBR is the maximum number of animals, not including natural mortalities, which may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.

Table 11. Descriptions of the Tier 2 Fishery Classification Categories.

Category	Category Description
Category I	A commercial fishery that has frequent incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is, by itself, responsible for the annual removal of 50 percent or more of any stock's PBR level.
Category II	A commercial fishery that has occasional incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is one that, collectively with other fisheries, is responsible for the annual removal of more than 10 percent of any marine mammal stock's PBR level and that is by itself responsible for the annual removal of between 1 percent and 50 percent, exclusive of any stock's PBR.
Category III	A commercial fishery that has a remote likelihood of, or no known incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is one that collectively with other fisheries is responsible for the annual removal of: a. Less than 50 percent of any marine mammal stock's PBR level, or b. More than 1 percent of any marine mammal stock's PBR level, yet that fishery by itself is responsible for the annual removal of 1 percent or less of that stock's PBR level. In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals by a commercial fishery, the Assistant Administrator would determine whether the incidental serious injury or mortality is "remote" by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area or at the discretion of the Assistant Administrator.

Interactions between gear and a given species occur when fishing gear overlaps both spatially and trophically with the species' niche. Spatial interactions are more "passive" and involve inadvertent interactions with fishing gear when the fishermen deploy gear in areas used by protected resources. Trophic interactions are more "active" and occur when protected species attempt to consume prey caught in fishing gear and become entangled in the process. Spatial and trophic interactions can occur with various types of fishing gear used by the multispecies fishery through the year. Many large and small cetaceans and sea turtles are more prevalent within the operations area during the spring and summer. However they are also relatively abundant during the fall and would have a higher potential for interaction with sector activities that occur during these seasons. Although harbor seals may be more likely to occur in the operations area between fall and spring, harbor and gray seals are year-round residents. Therefore, interactions could occur year-round. The uncommon occurrences of hooded and harp seals in the operations area are more likely to occur during the winter and spring, allowing for an increased potential for interactions during these seasons.

Although interactions between protected species and gear deployed by the Northeast multispecies fishery would vary, interactions generally include:

- Becoming caught on hooks (bottom longlines)
- Entanglement in mesh (gillnets and trawls)
- Entanglement in the float line (gillnets and trawls)
- Entanglement in the groundline (gillnets, trawls, and bottom longlines)
- Entanglement in anchor lines (gillnets and bottom longlines), or
- Entanglement in the vertical lines that connect gear to the surface and surface systems (gillnets, traps/pots, and bottom longlines).

NMFS assumes the potential for entanglements to occur is higher in areas where more gear is set and in areas with higher concentrations of protected species. Table 12 lists the marine mammals known to have had interactions with gear used by the Northeast multispecies fishery. This gear includes sink gillnets, traps/pots, bottom trawls, and bottom longlines within the Northeast multispecies region, as excerpted from the List of Fisheries for FY 2011 ([75 FR 68468; November 8, 2010], also see Waring et al. 2009). Sink gillnets have the greatest potential for interaction with protected resources, followed by bottom trawls. There are no observed reports of interactions between longline gear and marine mammals in FY 2009 and FY 2010. However, interactions between the pelagic longline fishery and both pilot whales and Risso's dolphins led to the development of the Pelagic Longline Take Reduction Plan.

Table 12. Marine Mammals Impacts Based on Groundfishing Gear and Northeast Multispecies Fishing Areas (Based on 2010 List of Fisheries).

Fishery		Estimated Number of	
Category	**Type**	**Vessels/Persons**	**Marine Mammal Species and Stocks Incidentally Killed or Injured**
Category I	MA gillnet	5,495	Bottlenose dolphin, Northern Migratory coastal [a] Bottlenose dolphin, Southern Migratory coastal [a] Bottlenose dolphin, Northern NC estuarine system [a] Bottlenose dolphin, Southern NC estuarine system [a] Bottlenose dolphin, WNA offshore Common dolphin, WNA Gray seal, WNA Harbor porpoise, GOM/Bay of Fundy Harbor seal, WNA Harp seal, WNA Humpback whale, Gulf of Maine Long-finned pilot whale, WNA Minke whale, Canadian east coast Risso's dolphin, WNA Short-finned pilot whale, WNA White-sided dolphin, WNA
	Northeast sink gillnet	7,712	Bottlenose dolphin, WNA, offshore Common dolphin, WNA Fin whale, WNA Gray seal, WNA Harbor porpoise, GOM/Bay of Fundy Harbor seal, WNA Harp seal, WNA Hooded seal, WNA Humpback whale, GOM Minke whale, Canadian east coast North Atlantic right whale, WNA Risso's dolphin, WNA White-sided dolphin, WNA
Fishery		**Estimated Number of**	
Category	**Type**	**Vessels/Persons**	**Marine Mammal Species and Stocks Incidentally Killed or Injured**
Category II	MA bottom trawl	1,182	Bottlenose dolphin, WNA offshore Common dolphin, WNA [a] Long-finned pilot whale, WNA [a] Short-finned pilot whale, WNA [a] White-sided dolphin, WNA
	Northeast bottom trawl	1,635	Common dolphin, WNA Harbor porpoise, GOM/ Bay of Fundy Harbor seal, WNA Harp seal, WNA Long-finned pilot whale, WNA Short-finned pilot whale, WNA White-sided dolphin, WNA [a]
	Atlantic mixed species trap/pot [c]	1,912	Fin whale, WNA Humpback whale, GOM
Category III	Northeast/MA bottom longline/hook-and-line	1,183	None documented in recent years

Notes:

[a] Fishery classified based on serious injuries and mortalities of this stock, which are greater than 50 percent (Category I) or greater than 1 percent and less than 50 percent (Category II) of the stock's PBR.

[b] Although not included in the 2010 List of Fisheries, Waring et al. (2009) indicates that nine gray seal mortalities in 2007 were attributed to incidental capture in the northeast bottom trawl.

[c] This fishery is classified by analogy.

Marine mammals are taken in gillnets, trawls, and trap/pot gear used in the Northeast multispecies area. Documented protected species interactions in Northeast sink gillnet fisheries include harbor porpoise, white-sided dolphin, harbor seal, gray seal, harp seal, hooded seal, long-finned pilot whale, offshore bottlenose dolphin, Risso's dolphin, and common dolphin. Not mentioned here are possible interactions with sea turtles and sea birds. Multispecies fishing vessels would be required to adhere to measures in the Atlantic Large Whale Take Reduction Plan (ALWTRP) to minimize potential impacts to certain cetaceans. ALWTRP was developed to address entanglement risk to right, humpback, and fin whales, and to acknowledge benefits to minke whales in specific Category I or II commercial fishing efforts that utilize traps/pots and gillnets. The ALWTRP calls for the use of gear markings, area restrictions, weak links, and sinking groundline. Fishing vessels would be required to comply with the ALWTRP in all areas where gillnets were used. Fishing vessels would also need to comply with the Bottlenose Dolphin Take Reduction Plan and Harbor Porpoise Take Reduction Plan (HPTRP) within the Northeast multispecies area. The Bottlenose Dolphin Take Reduction Plan restricts night time use of gillnets in the MA gillnet region. The HPTRP aims to reduce interactions between the harbor porpoise and gillnets in the Gulf of Maine. The HPTRP implements seasonal area closures and the seasonal use of pingers (acoustic devices that emit a sound) to deter harbor porpoises from approaching the nets.

Data from sector trips in FY 2010 and FY 2009 indicate no overall significant increase in take of protected resources or sea turtles. There may be a decrease in annual take in sink gillnet gear, and the data suggest an overall decrease in the winter take, and in the fall for turtles. However, this decrease in take corresponds well to the decrease in ACL. Within individual stat areas there does appear to be some trends in take of protected resources (includes all species).
Sea turtles have been caught and injured or killed in multiple types of fishing gear, including gillnets, trawls, and hook and line gear. However, impact due to inadvertent interaction with trawl gear is almost twice as likely to occur when compared with other gear types (NMFS 2009c). Interaction with trawl gear is more detrimental to sea turtles as they can be caught within the trawl itself and will drown after extended periods underwater. A study conducted in the MA region showed that bottom trawling accounts for an average annual take of 616 loggerhead sea turtles, although Kemp's ridleys and leatherbacks were also caught during the study period (Murray 2006). Sea turtles generally occur in more temperate waters than those in the Northeast multispecies area. Gillnets are considered more detrimental to marine mammals such as pilot whales, dolphins, porpoises, and seals, as well as large marine whales; however, protection for marine mammals would be provided through various Take Reduction Plans outlined above.

Atlantic sturgeon are known to be captured in sink gillnet, drift gillnet, and otter trawl gear (Stein et al. 2004a, ASMFC TC 2007). Of these gear types, sink gillnet gear poses the greatest known risk of mortality for bycaught sturgeon (ASMFC TC 2007). Sturgeon deaths were rarely reported in the otter trawl observer dataset (ASMFC TC 2007). However, the level of mortality after release from the gear is unknown (Stein et al. 2004a). In a review of the Northeast Fisheries Observer Program (NEFOP) database for the years 2001-2006, observed bycatch of Atlantic sturgeon was used to calculate bycatch rates that were then applied to commercial fishing effort to estimate overall bycatch of Atlantic sturgeon in commercial fisheries. This review indicated sturgeon bycatch occurred in statistical areas abutting the coast from

Massachusetts (statistical area 514) to North Carolina (statistical area 635) (ASMFC TC 2007). Based on the available data, participants in an ASMFC bycatch workshop concluded that sturgeon encounters tended to occur in waters less than 50 m throughout the year, although seasonal patterns exist (ASMFC TC 2007). The ASMFC analysis determined that an average of 650 Atlantic sturgeon mortalities occurred per year (during the 2001 to 2006 timeframe) in sink gillnet fisheries. Stein et al. (2004a), based on a review of the NMFS Observer Database from 1989-2000, found clinal variation in the bycatch rate of sturgeon in sink gillnet gear with lowest rates occurring off of Maine and highest rates off of North Carolina for all months of the year.

In an updated, preliminary analysis, the Northeast Fisheries Science Center (NEFSC) was able to use data from the NEFOP database to provide updated estimates for the 2006 to 2010 timeframe. Data were limited by observer coverage to waters outside the coastal boundary (fzone>0) and north of Cape Hatteras, NC. Sturgeon included in the data set were those identified by federal observers as Atlantic sturgeon, as well as those categorized as unknown sturgeon.

The preliminary analysis apportioned the estimated weight of all sturgeon takes to specific fishery management plans. The analysis estimates that between 2006 and 2010, a total of 15,587 lbs of Atlantic sturgeon were captured and discarded in bottom otter trawl (7,740 lbs) and sink gillnet (7,848 lbs) gear. The analysis results indicate that 1.1% (85 lbs) of the weight of sturgeon discards in bottom otter trawl gear could be attributed to the large mesh bottom trawl fisheries if a correlation of FMP species landings (by weight) was used as a proxy for fishing effort.

These additional data support the conclusion from the earlier bycatch estimates that the multispecies and spiny dogfish fisheries may interact with Atlantic sturgeon. Since the Atlantic sturgeon DPSs have been listed as endangered and threatened under the ESA, the ESA Section 7 consultations for the NE Multispecies FMP and Spiny Dogfish FMP have been reinitiated, and additional evaluation will be included in the resulting Biological Opinions to describe any impacts of the fisheries on Atlantic sturgeon and define any measures needed to mitigate those impacts, if necessary. It is anticipated that any measures, terms and conditions included in an updated Biological Opinions will further reduce impacts to the species.

5.2.4 Bycatch/Non-Target Species

NE Multispecies

An analysis of NEFOP and ASM observer data of declared groundfish trips in the proposed exempted fishery in Alternative 1 shows that the primary groundfish species caught as bycatch are cod and pollock (Table 13). However, groundfish bycatch represents just less than 0.1% of the total catch in the proposed exempted fishery (Table 13).

Table 13. Groundfish Catch on Potentially Exempted Trips, FY 2010 & 2011.

Month	# of Trips	# Trips >5%	Ratio	Cod	Pollock	Windowpane	Halibut	Winter	Haddock	Total Groundfish
June	35	0	0.18%	229.4	0	10.8	9	28.5	0	284.1
July	163	0	0.07%	90.6	64.7	87	68.5	47.6	0	370
August	266	0	0.09%	254.4	231.6	100.2	40	28.4	32	715.1
September	103	0	0.04%	84.5	19.5	0	68.8	0	0	177.6
October	49	0	0.05%	51.5	9	0	0	0	0	62
November	24	0	0.25%	73.2	0	0	0	2	0	78.2
December	2	0	0.38%	15	0	0	0	0	0	15
Total	**642**	**0**	**0.09%**	**798.6**	**324.8**	**198**	**186.3**	**106.5**	**32**	**1702**

Winter Skate

The primary catch on trips in Alternative 1 is winter skate (Table 14). On January 13, 2011, the Council was informed by the Northeast Fisheries Science Center (NEFSC) of updated skate status determinations, which utilize the 2009 and 2010 survey data collected with the new survey gear using the FSV Bigelow. These data were calibrated using coefficients estimated in (Miller, 2010), based on methods that were peer reviewed in a special Stock Assessment Workshop review in August 2009. At the time of the review, only calibration coefficient estimates for little and winter skate were calculated and the report recommended more detailed review of the calibrations in future assessments.

Winter skate biomass was 2.93 kg/tow in 2007, slightly above the 2.8 kg/tow minimum biomass threshold that was updated and re-specified in Amendment 3 to the skate FMP. Although it had been previously classified as overfished using old reference points, the updated reference points indicate that winter skate had not been overfished and Amendment 3 used this updated status determination that was the result of the DPWS assessment. Since then, winter skate biomass has skyrocketed to 9.64 kg/tow, well above the biomass target. Although the cause of this abrupt increase are unknown, it first appeared in the 2008 survey and appeared mainly in winter skates of intermediate size, suggesting to the Skate Plan Development Team that the increase was due to migration, which was previously observed (Frisk, 2006) in the early 1980s, rather than growth of existing skates in US waters or recruitment.

Table 14. Primary Species for Observed Trips in Alternative 1.

Month/Primary Species	# of Trips	Total lbs Species
June		
Dogfish	9	23,424
Skate	24	136,342
July		
Dogfish	48	107,931
Skate	95	472,717
August		
Dogfish	46	107,655
Skate	135	789,073
September		
Skate	100	397,887
October		
Skate	48	187,202
November		
Skate	23	24,141
December		
Skate	2	1,659
Grand Total	**530**	**2,248,031**

5.3 HUMAN COMMUNITIES/SOCIAL/ECONOMIC ENVIRONMENT

A detailed description of historical fisheries for spiny dogfish is presented in Section 2.3 of the FMP. The information presented in this section is intended to briefly characterize recent fisheries trends.

5.3.1 Commercial Vessel and Dealer Activity

According to unpublished NMFS permit file data, 2,942 vessels were issued federal spiny dogfish permits in 2010, while 326 of these vessels contributed to overall landings. The distribution of permitted and active vessels by home port state is given in Table 15. Most of the active vessels were from Massachusetts (31.6%), New Jersey (14.7%), New Hampshire (11.3%), Rhode Island (9.8%), New York (8.0%), North Carolina (6.7%), and Virginia (5.8%). The remaining 39 vessels from all other states comprised 12.0% of the total.

Table 15. Federally permitted dogfish vessel activity by home port state in FY2010. Active vessels are defined as vessels identified in the dealer reports as having landed spiny dogfish in FY2010.

State	Permitted Vessels	Pct of Total	State	Active Vessels	Pct of Total
MA	1,087	36.95%	MA	103	31.60%
NJ	422	14.34%	NJ	48	14.72%
ME	341	11.59%	NH	37	11.35%
NY	292	9.93%	RI	32	9.82%
RI	194	6.59%	NY	26	7.98%
NC	160	5.44%	NC	22	6.75%
NH	142	4.83%	VA	19	5.83%
VA	138	4.69%	ME	16	4.91%
CT	50	1.70%	MD	13	3.99%
MD	47	1.60%	CT	8	2.45%
DE	29	0.99%	Other	2	0.61%
PA	18	0.61%	**Total**	**326**	**100.00%**
FL	16	0.54%			
Other	6	0.20%			
Total	**2,942**	**100.00%**			

Source: NMFS permit data, Commercial Fisheries Database

NMFS permit data indicate that 495 dealers possessed federal spiny dogfish dealer permits in 2010 while dealer reports indicate 75 of those dealers actually bought spiny dogfish. The distribution of permitted and active dealers by state is given in Table 16. Most of the active dealers were from the states of Massachusetts (29.3%), New York (17.3%), North Carolina (14.7%), Rhode Island (13.3%), Virginia (7.8), New Jersey, (5.3%), New Hampshire (5.3%) with the remaining six dealers in other states comprising 8.0% of the total.

Table 16. Federally permitted spiny dogfish dealers by state in FY2010. Active dealers are defined as dealers identified in the federal dealer reports as having bought spiny dogfish in FY2010.

State	Permitted Dealers	Pct of Total	State	Active Dealers	Pct of Total
MA	134	27.07%	MA	22	29.33%
NY	97	19.60%	NY	13	17.33%
NJ	65	13.13%	NC	11	14.67%
RI	46	9.29%	RI	10	13.33%
ME	35	7.07%	VA	5	6.67%
NC	33	6.67%	NJ	4	5.33%
VA	32	6.46%	NH	4	5.33%
MD	18	3.64%	MD	3	4.00%
NH	14	2.83%	Other	3	4.00%
CT	5	1.01%	**Total**	**75**	**100.00%**
DE	5	1.01%			
PA	4	0.81%			
FL	3	0.61%			
Other	4	0.81%			
Total	**495**	**100.00%**			

Source: NMFS permit data, Commercial Fisheries Database

Landings by State

Commercial harvest has historically been dominated by Massachusetts (Table 17). Starting in 2007, dogfish landings from Virginia were greater than or approximately equivalent to those of 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%).

In fishing year 2010, Massachusetts accounted for 44.3% of coastwide landings (Table 17). North Carolina (13.0%), Virginia (11.9%), New Hampshire (8.4%), and New Jersey (8.3%) were also important landings states. No other states contributed more than 5% of annual landings.

Table 17. Commercial landings (1,000s lb) of spiny dogfish by state from fishing years 1989 through 2009.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Total
1989	4,962	0	5,100	47	24	13	1,434	0	714	18	0	9,903
1990	6,251	185	20,304	2,968	9	44	4,754	0	5,150	62	41	32,475
1991	2,059	0	13,523	1,901	22	74	2,382	6	3,338	165	1,463	29,049
1992	1,818	405	17,457	2,116	9	140	1,493	0	1,877	220	8,635	37,165
1993	3,408	1,639	26,189	1,554	170	100	707	0	1,893	379	8,806	45,509
1994	1,788	2,610	23,181	603	85	475	1,422	63	2,233	665	6,929	41,447
1995	1,683	2,094	28,789	414	408	815	2,581	0	7,752	1,065	9,525	50,068
1996	904	1,135	27,208	1,518	619	1,381	5,833	0	4,820	4,832	10,304	60,055
1997	437	999	21,417	682	282	312	3,831	0	2,105	3,945	5,924	40,460
1998	288	1,935	24,866	1,906	241	1,704	7,091	2	2,199	5,004	3,928	45,476
1999	28	1,233	14,824	1,237	87	2,868	6,586	0	808	1,750	3,601	32,760
2000	1	2,279	5,545	130	12	145	5	0	0	72	12	20,407
2001	0	529	3,912	395	7	62	17	0	0	178	0	5,056
2002	1	349	3,800	455	6	49	1	0	2	114	0	4,839
2003	0	175	2,006	141	2	41	0	0	5	451	520	2,579
2004	3	0	1,094	129	60	42	7	0	1	39	20	2,160
2005	31	162	1,826	173	93	44	1	0	11	66	10	2,535
2006	180	633	2,744	518	62	11	3	0	16	2,286	144	5,212
2007	99	185	2,796	523	23	21	10	0	25	2,575	167	7,723
2008	49	1,370	3,559	239	10	23	50	0	114	2,479	1,416	9,057
2009	594	1,885	3,881	940	92	192	1,342	14	175	1,487	1,708	11,752
2010	229	1,214	6,442	708	107	468	1,208	8	542	1,731	1,887	14,543

Source: NMFS Commercial Fisheries Database.

Landings by Month

Under the federal FMP, the annual commercial quota is allocated seasonally to two half-year periods. Period 1 (May 1 – Oct 31) is allocated 57.9% of the quota and Period 2 is allocated 42.1% of the quota. This allocation scheme was implemented as part of the rebuilding plan in order to match seasonal availability of the resource with the historic landings patterns by communities over the fishing year. Spiny dogfish migratory behavior makes them available to the northern end of the fishery (i.e., MA) during Period 1 and the southern end of the fishery (i.e., (VA and NC) during Period 2.

In fishing year 2010, spiny dogfish were landed in all months with peak landings occurring in June-August of Period 1 and Nov – Jan of Period 2 (Table 18).

Table 18. Spiny dogfish landings (lb) by month in FY2010.

	Month	Landings(lb)	Pct of Total
Period 1	May	204,979	1.41%
	Jun	1,700,034	11.69%
	Jul	3,891,882	26.76%
	Aug	3,025,937	20.81%
	Sep	492	0.00%
	Oct	8,955	0.06%
	Total	8,832,279	60.73%
Period 2	Nov	1,185,693	8.15%
	Dec	1,124,308	7.73%
	Jan	2,312,203	15.90%
	Feb	388,917	2.67%
	Mar	699,245	4.81%
	Apr	370	0.00%
	Total	5,710,736	39.27%
	Grand Total	14,543,015	100.00%

Source: NMFS Commercial Fisheries Database

5.3.2 Commercial Fishery Value

Unpublished NMFS dealer reports indicate that the total ex-vessel value of commercially landed spiny dogfish in calendar year 2010 was about $2.674 million, and in fishing year 2007 was about $3.119 million. The approximate price/lb of spiny dogfish was $0.22 and $0.21 in those timeframes, respectively (Table 19).

Table 19. Ex-vessel value and price per pound of commercially landed spiny dogfish, Maine - North Carolina combined, 2000-2010.

Calendar Year	Value ($1,000)	Price ($/lb)	Fishing Year	Value ($1,000)	Price ($/lb)
2000	4,342	0.21	2000	1,989	0.24
2001	1,137	0.22	2001	1,147	0.23
2002	989	0.20	2002	970	0.20
2003	364	0.14	2003	415	0.12
2004	311	0.14	2004	260	0.17
2005	479	0.19	2005	545	0.21
2006	1,188	0.23	2006	1,434	0.22
2007	1,508	0.20	2007	1,360	0.20
2008	2,207	0.24	2008	2,157	0.24
2009	2,544	0.21	2009	2,360	0.22
2010	2,674	0.22	2010	3,119	0.21

Source: NMFS Commercial Fisheries Database

In FY2010, 143 vessels with federal dogfish permits were reported in the dealer data to have had dogfish revenues greater than 5% of total revenue (dogfish revenue range $23 to 73,634, average = $11,933; dogfish rev / total rev range 5.0% to 100%, average = 10.0%).

5.3.3 Port and Community Description

Spiny dogfish landings were reported from a total of 68 unique ports in the dealer data. Landings by port for FY2010 are given in Table 15. Gloucester, MA accounted for the largest share of total FY2010 landings (16.79%), followed by Chatham, MA (10.95%), Hatteras, NC

(9.32%), VA Beach/Lynnhaven, VA (7.04%), Point Pleasant, NJ (5.59%), and New Bedford, MA (4.19%).

Spiny dogfish revenue was calculated as a % of total port revenue and was both greater than $100,000 and greater than 1% of port revenue in Virginia Beach/Lynnhaven, VA (29.54%), Hatteras, NC (6.97%), Rye, NH (5.33%), Chatham, MA (2.06%), and Ocean City, MD (1.32%). A complete set of profiles is online: http://www.nefsc.noaa.gov/read/socialsci/community_profiles/

Table 20. Commercial landings (lb) and value of spiny dogfish by port for fishing year 2010.

Port	Landings (lb)	Pct of Total	Value ($)	Pct of Total	Total Port Value ($)	Dogfish Value / Port Value
GLOUCESTER, MASSACHUSETTS	2,437,614	16.79%	511,986	16.50%	53,347,408	0.96%
CHATHAM, MASSACHUSETTS	1,590,193	10.95%	281,041	9.06%	13,634,909	2.06%
VIRGINIA BEACH/LYNNHAVEN, VIRGINIA	1,021,543	7.04%	208,372	6.71%	705,394	29.54%
HATTERAS, NORTH CAROLINA	1,353,608	9.32%	206,196	6.64%	2,956,349	6.97%
NEW BEDFORD, MASSACHUSETTS	607,930	4.19%	168,290	5.42%	312,914,202	0.05%
POINT PLEASANT, NEW JERSEY	812,216	5.59%	161,905	5.22%	26,084,624	0.62%
OTHER VIRGINIA, VIRGINIA	259,017	1.78%	161,002	5.19%	44,988,422	0.36%
OCEAN CITY, MARYLAND	529,926	3.65%	115,718	3.73%	8,741,828	1.32%
RYE, NEW HAMPSHIRE	451,640	3.11%	105,189	3.39%	1,975,089	5.33%
All Others (59)	5,455,628	37.57%	1,183,690	38.14%	469,836,037	0.25%
Total	**14,519,315**	**100.0%**	**3,103,389**	**100.0%**	**935,184,262**	**0.33%**

Source: Unpublished NMFS dealer reports

6.0 ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF IMPACTS

6.1 IMPACTS OF ALTERNATIVE 1

6.1.1 Physical Environment/EFH

The proposed exemption is not expected to adversely affect the physical environment within the proposed exemption area. Effort is not expected to increase substantially because the fishery is still limited by the 3,000 lb trip limit for spiny dogfish as well as an annual quota (Table 1). The reason for the requested exempted fishery is to relieve sector vessels from the obligation to use a multispecies DAS and in turn, from having the sector discard rate [applicable to this area/gear] applied to a fishery with very little groundfish bycatch." A summary of EFH vulnerability to gillnets, longlines, and handlines at different life stages is listed in Table 4. Effects on the physical environment would be similar for both Alternative 2 and the No Action Alternative.

6.1.2 Target Populations

The proposed action would likely have little to no effect on the spiny dogfish population within the proposed exemption area. While the proposed exemption may allow certain vessels access to the fishery that previously could not participate, the spiny dogfish fishery is still limited by both annual and seasonal quotas (Table 1). Effects on the target population of spiny dogfish would be similar for both Alternative 2 and the No Action Alternative.

6.1.3 Protected Resources

Section 5.2.2 describes the ESA listed and MMPA protected species VEC and other related impact considerations. All fishing gears are required to meet gear restrictions as required under the Atlantic Large Whale Take Reduction Plan (ALWTRP) and Harbor Porpoise Take Reduction Plan (HPTRP). These plans contain measures designed to reduce interactions/impacts associated with fishing gears. Interaction between endangered / protected resources and spiny dogfish fishing gear is also affected by species' abundances.

Since overall effort for spiny dogfish is limited by annual quota and 3,000 lb trip limit, effort is not expected to increase under Alternative 1. However, there is an increased incentive to target spiny dogfish in this area, so effort would likely be redistributed from other areas to focus on this exempted fishery. Since vessels would no longer be on declared NE multispecies trip under this exemption, it may provide greater opportunity for vessels to target NE multispecies in other areas. This minimal increase in effort is expected to be offset by other more substantial reductions in effort in the groundfish fishery, such as reductions to the Eastern Georges Bank cod and Georges Bank yellowtail flounder quotas.

The difference in total impacts between Alternatives 1, Alternative 2, and the No Action alternative are not expected to be differentiable. Therefore, the impacts on protected resources are expected to be low negative for all alternatives.

The protected species that would be encountered from directed dogfish fishing would likely be similar to those which occurred in the gill net fishery. As such, one might expect that encounters with coastal bottlenose dolphins, sea turtles, and harbor porpoises may occur (see Section 5.2.2). Since the implementation of the Bottlenose Dolphin Take Reduction Plan and Harbor Porpoise Take Reduction Plan, encounters with each of the species listed have continued to occur and are documented. Specifically, nets must be attended and no night time sets are allowed. Similarly, the Atlantic Large Whale Take Reduction Plan should reduce potential encounters with whales. Nevertheless, it is possible that protected resource encounters associated with spiny dogfish harvest may increase under Alternatives 1 and 2 as compared to No Action, and to the greatest degree under Alternative 2.

It is likely with this potential for increased fishing gear interactions with protected resources would also increase in this area, resulting in low negative impacts to this VEC. There is the potential for continued low negative impacts to protected resources under Alternative 1 and 2. However, because the abundance of dogfish has increased greatly, effort may increase for spiny dogfish overall. Should effort increase for spiny dogfish, this exemption would provide an additional exempted fishery where dogfish could be targeted. Under the No Action Alternative, this increase in effort would likely be shifted to other areas..

6.1.3.1 Atlantic Sturgeon Impacts

Atlantic sturgeon are known to be captured in sink gillnet, drift gillnet, and otter trawl gear. Of these gear types, sink gillnet gear poses the greatest known risk of mortality for bycaught sturgeon. Sturgeon deaths were rarely reported in the otter trawl observer dataset. Based on observer data, discard mortality in gillnets (except monkfish gillnets) is estimated to be 20%, while mortality in otter trawls is only 5%. In an updated, preliminary analysis, the Northeast Fisheries Science Center (NEFSC) was able to use data from the NEFOP database to provide updated estimates for the 2006 to 2010 timeframe. Data were limited by observer coverage to waters outside the coastal boundary (fzone>0) and north of Cape Hatteras, NC. Sturgeon included in the data set were those identified by federal observers as Atlantic sturgeon, as well as those categorized as unknown sturgeon.

The preliminary analysis apportioned the sturgeon takes to specific gears. The analysis estimates that between 2006 and 2010, there were 2,250 to 3,862 encounters per year in gillnet and trawl fisheries (average = 3,118). Approximately 1,570 sturgeon per year were caught in sink gillnets (~364 mortalities), and 1,548 sturgeon per year were caught in otter trawls (~77 mortalities). Other gear types, including hook and line, were determined to have minimal impacts on Atlantic sturgeon mortality. Therefore, impacts on sturgeon from the spiny dogfish fishery are restricted to the impacts associated with only gillnet and trawl trips.

As described in Table 7 in FY2010, gillnet trips accounted for 68% of spiny dogfish landings, while otter trawl trips accounted for 20% of landings. Since most trawl trips occur in Gulf of Maine, Georges Bank, or Southern New England waters, those trips typically require the use of Northeast Multispecies, Scallop, or Monkfish DAS, or participation in a Multispecies sector. Therefore, most trawl trips that land dogfish are associated with those fisheries, and effort is constrained under their respective FMPs. On such trips, spiny dogfish are mostly landed incidentally to the target groundfish/monkfish species. Since there are so few directed dogfish

trawl trips, and the discard mortality of sturgeon in trawls is so low (5%), the impacts of the dogfish trawl fishery on sturgeon are expected to be minimal.

A substantial proportion of gillnet trips that land spiny dogfish are also associated with DAS or sector fisheries. Directed spiny dogfish trips may occur without the use of DAS in several exemption areas, such as the Gulf of Maine/Georges Bank Dogfish Gillnet Exemption Area (July 1 – August 31), Nantucket Shoals Dogfish Exemption Area (June 1 – October 15), Southern New England Dogfish Gillnet Exemption Area (May 1- October 31), and the Mid-Atlantic Exemption Area (year round). Descriptions of these areas and their associated requirements can be found at http://www.nero.noaa.gov/sfd/sfdsdog.html. This action would add an addition exempted fishery to this list.

Under Alternatives 1 and 2, in an area east of Cape Cod vessels using gillnet, longline, and handline gear would be allowed to target spiny dogfish outside the restrictions of the NE multispecies fishery. This exemption is not likely to substantially increase effort for spiny dogfish because the spiny dogfish fishery is limited by an annual quota and a 3,000 lb trips limit. However, this exemption may redirect vessels using trawl gear or fishing in other areas to use gillnet, longline, and handline gear in this area. Although the impact of gillnet gear on Atlantic sturgeon mortality is greater than that of trawl gear, the impact of longlines and handlines has been determined to be minimal.

Given this combination of factors, the Alternatives 1 and 2 are likely to have neutral to slightly negative impacts on Atlantic sturgeon compared to the No Action alternative, strictly because of the incentive to use gillnet gear in this area.

6.1.4 Bycatch/Non-Target Species

NEFOP and ASM data were compiled from 2010 to 2011 to determine the catch rate of regulated NE multispecies for vessels using gillnet, longline, and handline gear on declared NE multispecies DAS or sector trips. Bycatch rates were calculated on a trip basis in the area proposed in Alternative 1. Based on this data, there were no trips that caught more than 5% groundfish under the restrictions of Alternative 1, i.e., gillnet and longline gear from June-December and handline gear from June through August. A total of 642 trips were analyzed.

%Multispecies = [Multispecies/(Multispecies + dogfish + Other Catch)] x 100

The average percentage of groundfish caught on these trips was 0.9%. Of the 642 trips, zero trips exceeded the 5% groundfish threshold (Table 21, Figure 9).

Table 21. Observed trips by month in Alt. 1 area and avg. % reg. species caught.

Month	# of Trips	Average of % Reg. Species
June	35	0.18%
July	163	0.07%
August	266	0.09%
September	103	0.04%
October	49	0.05%
November	24	0.25%
December	2	0.38%
Grand Total	**642**	**0.09%**

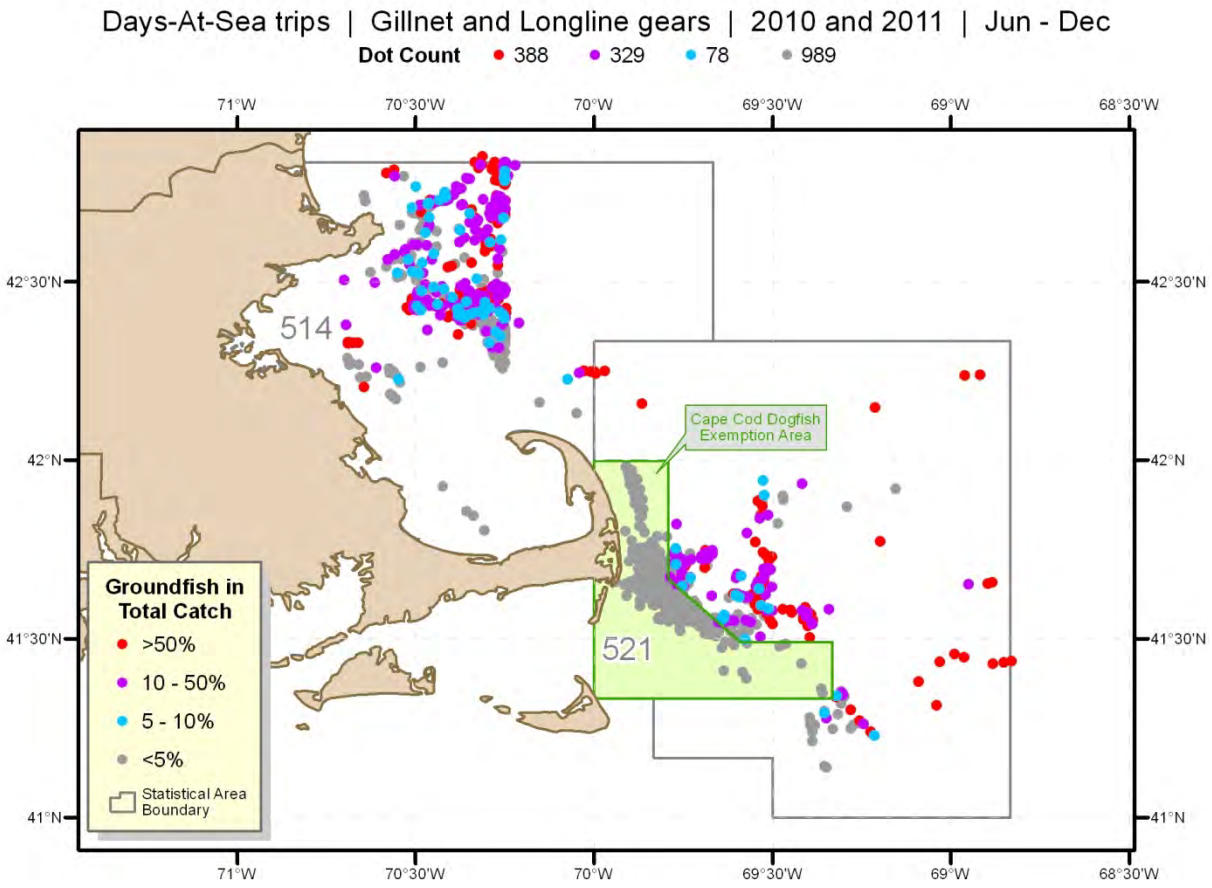


Figure 9. Percentage of reg. species catch on observed trips - Alt. 1.

The trip analysis showed that cod and pollock account for 66% of the groundfish bycatch in these trips, 46.9% and 19.1%, respectively (Table 13). In a 2012 operational assessment

Georges Bank cod was determined to be overfished is experiencing overfishing. In 2010, in the SARC 50 assessment it was determined that pollock is not overfished, is not subject overfishing. The observer data indicate that the groundfish bycatch would be far below the maximum of 5% required to qualify for an exempted fishery (Table 21). Further, the data analyzed from observed trips under Alternative 1 showed that these trips averaged a catch of 0.09 % of multispecies (an average of 2.65 lb per trip). Compared to Alternative 2, data show that Alternative 1 (the preferred alternative) would likely result in less groundfish catch due to the few trips that caught over 5% NE multispecies in Alternative 2. Allowing access to this area year-round for all gear types (as proposed in Alternative 2) causes a problem because there were several handline trips in the months of September through December that exceeded the 5% threshold required for an exempted fishery (Figure 10). In addition, Alternative 2 includes months where there were no observed tows in the area (Table 25). Due to the uncertainty of the catch composition in these months and the increased number of trips exceeding 5% groundfish, Alternative 1 is preferred.

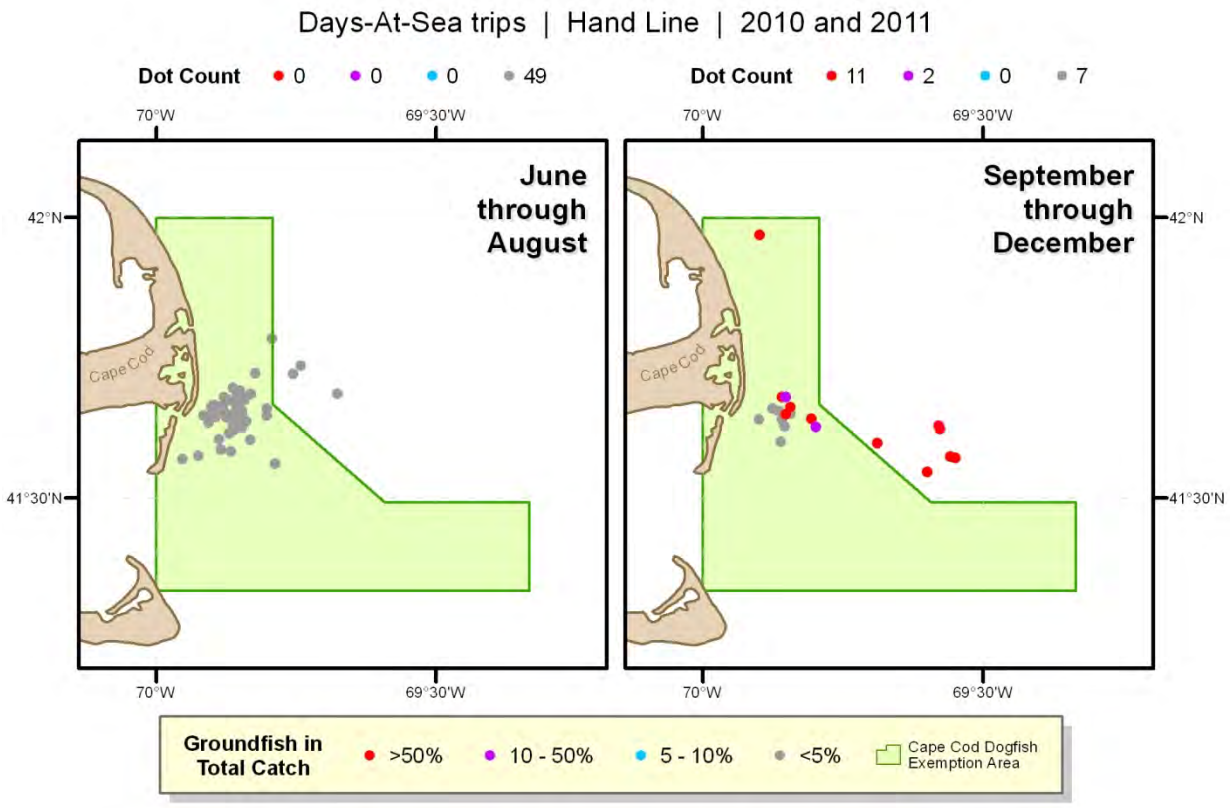


Figure 10. Handline Trips by Month

As stated above, Alternative 1 is not expected to increase effort for spiny dogfish compared to the No Action alternative because the spiny dogfish fishery is limited by an annual quota and a 3,000 lb trip limit. Because of this, the impacts of Alternative 1 to non-target species (NE multispecies) should be minimal. One impact of the action would simply change the portion of the ACL where the NE multispecies are deducted to account for discards. For sector vessels, under the No Action alternative, the calculated groundfish discards is deducted from each vessel's sector's ACE. For common pool vessels, the calculated groundfish discards would come out of the sub-ACL for common pool. Because the calculated bycatch rate is based on all

vessels in that individuals sector (or common pool) that are on a declared groundfish trip, the discard rates are artificially high for these trips that are targeting spiny dogfish. This is burdensome to sectors and the common pool because it removes these pounds of fish from the sector's ACE and the common pool sub-ACL, respectively that could otherwise be landed for sale. Under both Alternative 1 and 2, the groundfish discards would be deducted from the "Other ACL sub-components" portion of the ACL at a more accurate rate compared to those currently being attributed to the declared groundfish trips targeting spiny dogfish.

6.1.5 Impact of Action on Human Communities

Compared to the No Action alternative, the preferred alternative is expected to benefit the local fishing communities that have historically depended on the spiny dogfish fishery off of Cape Cod. This exemption was requested by members of the NE multispecies sector fleet. The cost of fishing for spiny dogfish has become increasingly high primarily due to the calculated discards that are attributed to each vessel's sector ACE when fishing on a declared groundfish trip. Thus, this spiny dogfish exempted fishery would allow vessels to target dogfish outside of the multispecies regulations without discards being deducted from their sector's ACE. It is important to point out however that, with the elimination of these low discard trips from the sector's discard strata, the overall discard rate for the sector would likely increase because spiny dogfish trips that were observed were keeping the discard rate for trips targeting groundfish artificially low. The calculated discard rates for both groundfish vessels and vessels targeting spiny dogfish will be more accurate as a result of the exemption; more accurate discards are not expected to have an economic effect on the fishing community as a whole. Further, participation in this exemption is voluntary. A vessel may still choose to target spiny dogfish during the exemption while on a groundfish trip should they feel it is to their benefit.

If the pounds of ACE that were attributed to discards had been landed, the market value of discards attributed to trips that would qualify for the exemption proposed in Alternative 1 in FY 2010 and 2011 was a combined $48,458.80 (Table 22), $877.93 less than the trips that would qualify for the exemption proposed in Alternative 2 (Table 24). If the ACE had been traded, the value could have been as high as $8,312.07 (Table 23). This is $271.83 less than Alternative 2 (Table 24).

Table 22. Calculated discards in Alternative 1 in FY 2010 & 2011 and their value.

Species	Calculated Discards LB	Avg. Price in FY 2010	Total Value	Minus Zero Retention Stocks
Cod	11,794.61	1.93	22,763.59	22,763.59
Windowpane Flounder	272.36	0.64	174.31	
Winter Flounder	1,524.71	1.84	2,805.47	
Haddock	1,653.58	1.59	2,629.19	2,629.19
Halibut	2,230.65	6.74	15,034.57	15,034.57
White Hake	1,393.96	1.37	1,909.73	1,909.73
Ocean Pout	1,500.07	0.63	945.05	
American Plaice	59.40	1.60	95.04	95.04
Pollock	5,520.16	1.05	5,796.17	5,796.17
Redfish	80.07	0.84	67.26	67.26
Witch Flounder	4.82	3.40	16.40	16.40
Wolffish	1,240.27	1.29	1,599.95	
Yellowtail Flounder	98.57	1.49	146.87	146.87
Total	**27,373.22**		**$53,983.57**	**$48,458.80**

Table 23. Value of discards in Alternative 1 based on ACE trading for FY 2010 &2011.

Species	Calculated Discards LB	Avg. ACE Value	Total Value
Cod	11,794.61	0.62	7,312.66
Windowpane Flounder	272.36	N/A	N/A
Winter Flounder	1,524.71	N/A	N/A
Haddock	1,653.58	N/A	N/A
Halibut	2,230.65	N/A	N/A
White Hake	1,393.96	0.41	571.52
Ocean Pout	1,500.07	N/A	N/A
American Plaice	59.40	0.07	4.10
Pollock	5,520.16	0.06	325.69
Redfish	80.07	0.72	57.41
Witch Flounder	4.82	0.67	3.24
Wolffish	1,240.27	N/A	N/A
Yellowtail Flounder	98.57	0.38	37.46
Total	**27,373.22**		**$8,312.07**

Table 24. Value of discards Alt.1 & Alt. 2.

Value Item	Alt. 1	Alt. 2	Difference
Discards Landed	$48,458.80	$49,336.73	$877.93
Discards Traded	$8,312.07	$8,583.90	$271.83

6.2 IMPACTS OF ALTERNATIVE 2

6.2.1 Impacts of Action on Physical Environment/EFH

Compared to the No Action alternative this alternative is not expected to adversely affect the physical environment or EFH within the proposed exemption area for the same reasons as described above in Section 6.1.1. This is primarily because neither alternative is expected to substantially increase effort in the spiny dogfish fishery because the fishery is limited by the 3,000 lb trip limit as well as an annual quota (**Error! Reference source not found.**). Therefore, an increase in effort and fishing time is not expected. However, compared to the preferred alternative, groundfish EFH could be more greatly affected by this alternative, because it exempts the area for a larger amount of time.

6.2.2 Impact of Action on Target Populations

The proposed action would likely have little to no effect on the spiny dogfish population, the primary target species, for the same reasons as discussed in Section 6.1.2. Specifically, the spiny dogfish fishery is limited by the 3,000 lb trip limit as well as an annual quota (Table 1). However, since there is very little information in the additional months for Alternative 2 (Table 25), the precise effects of fishing in those months are difficult to predict.

6.2.3 Impact of Action on Protected Resources

This alternative is expected to have the same potential effects on protected resources as those described in the Alternative 1 (Section 6.1.3), because there is not expected to be a substantial increase in overall effort or fishing time under any of the alternatives, including No Action. There are existing exempted fisheries for spiny dogfish, in the Gulf of Maine and Southern New England. If the overall quota for spiny dogfish increases, any increased effort would likely be distributed to these exempted fisheries in addition to the proposed exempted fishery. Under the No Action Alternative, all effort would likely be focused in the existing exempted fisheries, in addition to effort on NE multispecies trips. The same protected species range throughout the area proposed in this alternative, as do in Alternative 1. Overall, the impacts to protected species could be low, negative if effort increases.

6.2.4 Impact of Action on Bycatch/Non-Target Species

This alternative is expected to have similar impacts on bycatch and non-target species as the preferred alternative (Sec. 6.1.4). However, when compared to Alternative 1, the additional 5 months (January through May), as well as the additional months for handline gear (September through May), may have added negative effects. The analysis of observer data indicated that there is an increase in the number of trips that catch >5% groundfish when handline trips are included (Figure 10, Table 25). Further, the lack of observed trips during the additional months introduces more uncertainty about the potential effects on non-target species.

Table 25. Observed tows >5% reg. groundfish species.

Month	Number of Trips	# >5%	Average Ratio	Number of Trips	# >5%	Average Ratio
January	N/A	N/A	N/A	0	N/A	N/A
February	N/A	N/A	N/A	0	N/A	N/A
March	N/A	N/A	N/A	0	N/A	N/A
April	N/A	N/A	N/A	0	N/A	N/A
May	N/A	N/A	N/A	2	1	18.99%
June	35	0	0.18%	35	0	0.18%
July	163	0	0.07%	163	0	0.07%
August	266	0	0.09%	266	0	0.09%
September	103	0	0.04%	114	6	2.78%
October	49	0	0.05%	54	0	0.05%
November	24	0	0.25%	24	0	0.25%
December	2	0	0.38%	3	1	33.15%
Total	**642**	**0**	**0.09%**	**661**	**8**	**0.76%**

6.2.5 Impact of Action on Human Communities

The impacts of Alternative 2 would be expected to be similar to the impacts of the preferred alternative, as described in 6.1.5. However, the expanded time would allow more vessels a greater opportunity to participate in the exempted fishery, thus resulting in low positive impacts. The market value of discards attributed to trips that would have qualified for the exemption proposed in Alternative 2 in FY 2010 and 2011 was $49,336.73 (Table 26), this is $877.93 more than Alternative 1 (Table 24). If the ACE had been traded, the value could have been as high as $8,583.90 (Table 23). This is $271.83 more that alternative 2 (Table 24).

Table 26. Calculated discards in Alternative 2 in FY 2010 & 2011 and their value.

Species	Calculated Discards LB	Avg. Price in FY 2010	Total Value	Minus Zero Retention Stocks
Cod	12,225.08	1.93	23,594.40	23,594.40
Windowpane Flounder	273.41	0.64	174.98	
Winter Flounder	1,612.00	1.84	2,966.08	
Haddock	1,666.49	1.59	2,649.71	2,649.71
Halibut	2,231.33	6.74	15,039.18	15,039.18
White Hake	1,398.98	1.37	1,916.61	1,916.61
Ocean Pout	1,531.33	0.63	964.74	
American Plaice	61.43	1.60	98.29	98.29
Pollock	5,521.51	1.05	5,797.58	5,797.58
Redfish	80.07	0.84	67.26	67.26
Witch Flounder	4.82	3.40	16.40	16.40
Wolffish	1,273.84	1.29	1,643.26	
Yellowtail Flounder	105.57	1.49	157.30	157.30
Total	**27,985.86**		**55,085.78**	**49,336.73**

Table 27. Value of discards in Alternative 2 based on ACE trading for FY 2010 &2011.

Species	Calculated Discards LB	Avg. ACE Value	Total Value
Cod	12,225.08	0.62	7,579.55
Windowpane Flounder	273.41	N/A	N/A
Winter Flounder	1,612.00	N/A	N/A
Haddock	1,666.49	N/A	N/A
Halibut	2,231.33	N/A	N/A
White Hake	1,398.98	0.41	573.58
Ocean Pout	1,531.33	N/A	N/A
American Plaice	61.43	0.07	4.24
Pollock	5,521.51	0.06	325.77
Redfish	80.07	0.72	57.41
Witch Flounder	4.82	0.67	3.24
Wolffish	1,273.84	N/A	N/A
Yellowtail Flounder	105.57	0.38	40.12
Total	**27,985.86**		**8,583.90**

6.3 IMPACT OF NO ACTION

6.3.1 Impact of No Action on Physical Environment/EFH

Similar to the other two alternatives, there would be no new impacts on habitat under this alternative. Existing disturbances from the current spiny dogfish fishery would continue off of Cape Cod. There would not likely be an increase in effort for spiny dogfish under any of the alternatives, including the no action alternative, as the fishery is limited by the 3,000 lb trip limit as well as an annual quota (Table 1).

6.3.2 Impact of No Action on Target Populations

Under the No Action alternative, the status quo would continue for the spiny dogfish fishery. The targeting of spiny dogfish would continue at a similar rate. The impacts of the spiny dogfish fishery, as it operates at this time, are discussed in 2012 specifications to the Spiny Dogfish FMP. The 2012 specifications set an annual commercial quota for spiny dogfish at 35.694 million lb (16,191 mt). This is divided into two seasons and maintains a 3,000 lb trip limit for spiny dogfish (Table 1). Because these provisions would still exist under each of the alternatives, effects on the target population of spiny dogfish would be similar for the no action alternative and both Alternative 1 and Alternative 2.

6.3.3 Impact of No Action on Protected Resources

Under the No Action alternative, the status quo would continue for the spiny dogfish fishery. Impacts from the spiny dogfish fishery on protected resources are expected to be similar under all alternatives, as there would be no increase in effort in the spiny dogfish fishery. Therefore, protected species interactions with gear are likely to remain at the status quo. As stated, impacts among all alternatives would be similar, and are described in detail in sections, 6.1.3 and 6.2.3.

6.3.4 Impact of No Action on Bycatch/Non-Target Species

The No Action alternative would result in no new impacts from the spiny dogfish fishery on non-target species, primarily groundfish, in the inshore Georges Bank area. Existing impacts on these non-target species from other fisheries would continue as they have been under current regulations. The No Action alternative would not cause a major change in the amount of interactions with non-target species. Unlike the other alternatives, taking no action would result in groundfish discard rates to continue to be attributed to spiny dogfish trips at an elevated level. Sector discard rates of groundfish are elevated for trips targeting spiny dogfish because discard rates for sectors are based on the sector, statistical area, and gear type fished. Since spiny dogfish trips use the same gear types (gillnets, longlines, and handlines) and occur in the same sector and statistical area as sector trips targeting groundfish, spiny dogfish trips receive the same discard rate as trips that are targeting groundfish, even though they catch far less NE multispecies. This creates a bias in the calculated discards for trips that are fishing on a declared groundfish trip but are actually targeting spiny dogfish. This would continue to occur if the No Action alternative is selected. In addition, when a sector vessel is observed on a spiny dogfish trip, the rate calculated from that trip would provide an artificially low discard rate for the members of that sector targeting groundfish in the same area using the same gear.

6.3.5 Impact of No Action on Human Communities

The impact on human communities could be negative if this proposed exemption area is not created. The spiny dogfish fishery is a valuable resource. The discards that are attributed to these trips come directly out of the vessel's sector ACE. This takes away the opportunity to catch these fish in the future. The NE multispecies sector members requesting this exemption believe that No Action would be detrimental to their communities because of the economic value of the high number of discards that are being attributed to their spiny dogfish fishing trips. Using FY 2010 and 2011 observer, ASM, and dealer data, this was estimated at $24,229.40 per FY for Alternative 1 and $24,668.37 per FY for Alternative 2. See Sections 6.1.5 and 6.2.5 for more details.

7.0 CUMULATIVE EFFECTS

7.1 INTRODUCTION TO CUMULATIVE IMPACTS

A cumulative effects assessment (CEA) is a required part of an EIS or EA according to the Council on Environmental Quality (CEQ) (40 CFR part 1508.7) and NOAA's agency policy and procedures for NEPA, found in NOAA Administrative Order 216-6. The purpose of the CEA is to integrate into the impact analyses, the combined effects of many actions over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective but rather, the intent is to focus on those effects that are truly meaningful. This section serves to examine the potential direct and indirect effects of the alternatives in this EA together with past, present, and reasonably foreseeable future actions that affect the groundfish environment. It should also be noted that the predictions of potential synergistic effects from multiple actions, past, present and/or future would generally be qualitative in nature. Because this is a spiny dogfish fishery that would be exempted from the requirements of NE multispecies fishery, this section relies heavily on the EAs from FW 47 to the NE multispecies FMP and the 2012 Specifications to the Spiny Dogfish FMP.

<u>Valued Ecosystem Components (VEC)</u>
The CEA focuses on VECs specifically including:
1. Regulated groundfish stocks (non-target);
2. Non-groundfish species (target catch (dogfish) and other bycatch);
3. Endangered and other protected species;
4. Habitat, including non-fishing effects; and
5. Human Communities (includes economic and social effects on the fishery and fishing communities).

<u>Temporal Scope of the VECs</u>
The temporal range that would be considered for regulated groundfish stocks, non-groundfish species, endangered and other protected species, habitat, including non-fishing effects, and human communities extends from 2010, the year that Amendment 16 to the NE multispecies FMP were implemented, through May 1, 2013 the beginning of the next fishing year. While the

effects of actions prior to these actions are considered (see Amendment 16 for a full cumulative effects analysis), the cumulative effects analysis for this action is focused primarily on Amendment 16 and subsequent actions because this action included major changes to management.

The temporal range considered for endangered and other protected species begins in the 1990's when NMFS began generating stock assessments for marine mammals and developed recovery plans for sea turtles that inhibit waters of the U.S. EEZ. In terms of future actions, the analysis examines this action through May 1, 2013, which is the beginning of the subsequent fishing year when new management measures would be implemented.

The broad geographic scope considered for cumulative effects to habitat, regulated groundfish stocks, and non-groundfish species consists of the range of species, primary ports, and geographic areas (habitat) discussed in the Affected Environment section of the EA for the 2012 Specifications to the Spiny Dogfish FMP. Similarly, the range of each endangered and protected species as presented in Section 5.2.2 would be the broad geographic scope for that VEC, however, the most likely geographic scope for all cumulative effects would be the Gulf of Maine, Georges Bank, and SNE waters where most of the spiny dogfish fishery occurs. The geographic scope for the human communities would consist of those primary port communities from which vessels fishing for spiny dogfish originate.

7.2 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

Table 28 summarizes the combined effects of other past, present and reasonably foreseeable future actions that affect the VECs, i.e., actions other than those alternatives under development in this document.

Note that most of the actions affecting this exemption and considered in Table 28 come from fishery-related activities (e.g., Federal fishery management actions). As expected, these activities have fairly straightforward effects on environmental conditions, and were, are, or would be taken, in large part, to improve those conditions. The reason for this is the statutory basis for Federal fisheries management - the reauthorized Magnuson-Stevens Act. That legislation was enacted to promote long-term positive impacts on the environment in the context of fisheries actions. More specifically, the act stipulates that management comply with a set of National Standards that collectively serve to optimize the conditions of the human environment. Under this regulatory regime, the cumulative impacts of past, present, and future Federal fishery management actions on the VECs should be expected to result in positive long-term outcomes. Nevertheless, these actions are often associated with offsetting impacts. For example, constraining fishing effort frequently results in negative short-term socio-economic impacts for fishery participants. However, these impacts are usually necessary to bring about long-term sustainability of a given resource and as such should, in the long-term, promote positive effects on human communities, especially those that are economically dependent upon the managed resource.

Non-fishing activities were also considered when determining the combined effects from past, present and reasonably foreseeable future actions. Activities that have meaningful effects on the

VECs include the introduction of chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment. These activities pose a risk to the all of the identified VECs in the long term. Human induced non-fishing activities that affect the VECs under consideration in this document are those that tend to be concentrated in near shore areas. Examples of these activities include, but are not limited to agriculture, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging and the disposal of dredged material. Wherever these activities occur, they are likely to work additively or synergistically to decrease habitat quality and, as such, may indirectly constrain the sustainability of the managed resources, non-target species, and protected resources. Decreased habitat suitability would tend to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then negatively impact human communities.

7.2.1 Past and Present Actions

Table 28. Summary effects of past, present and reasonably foreseeable future actions on the VECs identified for the Cape Cod Spiny Dogfish Exempted Fishery.

VEC	Past Actions	Present Actions	Reasonably Foreseeable Future Actions	Combined Effects of Past, Present, Future Actions
Regulated groundfish stocks (non-target)	**Mixed** Combined effects of past actions have decreased effort, improved habitat protection, and implemented rebuilding plans when necessary. However, some stocks remain overfished	**Positive** Current regulations continue to manage for sustainable stocks	**Positive** Future actions are anticipated to continue rebuilding and strive to maintain sustainable stocks	**Short-term Negative** Several stocks are currently overfished, have overfishing occurring, or both **Long-Term Positive** Stocks are being managed to attain rebuilt status
Non-groundfish species (target catch and bycatch)	**Positive** Combined effects of past actions have decreased effort and improved habitat protection	**Positive** Current regulations continue to manage for sustainable stocks, thus controlling effort on direct and discard/bycatch species	**Positive** Future actions are anticipated to continue rebuilding and target healthy stocks, thus limiting the take of discards/bycatch	**Positive** Continued management of directed stocks will also control incidental catch/bycatch
Endangered and other protected species	**Positive** Combined effects of past fishery actions have reduced effort and thus interactions with protected resources	**Positive** Current regulations continue to control effort, thus reducing opportunities for interactions	**Mixed** Future regulations will likely control effort and thus protected species interactions, but as stocks improve, effort will likely increase, possibly increasing interactions	**Positive** Continued effort controls along with past regulations will likely help stabilize protected species interactions
Habitat, including non-fishing effects	**Mixed** Combined effects of effort reductions and better control of nonfishing activities have been positive but fishing activities and non-fishing activities continue to reduce habitat quality	**Mixed** Effort reductions and better control of nonfishing activities have been positive but fishing activities and non-fishing activities continue to reduce habitat quality	**Mixed** Future regulations will likely control effort and thus habitat impacts but as stocks improve, effort will likely increase along with additional non-fishing activities	**Mixed** Continued fisheries management will likely control effort and thus fishery related habitat impacts but fishery and non-fishery related activities will continue to reduce habitat quality
Human Communities (includes economic and social effects on the fishery	**Mixed** Fishery resources have supported profitable industries and communities but increasing effort and	**Mixed** Fishery resources continue to support communities but increasing effort and catch limit controls combined with	**Short-term Negative** As effort controls are maintained or strengthened, economic impacts will be negative	**Short-term Negative** Lower revenues would likely continue until stocks are fully rebuilt

and fishing communities)	catch limit controls have curtailed fishing opportunities	nonfishing impacts such as rising fuel costs have had a negative economic impact	**Long-term Positive** As stocks improve, effort will likely increase which would have a positive impact	**Long-term Positive** Sustainable resources should support viable communities and economies

Impact Definitions:
-Regulated Groundfish Stocks, Non-groundfish species, Endangered and Other Protected Species: positive=actions that increase stock size and negative=actions that decrease stock size
-Habitat: positive=actions that improve or reduce disturbance of habitat and negative=actions that degrade or increase disturbance of habitat
-Human Communities: positive=actions that increase revenue and well-being of fishermen and/or associated businesses and negative=actions that decrease revenue and well-being of fishermen and/or associated businesses

7.3 CUMULATIVE IMPACTS OF THE PROPOSED ACTION

The following analysis summarizes the cumulative effects of past, present, and reasonably foreseeable future actions in combination with the proposed action on the VECs identified in Section 7.1.

7.3.1 Cumulative Effects on Regulated Groundfish Stocks (Non-Target)

Actions that reduce fishing effort have had positive effects on non-target species and bycatch because in general, less fishing effort results in less impact to non-allocated target species and bycatch. Conversely, actions that increase fishing effort are considered to have low negative effects on non-target species and bycatch because more fishing generally results in more bycatch.

The primary non-target and bycatch species analyzed for the purposes of this EA are groundfish. Management efforts in the past have led to these species being managed under their own FMP. While some groundfish stocks remain in an overfished condition, or subject to overfishing, actions in the NE Multispecies FMP (e.g., Amendment 16) are attempting to control mortality on these stocks. Mortality and effort controls such as hard TACs and NE Multispecies DAS collectively help reduce bycatch of non-target species. This action is not expected to have any significant effect on groundfish stocks. Instead, this action may provide an increased opportunity for groundfish vessels to target more healthy stocks, i.e., spiny dogfish. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions have resulted in positive effects on non-target species and bycatch. Therefore, when considering the cumulative effects of this action in combination with past, present, and reasonably foreseeable future actions, no significant impacts to regulated groundfish stocks from the proposed action are expected.

7.3.2 Cumulative Effects on Non-Groundfish Species (Target Species)

As noted in Table 28, the long-term trend has been positive for cumulative impacts to target species (spiny dogfish). Further, indirect impacts from the effort reductions in other FMPs are thought to contribute to spiny dogfish mortality reductions and will continue to do so for the foreseeable future (e.g., NE Multispecies FMP). These factors, when considered in conjunction with the proposed action, would have negligible impacts to the target species because spiny dogfish are managed via sustainable catch rates (ABC) and this action would not compromise

overall effort controls. Therefore, when considering the cumulative effects of this action in combination with past, present, and reasonably foreseeable future actions, no significant impacts to spiny dogfish stocks from the proposed action are expected.

7.3.3 Cumulative Effects on Endangered and Other Protected Species

As noted in Table 28, the combined impacts of past federal fishery management actions have reduced fishing effort, and therefore reduced interactions with protected resources. Current management measures, including those implemented through Amendment 16 to the NE Multispecies FMP, are expected to continue to control effort and catch, and therefore continue to lessen interactions with protected resources. The proposed action is expected to have low negative impacts on protected species because NE multispecies vessels will be provided greater opportunities to target groundfish in other areas. However, this minimal increase in effort is expected to be offset by other more substantial reductions in effort in the groundfish fishery. On February 6, 2012, NMFS listed the Gulf of Maine distinct population segment of Atlantic sturgeon as threatened, and listed the New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon as endangered (77 FR 5880 and 75 FR 5914). NMFS has considered whether the proposed action is likely to jeopardize Atlantic sturgeon DPSs and concluded that is not. While there may be interactions between Atlantic sturgeon and gear used in the spiny dogfish fishery, the number of interactions that will occur during the duration of this action is not likely to cause an appreciable reduction in survival and recovery. This is supported by updated bycatch estimates based upon NEFOP data (2006-2010). fFormal consultation on the spiny dogfish fishery was reinitiated on February 9, 2012, and a Biological Opinion is expected to be completed in 2013. NMFS has determined that there will not be any irreversible or irretrievable commitment of resources under section 7(d) of the ESA during the consultation period that would have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures. NMFS has also determined that the continued authorization of the spiny dogfish fishery during the consultation period, including the authorization of the fishery to operate under the measures proposed in this action, is not likely to jeopardize the continued existence of ESA-listed species or result in the destructive or adverse modification of critical habitat.

Given the limited scope and timing of this action and the comparatively low contribution of the spiny dogfish fishery to Atlantic sturgeon mortality, the magnitude of interactions are not likely to result in jeopardy to the species based on current assessments of each DPS. Since Atlantic sturgeon DPSs have been listed under the ESA, formal consultations were reinitiated as required for the spiny dogfish fishery, as well as the related Multispecies fishery, and additional evaluation will be included to describe any impacts of the fisheries on Atlantic sturgeon and define any measures needed to mitigate those impacts, if necessary. It is anticipated that any measures, terms and conditions included in an updated Biological Opinion will further reduce impacts to the species. Therefore, when considering the cumulative effects of this action in combination with past, present, and reasonably foreseeable future actions, no significant impacts to protected species from the proposed action are expected.

7.3.4 Cumulative Effects on Habitat

As noted in Table 28, the combined impacts of past federal fishery management actions have reduced fishing effort, and therefore have been positive for habitat protection. In addition, better control of non-fishing activities has also been positive for habitat protection. However, both fishing and non-fishing activities continue to decrease habitat quality. None of the fishery measures are expected to have substantial impacts to habitat or EFH. Generally, the modifications to program administration measures are expected to have neutral or no impacts, since these actions should not greatly alter fishing practices. Therefore, when considering the cumulative effects of this action in combination with past, present, and reasonably foreseeable future actions, no significant impacts to habitat or EFH from the proposed action are expected.

7.3.5 Cumulative Effects on the Human Communities

As noted in Table 28, the combined impacts of past federal fishery management actions have reduced effort, and therefore have curtailed fishing opportunities. Past and current management measures, including those implemented through Amendment 16 to the FMP, will maintain effort and catch limit controls, which together with non-fishing impacts such as rising fuel costs have had significant negative short term economic impacts on human communities. The proposed action is expected to have immediate positive effects on human communities. The elimination of groundfish discard rates associated with a groundfish trip attributed to vessels targeting spiny dogfish would allow fishermen to target spiny dogfish without having groundfish taken out of their sector's ACE. Further, these fishermen would no longer be assigned an at-sea monitor, who cost ~$650 per day, at the same rate as under the requirements of the groundfish fishery. There may be some deleterious effects for groundfish fishermen who are not targeting spiny dogfish because the low discards in the spiny dogfish fishery would no longer be contributing to keeping the discard rates low. Also, in combination with the potential effects of accumulation limits proposed in Amendment 18 to the NE multispecies FMP, this action could help smaller fishing communities function into the foreseeable future. Overall, the combination of past, present, and future actions is expected to enable a sustainable harvest of groundfish stocks, which should eventually lead to a long term positive impact on fishing communities and economies. Therefore, when considering the cumulative effects of this action in combination with past, present, and reasonably foreseeable future actions, overall insignificant, positive impacts for human communities would be expected from this action.

8.0 APPLICABLE LAW

8.1 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Section 301 of the MSA requires that the regulations implementing any fishery management plan be consistent with the ten national standards. Below is a list of the national standards and descriptions of how the proposed action complies with each standard.

- **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 not cause overfishing to occur in either the spiny dogfish fishery or the NE multispecies fishery. Analysis demonstrates that bycatch of regulated multispecies in the

spiny dogfish fishery in the proposed exempted area is very low, and consistent with the bycatch reduction measures of the NE Multispecies FMP. Further, both of these fisheries are managed by annual quotas that prevent overfishing.

- **Conservation and management measures shall be based on the best scientific information available.**

The data utilized in the determination of this proposed exemption were taken from the best sources available, including the NEFSC observer program, NEFSC scientific surveys, vessel trip reports, and the most recent stock assessment for all of the potentially affected species.

- **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 proposed action impacts one stock, spiny dogfish, and to a lesser extent, multiple stocks of various NE multispecies that occur in the same area. The impacts of the proposed exemption on these stocks, which represents a relatively small portion of the EEZ, and their respective habitats, are discussed in Section 6.1 above.

- **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 a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.**

The proposed action allows any vessel with a valid Federal spiny dogfish permit to fish within the proposed exemption area. Though vessels hailing from the ports most proximate to the exemption area may have easier access to the area, vessels from any state with the appropriate permits may participate in the exemption program.

- **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.**

The proposed action would promote efficiency in utilization of fishery resources by not attributing excessive groundfish discards to vessels fishing for spiny dogfish. This would allow sectors vessels to more efficiently harvest their ACE.

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

The proposed exemption area is consistent with the bycatch requirements of the NE Multispecies FMP at this time, assuming that groundfish bycatch in the proposed exemption area is minimal. The impacts of this fishery on the target spiny dogfish resource have also been assessed, and found to be acceptable. If the status of target or non-target species were to change over time, these measures could be adjusted to meet the requirements of the respective FMPs.

- **Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.**

The proposed measures do not duplicate any existing fishery regulations, or impose any new costs on the affected parties. Further, these measures would reduce costs for those vessels operating in the proposed exempted fishery.

- **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 impacts on such communities.**

The proposed action was initiated by industry representatives that wished to alleviate adverse impacts being experienced by NE multispecies sector fishermen. The proposed exemption area is consistent with the conservation requirements of the MSA, the Spiny Dogfish FMP, and the NE Multispecies FMP, and therefore provides for the sustained participation of this community in the spiny dogfish fishery.

- **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.**

This proposed action is consistent with the bycatch requirements of the NE Multispecies FMP, and the data supports the fact that bycatch of finfish, protected species, and other non-target species in this proposed exempted fishery area is minimal.

- **Conservation and management measures shall, to the extent practicable, promote safety of human life at sea.**

The proposed action promotes safety at sea by allowing vessels that fish both spiny dogfish and NE multispecies to fish more efficiently in both fisheries.

8.2 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

NEPA provides a mechanism for identifying and evaluating environmental issues associated with Federal actions, and for considering a reasonable range of alternatives to avoid or minimize adverse environmental impacts. This document is designed to meet the requirements of both the MSA and NEPA.

8.2.1 Environmental Assessment (EA)

The required elements of an EA are specified in 40 CRS 1508.9(b), and are included in this document as indicated below:

- Need for this action: Section 3.0
- Alternatives considered: Section 4.0
- Environmental impacts of proposed action: Section 6.0
- The agencies and persons consulted on this action are listed in Section 9.0 & 10.0

In addition, Section 5.0 of this document includes a discussion of the affected environment for this action as a basis to evaluate the impacts of the alternatives specified for this action.

8.2.2 Finding of No Significant Impact

NOAA 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 (CEQ) regulations at 40 C.F.R. 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant in making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

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

The proposed action is not reasonably expected to jeopardize the sustainability of any target species that may be affected. The spiny dogfish stock is rebuilt, is not overfished, and overfishing is not occurring. Since the increase in effort in the spiny dogfish fishery is predicted to be minimal and there would be no change in the possession limit for spiny dogfish, it is likely that additional mortality of spiny dogfish would be minimized as well. Further details can be found in Section 6.1.2 of this document.

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

The proposed action is not reasonably expected to jeopardize the sustainability of any non-target species. From a total of 642 observed trips in the proposed exemption area and months the mean percent bycatch was 0.09% of the total catch (Table 21). This small bycatch rate, on average, is well below the allowable thresholds within the proposed exemption area. Further details can be found in Section 6.1.4 of this document.

3. Can the proposed action reasonably be expected to allow substantial damage to the ocean and coastal habitats and/or EFH as defined under the Magnuson-Stevens Act and identified in FMPs?

The proposed exemption is not expected to adversely affect the physical environment within the proposed exemption area. There would not likely be a large increase in effort for spiny dogfish as the fishery is still limited by an annual quota and a 3,000 lb possession limit. Additionally, this area is currently subject to fishing for NE multispecies and spiny dogfish by gillnet, longline, and handline gears. For further details, see Section 6.1.1 of this document.

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

No, the action is not expected to have a substantial impact on public health or safety. This exemption is intended to help fishermen increase fishing revenues, by allowing them access to the spiny dogfish fishery without using valuable NE multispecies ACE. Increases in revenue may provide additional funds to maintain fishing vessels, increasing safe operations.

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

The proposed management measures are not reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat. A number of endangered or threatened species and marine mammals are found within the geographic range of the proposed exemption area. Based on previous ESA consultations associated with the spiny dogfish and NE multispecies fisheries, marine mammals are not considered to be adversely affected by gillnet, longline or handline gear in this area. Based on the available data, these gears appear to have minimal impacts on sea turtles and any other protected species within the proposed exemption area. Further details can be found in Section 6.1.3 of this document.

For the reasons described in Section 6.1.3, NMFS has determined that the continued operation of the spiny dogfish during the reinitiation period is not likely to jeopardize the continued existence of any Atlantic sturgeon DPS. This is based on the short time period encompassed by the reinitiation period and consequently, the scale of any interactions with Atlantic sturgeon that may occur during this period. NMFS will implement any appropriate measures outlined in the BO to mitigate harm to Atlantic sturgeon. Further, the encounter rates and mortalities for Atlantic sturgeon that have been calculated as part of the preliminary analysis of NEFOP data include encounters and mortalities by all fisheries utilizing large-mesh sink gillnet and otter trawl gear, including the groundfish, monkfish, bluefish, spiny dogfish, and other fisheries. Based upon the above estimates, the rates of encounters and mortalities by the spiny dogfish fishery are lower than the estimates in most of those fisheries.

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

This action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. The affected area has been impacted by gillnet, longline, and handline gears for many decades, yet continues to be a productive environment for target and non-target species.

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

The proposed action would likely have some beneficial social and economic impacts, due to increased revenues from more efficient use of NE multispecies ACE, but as discussed above

(Section 6.0), there are not expected to be significant impacts on the natural or physical environment.

8. Are the effects on the quality of human communities likely to be highly controversial?

The effects of the proposed action on the quality of human communities are not expected to be highly controversial. The action being created was initially proposed by industry representatives, and the proposed exemption meets most of the conditions of their request. The proposed decision was based on reliable scientific data from the NEFSC, NERO, the Council, and the scientific literature. The proposed action, the decision process, and the supporting data are described in a transparent fashion in this document to help avoid any controversy among the affected human communities.

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

No, the proposed action cannot be reasonably expected to result in substantial impacts to unique areas or ecological critical areas. No such areas exist within the proposed exemption area.

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

The proposed action is not expected to result in highly uncertain effects on human communities or involve unique or unknown risks. Although it is unclear exactly how individual participants in the fishery would react to the proposed action, the action would result in the impacts to human communities as described in Section 6.1.5, with a relative amount of certainty. The proposed exemption area is expected to benefit fishing communities, particularly those which are in close proximity to the area, and have high participation in the spiny dogfish fishery.

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

The proposed action is related to other recent management actions beginning with Amendment 16 and subsequent framework actions to the NE Multispecies FMP, primarily because these actions implemented the majority of the management measures currently in effect. While Amendment 16 resulted in significant impacts to the human environment, the proposed action is insignificant (see Section 7.0) and would not result in additional significant cumulative impacts.

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

The proposed action is not likely to affect objects listed in the National Register of Historic Places or cause significant impact to scientific, cultural, or historical resources. There are no such objects within the proposed exemption area.

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

This action would not result in the introduction or spread of any nonindigenous species, as it would not result in any vessel activity outside of the Northeast region.

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

No, the proposed action is not likely to establish precedent for future actions with significant effects. The process for requesting exempted fisheries was established in Amendment 7 to the NE Multispecies FMP in 1996. The proposed action creates the third exempted fishery area for vessels targeting spiny dogfish in the NE Region.

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

The proposed action would not threaten a violation of Federal, state, or local law or requirements to protect the environment. The action complies with all applicable laws.

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

As specified in the responses to the first two criteria of this section, the proposed action is not expected to result in cumulative adverse effects that would have a substantial effect on target or non-target species. For further details see Section 7.0 of this document.

DETERMINATION: In view of the information presented in this document and the analysis contained in the supporting EA prepared for this action, it is hereby determined that the proposed exempted fishery would not significantly impact the quality of the human environment as described above and in the supporting EA. 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 EIS for this action is not necessary.

Regional Administrator, Northeast Region **Date**

8.2.3 Opportunity for Public Comment

The proposed action would follow the procedures specified in the MSA and the Administrative Procedures Act. Proposed measures were published in the Federal Register on [insert date of publication] (xx FR xxxxx), and 15 days were provided for public comment.

8.3 MARINE MAMMAL PROTECTION ACT (MMPA)

NOAA Fisheries Service has reviewed the impacts of the Cape Cod Spiny Dogfish Exempted Fishery 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 impacts of the fishery and the proposed management action, see Section 6.1.3.

8.4 ENDANGERED SPECIES ACT (ESA)

On February 3, 2012, NMFS published final rules listing the Gulf of Maine distinct population segment (DPS) of Atlantic sturgeon as threatened, and listing the New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon as endangered, effective April 6, 2012. Preliminary analysis indicates that multiple Atlantic sturgeon DPSs may be affected by the continued operation of the NE multispecies fishery and formal consultation under Section 7 of the ESA has been reinitiated and is ongoing for the NE multispecies fishery. The previous Biological Opinion for the NE multispecies fishery completed in October 2010 concluded that the actions considered would not jeopardize the continued existence of any listed species. This Biological Opinion will be updated and additional evaluation will be included to describe any impacts of the NE multispecies fishery on Atlantic sturgeon DPSs and define any measures needed to mitigate those impacts, if necessary. It is anticipated that any measures, terms and conditions included in an updated Biological Opinion will further reduce impacts to the species. NMFS has determined that continued operation of the fishery during the consultation period is not likely to jeopardize the continued existence of listed species. As discussed in Section 4.1 in this EA, the proposed exemption is from the months of June through December of each year.

Therefore, there would be no fishing under this exemption from now until the time when the Biological Opinion will be completed.

8.5 ADMINISTRATIVE PROCEDURE ACT (APA)

This action was developed in compliance with the requirements of the Administrative Procedure Act, and these requirements will continue to be followed when the proposed regulation is published. 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, NMFS is not requesting any abridgement of the rulemaking process for this action.

8.6 PAPERWORK REDUCTION ACT (PRA)

The purpose of the PRA 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 PRA is necessary.

8.7 COASTAL ZONE MANAGEMENT ACT (CZMA)

NMFS made a general consistency determination that the NE Multispecies FMP, is consistent to the maximum extent practicable with the enforceable policies of the approved coastal management programs of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina. This general consistency determination applies to the current FMP, and all subsequent routine Federal actions carried out in accordance with the FMP such as framework adjustments and specifications. This determination was submitted to the above states on October 21, 2009. To date, North Carolina, Rhode Island, Virginia, Connecticut, New Hampshire, and New Jersey, Delaware, and Pennsylvania have concurred with the general consistency determination. Consistency was inferred for those states that did not respond.

8.8 INFORMATION QUALITY ACT (SECTION 515)

In accordance with the Information Quality Act (Public Law 106-554), the Office of Management and Budget directed each Federal agency to issue guidelines that ensure the quality, objectivity, utility, and integrity of information disseminated by federal agencies. The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the Information Quality Act. Information must meet standards of utility, integrity, and objectivity. This section provides information that demonstrates compliance with these standards.

8.8.1 Utility of Information Product

A. Is the information helpful, beneficial or serviceable to the intended user?

This action proposes measures to create a new spiny dogfish exempted fishery area. The EA and the Federal Register document prepared for this action include a description of the proposed measures, the reasons why such measures are necessary, and the environmental impacts of the proposed measures. The Federal Register notice provides a summary of the information contained in the EA to inform interested public in the scope and purpose of the proposed action. This proposed action is consistent with the NE Multispecies and Spiny Dogfish FMPs and the conservation and management goals of the MSA.

B. Is the data or information product an improvement over previously available information? Is it more current or detailed? Is it more useful or accessible to the public? Has it been improved based on comments from or interactions with customers?

The proposed action would implement new management measures. The EA contains the most recent information available on the status of groundfish and spiny dogfish stocks along with the impacts of the proposed measures, based upon the best available scientific information. The EA will be made available to the public for comment. The Federal Register notice will also be made available to the public to review and comment on the proposed measures.

C. What media are used in the dissemination of the information? Printed publications? CD-ROM? Internet? Is the product made available in a standard data format? Does it use consistent attribute naming and unit conventions to ensure that the information is accessible to a broad range of users with a variety of operating systems and data needs?

The Federal Register document that announces the proposed measures, as well as the EA that analyzes the potential impact of such measures, will be made available in printed publication and on the Internet website for the Northeast Regional Office.

8.8.2 Integrity of Information Product

The information product meets the following standards for integrity:

- If information is confidential, it is safeguarded pursuant to the Privacy Act and Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business and financial information).

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

8.8.3 Objectivity of Information

(1) Indicate which of the following categories of information products apply for this product:

- □ **Original Data**
- □ **Synthesized Products**
- □ **Interpreted Products**
- □ **Hydrometeorological, Hazardous Chemical Spill, and Space Weather Warnings, Forecasts, and Advisories**
- □ **Experimental Products**
- ☒ **Natural Resource Plans**
- □ **Corporate and General Information**

(2) Describe how this information product meets the applicable objectivity standards. (See the DQA Documentation and Pre-Dissemination Review Guidelines for assistance and attach the appropriate completed documentation to this form.)

What published standard(s) governs the creation of the Natural Resource Plan? Does the Plan adhere to the published standards? (See the NOAA Sec. 515 Information Quality Guidelines, Section II(F) for links to the published standards for the Plans disseminated by NOAA.)

Any management action under this FMP must comply with the requirements of the MSA, the National Environmental Policy Act, the Regulatory Flexibility Act, the Administrative Procedures Act, the Paperwork Reduction Act, the Coastal Zone Management Act, the Endangered Species Act, the Marine Mammal Protection Act, and Executive Orders 12612 (Federalism), 12630 (Property Rights), 12866 (Regulatory Planning), and 13158 (Marine Protected Areas). NMFS has determined that the proposed rule to implement the measures under this action is consistent with the National Standards of the MSA and all other applicable laws.

Was the Plan developed using the best information available? Please explain.

Analyses for the proposed measures incorporate the most comprehensive and accurate data available from the NEFSC. These data represent the best information available. National Standard 2 requires that the FMP's conservation and management measures shall be based upon the best scientific information available. These measures have been determined to be in compliance with National Standard 2.

Have clear distinctions been drawn between policy choices and the supporting science upon which they are based? Have all supporting materials, information, data and analyses used within the Plan been properly referenced to ensure transparency?

The policy choices (i.e., management measures) that are proposed are supported by the available scientific information. The supporting materials and analyses used to develop

these measures are contained in readily available documents that are properly referenced in the EA.

Describe the review process of the Plan by technically qualified individuals to ensure that the Plan is valid, complete, unbiased, objective and relevant. For example, internal review by staff who were not involved in the development of the Plan to formal, independent, external peer review. The level of review should be commensurate with the importance of the Plan and the constraints imposed by legally enforceable deadlines.

The addition of an exempted fishery to the NE Multispecies FMP involves the Northeast Regional Office and scientific data from the NEFSC. The NEFSC technical review is conducted by senior level scientists with specialties in population dynamics, stock assessment methods, demersal resources, population biology, and the social sciences. 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.

8.9 REGULATORY IMPACT REVIEW (RIR)

This section contains a RIR, in compliance with Executive Order (E.O.) 12866 and the Regulatory Flexibility Act. The information contained in this section complements the information in other sections of this EA. The principal elements of the Regulatory Impact Review include a description of the management objectives, a description of the fishery, a statement of the problem**,** a description of each selected alternative, including the "no action" alternative; and an economic analysis of the expected effects of each selected alternative relative to the baseline. The management objectives underlying the proposed action are described in Section 3.0, descriptions of the fisheries involved are found is Section 5.0, descriptions of the alternatives are in Section 4.0, and an economic analysis is in Section 6.1.5. The baseline against which the proposed alternatives are compared is the No Action alternative.

8.9.1 Regulatory Flexibility Act (RFA)

Description of the Reasons Why Action by Agency is Being Considered

A description of the purpose and need for the proposed action is contained in Section 3.0. The RA has the authority to review exempted fishery requests, and grant them if the data shows that they meet the requirements dictated by the regulations. The exemption request submitted by representatives from the NE multispecies and spiny dogfish fleets is consistent with these requirements.

The Objectives and Legal Basis for the Proposed Action

The NE Multispecies FMP and promulgating regulations at 50 CFR § 648.80(a)(8) allow the RA to review and grant exemptions to fisheries that meet the requirements stated in those regulations. The proposed action creates a new exemption area for spiny dogfish vessels fishing off of Cape Cod.

Estimate of the Number of Small Entities

All of the potentially affected businesses are considered small entities under the standards described in NOAA Fisheries guidelines because they have gross receipts that do not exceed $4 million annually.

Alternatives which Minimize Significant Economic Impact of Proposed Action on Small Entities
The only alternative that may have a negative economic impact on the affected small entities is the No Action alternative described in Section 4.3. The impacts of the No Action alternative are described in Section 6.3.5. The other alternatives, which create a new exemption area, all have positive economic impacts. Although Alternative 2 appears to provide greater positive economic impacts, the analysis of observer data indicated that there is an increase in the number of trips that catch >5% groundfish for handline trips in the area in the months of January through May (Table 25, Figure 10). Further, the lack of observed trips in the area from January through May introduces more uncertainty about the potential effects on non-target species. For these reasons, Alternative 1 is the preferred alternative.

Description of the proposed reporting, record keeping and other compliance requirements
There are no additional requirements imposed by this action. This action would exempt participating vessels from the requirement to contact the Pre-Trip Notification System 48 hours before a trip, as well as the requirement to submit a catch report and a trip end-hail through the vessels monitoring system (VMS). Further, vessels participating in this fishery would no longer be required to have a functional VMS onboard the vessel.

Federal rules which may duplicate, overlap, or conflict
There are no rules that duplicate, overlap, or conflict with the proposed exemption.

8.10 E.O. 12866 (REGULATORY PLANNING AND REVIEW)

The purpose of E.O 12866 is to enhance planning and coordination with respect to new and existing regulations. This E.O. requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be "significant." Section 8.9 of this document represents the RIR, which includes an assessment of the costs and benefits of the proposed action, in accordance with the guidelines established by E.O. 12866. The analysis included in the RIR shows that this action is not a "significant regulatory action" because it would not affect in a material way the economy or a sector of the economy. See Table 29.

Table 29. Economic costs and benefits of each alternative and their expected magnitude based off of FY 2010 & 2011.

Potential Cost/Benefit Under Proposed Alternative	Alternative 1	Alternative 2	No Action
Allocated discards coming from ACE	Benefit for FY 2010 & 2011 *$48,458.80*	Benefit for FY 2010 & 2011 *$49,336.73*	Cost for FY 2010 & 2011 *$48,458.80*
Increased Discard Rate for Sectors	Cost *Low*	Cost *Low*	Benefit *Low*
Disposition of groundfish caught as bycatch	Cost (discarded) *Low*	Cost (discarded) *Low*	Benefit (landed) *Low*

8.11 E.O. 13132 (FEDERALISM)

This E.O. established nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. The E.O. 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 in the Cape Cod Spiny Dogfish Exempted Fishery. This action does not contain policies with federalism implications sufficient to warrant preparation of an assessment under E.O. 13132.

9.0 LIST OF PREPARERS; POINT OF CONTACT

Questions concerning this document may be addressed to:

Daniel S. Morris,
Acting Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

This document was prepared by:

Travis Ford, Northeast Regional Office, NMFS

Consultations on this document were provided by:

Susan A. Murphy, Northeast Regional Office, NMFS
George Darcy, Northeast Regional Office, NMFS
Tim Cardiasmenos, Northeast Regional Office, NMFS
Jennifer Anderson, Northeast Regional Office, NMFS

Mark Brady, Northeast Regional Office, NMFS
Dean Szumylo, Northeast Regional Office, NMFS

10.0 AGENCIES CONSULTED

The following agencies were consulted in the preparation of this document:

National Marine Fisheries Service, NOAA, Department of Commerce

11.0 WORKS CITED

Aguilar, A. 2002. Fin whale, Balaenoptera physalus. Pages 435-438 in W.F. Perrin, B. Würsig, and J.G.M. Thewissen (eds.). Encyclopedia of Marine Mammals. San Diego: Academic Press.

ASFMC TC, Atlantic States Marine Fisheries Commission Technical Committee. (2007). *Special Report to the Atlantic Sturgeon Management Board: Estimation of Atlantic sturgeon bycatch in coastal Atlantic commercial fisheries of New England and the Mid-Atlantic.* ASFMC.

ASSTR, Atlantic Sturgeon Status Review Team. (2007). *Status review of Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus).* National Marine Fisheries Service.

Best, P.B., J. L., Brownell, R.L. Jr., and Donovan, G.P., (eds.) 2001. Report of the workshop on status and trends of western North Atlantic right whales. J. Cetacean Res. Manage. (Special Issue) 2: 61-87.

Bowen, B.W., A.L. Bass, S.-M. Chow, M. Bostrom, K.A. Bjorndal, A.B. Bolten, T. Okuyama, B.M. Bolker., S. Epperly, E. Lacasella, D. Shaver, M. Dodd, S.R. Hopkins-Murphy, J.A. Musick, M. Swingle, K. Rankin-Baransky, W. Teas, W.N. Witzell, and P.H. Dutton. 2004. Natal homing in juvenile loggerhead turtles (Caretta caretta). Molecular Ecology 13:3797-3808.

Braun-McNeill, J., and S.P. Epperly. 2004. Spatial and temporal distribution of sea turtles in the western North Atlantic and the U.S. Gulf of Mexico from Marine Recreational Fishery Statistics Survey (MRFSS). Mar. Fish. Rev. 64(4):50-56.

Brown, M.B., O.C. Nichols, M.K. Marx, and J.N. Ciano, Surveillance of North Atlantic right whales in Cape Cod Bay and adjacent waters. Final report to the Division of Marine Fisheries, Commonwealth of Massachusetts. 29 pp., September 2002.

Carr, H.A. and H.O. Milliken. 1998. Conservation engineering: options to minimize fishing's impacts to the sea floor. Pp. 100–103 in E.M. Dorsey and J. Pederson, eds. Effects of Fishing Gear on the Sea Floor of New England. Conservation Law Foundation, Boston, MA. 160 pp.

Cetacean and Turtle Assessment Program (CeTAP). 1982. Final report or the cetacean and turtle assessment program, University of Rhode Island, to Bureau of Land Management, U.S. Department of the Interior. Ref. No. AA551-CT8-48. 568 pp.

Clapham, P.J. S. Brault, H. Caswell, M. Fujiwara, S. Kraus, R. Pace, and P. Wade. Report of the working group on survival estimation of North Atlantic right whales. September 27, 2002.

Conant, T.A., P.H. Dutton, T. Eguchi, S.P. Epperly, C.C. Fahy, M.H. Godfrey, S.L. MacPherson, E.E. Possardt, B.A. Schroeder, J.A. Seminoff, M.L. Snover, C.M. Upite, and B.E. Witherington. 2009. Loggerhead sea turtle (Caretta caretta) 2009 status review under the U.S. Endangered Species Act. Report of the Loggerhead Biological Review Team to the National Marine Fisheries Service, August 2009. 222 pages.

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 River estuary, New York. New York Fish and Game Journal 30: 140-172.

Dutton, Peter. 2011. NMFS, Marine Turtle Genetics Program, Program Leader, personal communication, September 10, 2011.

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.

Frisk, M. G. (2006). Age, growth and latitudinal patterns of two rajidae species in the northwestern Atlantic: Little skate (Leucoraja erinacea) and winter skate (Leucoraja ocellata). *Canadian Journal of Fisheries and Aquatic Sciences*, 63: 1078 – 1091.

Gabriel, W. 1992. Persistence of demersal fish assemblages between Cape Hatteras and Nova Scotia, northwest Atlantic. Journal of Northwest Atlantic Fisheries Science 14:29-46.

Hayes, M.L. 1983. Active fish capture methods in Nielson, L.A.; Johnson, D.L., eds. Fisheries techniques. Bethesda, MD: Am. Fish. Soc.; p. 123-145.

Holland, B.F., Jr., and G.F. Yelverton. 1973. Distribution and biological studies of anadromous fishes offshore North Carolina. Division of Commercial and Sports Fisheries, North Carolina Dept. of Natural and Economic Resources, Special Scientific Report No. 24. 130pp.

Horwood, J. 2002. Sei whale, Balaenoptera borealis. Pages 1069-1071 *in* W.F. Perrin, B. Würsig, and J.G.M. Thewissen, eds. Encyclopedia of Marine Mammals. San Diego: Academic Press.

International Council for the Exploration of the Seas (ICES). 2001. Effects of Different Types of Fisheries on North Sea and Irish Sea Benthic Ecosystems. Report of the ICES Advisory Committee on the Marine Environment 2000. ICES Coop. Res. Rep. No. 241, 27 pp.

James, M.C., R.A. Myers, and C.A. Ottenmeyer. 2005. Behaviour of leatherback sea turtles, Dermochelys coriacea, during the migratory cycle. Proc. R. Soc. B, 272: 1547-1555.

Kahnle, A. W., K. A. Hattala, K. McKown. 2007. Status of Atlantic sturgeon of the Hudson River estuary, New York, USA. In J. Munro, D. Hatin, K. McKown, J. Hightower, K. Sulak, A. Kahnle, and F. Caron (editors). Proceedings of the symposium on anadromous sturgeon: Status and trend, anthropogenic impact, and essential habitat. American Fisheries Society, Bethesda, Maryland.

Katona, S.K., V. Rough and D.T. Richardson 1993. A field guide to whales, porpoises, and seals from Cape Cod to Newfoundland. Smithsonian Institution Press, Washington, DC. 316 pp.

Keinath, J.A., J.A. Musick, and R.A. Byles. 1987. Aspects of the biology of Virginia's sea turtles: 1979-1986. Virginia J. Sci. 38(4):329-336.

Kenney, R.D. 2002. North Atlantic, North Pacific, and Southern Hemisphere right whales, pp.806-813 in: W.F. Perrin, B. Wursig, and J.G.M. Thewissen (eds.) Encyclopedia of Marine Mammals. Academic Press, CA 2002.

Kocik, J.F., and T.F. Sheehan. 2006. Atlantic Salmon. Available at: http://www.nefsc.noaa.gov/sos/spsyn/af/salmon/.

Kynard, B. and M. Horgan. 2002. Ontogenetic behavior and migration of Atlantic sturgeon, Acipenser oxyrinchus oxyrinchus, and shortnose sturgeon, A. brevirostrum, with notes on social behavior. Environmental Behavior 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.

Lacroix G. L., D. Knox, and M. J. W. Stokesbury. 2005. Survival and behaviour of postsmolt Atlantic salmon in coastal habitat with extreme tides. Journal of Fish Biology 66(2): 485-498.

Mid-Atlantic Fisheries Management Council (MAFMC) 1999. Spiny Dogfish Fishery Management Plan (includes Final Environmental Impact Statement and Regulatory Impact Review).

Mid-Atlantic Fisheries Management Council (MAFMC), 2009. Spiny Dogfish Specifications, Environmental Assessment, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis. April 9.

Miller, T. C. (2010). Estimation of Albatross IV to Henry B. Bigelow Calibration Factors. *Northeast Fisheries Science Center Reference Document 10-05*.

Morgan, L.E. and R. Chuenpagdee. 2003. Shifting Gears: Addressing the collateral impacts of fishing methods in U.S. waters, Pew Science Series on Conservation and the Environment, Washington D.C., Island Press, 41 p.

Mirarchi, F. (1998). Bottom trawling on soft substrates. In E. Dorsey, & e. J. Pederson, *Effects of fishing gear on the sea floor of New England.* Boston, Massachusetts: Conservation Law Foundation.

Morreale, S.J. and E.A. Standora. 1998. Early life stage ecology of sea turtles in northeastern U.S. waters. U.S. Dep. Commer. NOAA Tech. Mem. NOAA Fisheries-SEFSC-413, 49 pp.

Morreale, S.J. and E.A. Standora. 1998. Vying for the same resources: potential conflict along migratory corridors. Proceedings of the Seventeenth Annual Sea Turtle Symposium. U.S. Dep. Commer. NOAA Tech Memo. NMFS-SEFSC-415. 294pp.

Morreale, S.J. and E.A. Standora. 2005. Western North Atlantic waters: Crucial developmental habitat for Kemp's ridley and loggerhead sea turtles. Chel. Conserv. Biol. 4(4):872-882.

Murray, K.T. 2006. Estimated average annual by-catch of Loggerhead Sea Turtles (*Caretta caretta*) in U.S. Mid-Atlantic bottom otter trawl gear, 1996-2004. U.S. Dep. Commer., Northeast Fish. Sci. Cent. Ref. Doc. 06-19; 26 p.

Musick, J.A. and C.J. Limpus. 1997. Habitat utilization and migration in juvenile sea turtles. Pp 137-164 In: Lutz, P.L. and J.A. Musick, eds., The Biology of Sea Turtles. CRC Press, New York. 432 pp.

National Marine Fisheries Service (NMFS). 1991. Final recovery plan for the North Atlantic right whale (Eubalaena glacialis). Prepared by the Right Whale Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. 86 pp.

National Marine Fisheries Service (NMFS). 1994. State and federal fishery interactions with sea turtles in the MA area. NOAA/NMFS, Silver Spring, MD, 13pp.

National Marine Fisheries Service (NMFS). 1998. Recovery Plan for the Shortnose Sturgeon (Acipenser brevirostrum). Prepared by the Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. 104 pages.

National Marine Fisheries Service (NMFS). 2002. Endangered Species Act Section 7 Consultation on Shrimp Trawling in the Southeastern United States, under the Sea Turtle Conservation Regulations and as Managed by the Fishery Management Plans for Shrimp in the South Atlantic and Gulf of Mexico. December 2.

National Marine Fisheries Service (NMFS). 2003. Techniques for Making Weak Links and Marking Buoy Lines. How to Comply with the Atlantic Large Whale Take Reduction Plan. Brochure October, 2003.

National Marine Fisheries Service (NMFS). 2004. Endangered Species Act Section 7 Reinitiated Consultation on the Continued Authorization of the Atlantic Pelagic Longline Fishery under the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks (HMS FMP). Biological Opinion, June 1.

National Marine Fisheries Service (NMFS). 2005. Recovery Plan for the North Atlantic right whale (Eubalaena glacialis). National Marine Fisheries Service, Silver Spring, MD. 137pp.

National Marine Fisheries Service (NMFS). 2009a. Hawksbill Turtle *(Eretmochelys imbricata)*. Available at: http://www.nmfs.noaa.gov/pr/species/turtles/hawksbill.htm.

National Marine Fisheries Service (NMFS). 2009c. Correspondence between ENTRIX, Inc and the Northeast Fisheries Science Center regarding impacts to sea turtles from fishing gear.

National Marine Fisheries Service (NMFS). 2009d. Harbor Porpoise Take Reduction Plan Final Environmental Assessment. Prepared by NMFS Northeast Region, Gloucester, Massachusetts. 170pp.

National Marine Fisheries Service (NMFS). 2010. 2011 List of Fisheries. Available at: http://www.nmfs.noaa.gov/pr/interactions/lof/final2011.htm.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1998. Recovery Plan for U.S. Pacific Populations of the Green Turtle (Chelonia mydas). National Marine Fisheries Service, Silver Spring, Maryland.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1991a. Recovery plan for U.S. population of loggerhead turtle. National Marine Fisheries Service, Washington, D.C. 64 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1991b. Recovery plan for U.S. population of Atlantic green turtle. National Marine Fisheries Service, Washington, D.C. 58 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1992. Recovery plan for leatherback turtles in the U.S. Caribbean, Atlantic, and Gulf of Mexico. National Marine Fisheries Service, Washington, D.C. 65 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1995. Status reviews for sea turtles listed under the Endangered Species Act of 1973. National Marine Fisheries Service, Silver Spring, Maryland. 139 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1992. Recovery plan for leatherback turtles in the U.S. Caribbean, Atlantic, and Gulf of Mexico. National Marine Fisheries Service, Washington, D.C. 65 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 2007a. Loggerhead sea turtle (/Caretta caretta/) 5 year review: summary and evaluation. National Marine Fisheries Service, Silver Spring, Maryland. 65 pp. Available at: http://www.nmfs.noaa.gov/pr/listing/reviews.htm.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 2007b. Leatherback sea turtle (/Dermochelys coriacea/) 5 year review: summary and evaluation. National Marine Fisheries Service, Silver Spring, Maryland. 79 pp. Available at: http://www.nmfs.noaa.gov/pr/listing/reviews.htm

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 2007c. Kemp's ridley sea turtle/ (Lepidochelys/ /kempii/) 5 year review: summary and evaluation. National Marine Fisheries Service, Silver Spring, Maryland. 50 pp. Available at: http://www.nmfs.noaa.gov/pr/listing/reviews.htm.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 2007d. Green sea turtle (/Chelonia mydas/) 5 year review: summary and evaluation. National Marine Fisheries Service, Silver Spring, Maryland. 102 pp. Available at: http://www.nmfs.noaa.gov/pr/listing/reviews.htm.

National Research Council (NRC). 1990. Decline of the Sea Turtles: Causes and Prevention. Committee on Sea Turtle Conservation. Natl. Academy Press, Washington, D.C. 259 pp.

National Research Council (NRC). 2002. Effects of Trawling and Dredging on Seafloor Habitat. National Academy Press. 126 p.

National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center. 2001. Stock assessments of loggerheads and leatherback sea turtles and an assessment of the impact of the pelagic longline fishery on the loggerhead and leatherback sea turtles of the Western North Atlantic. U.S. Department of Commerce, National Marine Fisheries Service, Miami, FL, SEFSC Contribution PRD-00/01-08; Parts I-III and Appendices I-IV. NOAA Tech. Memo NMFS-SEFSC-455, 343 pp.

New England Fishery Management Council (NEFMC). 2003. Final Amendment 13 to the Northeast Multispecies Fishery Management Plan Including a Final Supplemental Environmental Impact Statement and an Initial Regulatory Flexibility Analysis. Newburyport, MA. Available at: http://www.nefmc.org/nemulti/index.html.

NEFMC, N. E. (2009). *Amendment 16 to the Northeast Multispecies Fishery Management Plan.* Newburyport, Massachusetts: New England Fishery Management Council.

NEFMC, N. E. (2009). *Amendment 3 to the Fishery Management Plan for the Northeast Skate Complex.* Newburyport, Massachusetts: New England Fishery Management Council.

NEFMC, N. E. (2012). *Framework Adjustment 47 to the Northeast Multispecies Fishery Management Plan.* Newburyport, Massachusetts: New England Fishery Management Council.

NEFSC, N. F. (2007). *Stock Assessment Workshop (44th SAW).* Northeast Fisheries Science Center.

NOAA Administrative Order Series 216-6. (1999). *Environmental Review Procedures for Implementing the Nation Environmental Policy Act.*

Northeast Fisheries Science Center (NEFSC). 2002. 1998. Report of the 26th Northeast Regional Stock Assessment Workshop: Stock Assessment Review Committee Consensus Summary of Assessments. NEFSC Ref. Doc. 98-03.

Northeast Fisheries Science Center (NEFSC). 2002. 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.

Northeast Fisheries Science Center (NEFSC). 2002. Report of the 30th Northeast regional Stock Assessment Workshop (30th SAW): Stock Assessment Review Committee (SARC) Consensus Summary of Assessments. Northeast Fisheries Science Center, Woods Hole, MA NEFSC Reference Document 00-03.

Northeast Fisheries Science Center (NEFSC). 2002. Assessment of 20 Northeast Groundfish Stocks through 2001: a report of the Groundfish Assessment Review Meeting (GARM), Northeast Fisheries Science Center, Woods Hole, MA, October 8-11, 2001.

NREFHSC, N. R. (2002). Workshop on the Effects of Fishing Gear on Marine Habitats Off the Northeastern United States. *Northeast Fish Sci Cent Ref Doc 02-01*, (p. 86). Boston, Massachusetts.

Overholtz, W.J. and A.V. Tyler. 1985. Long-term responses of the demersal fish assemblages of Georges Bank. U.S. Fisheries Bulletin 83(4):507-520.

Perrin, W.F., B. Wursig, and J.G.M. Thewissen, (eds). 2002. Encyclopedia of Marine Mammals. Academic Press, CA. 1414 pp.

Perry, S.L., D.P. DeMaster, and G.K. Silber. 1999. The great whales: History and status of six

species listed as endangered under the U.S. Endangered Species Act of 1973. Mar. Fish. Rev. Special Edition. 61(1): 59-74.

Perry, S.L., D.P. DeMaster, and G.K. Silber. 1999. The Sperm Whale In: The great whales: History and status of six species listed as endangered under the U.S. Endangered Species Act of 1973. Mar. Fish. Rev. Special Edition. 61(1): 59-74.

Sainsbury, J. C. 1996. Commercial fishing methods: an introduction to vessels and gears, Fishing News Books, Third Edition.

Schueller, P. and D. L. Peterson. 2006. Population status and spawning movements of Atlantic sturgeon in the Altamaha River, Georgia. Presentation to the 14th American Fisheries Society Southern Division Meeting, San Antonio, February 8-12th, 2006. Scott, W. B. and E. J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada Bulletin 184: 966 pp

Sears, R. 2002. Blue whale, Balaenoptera musculus. Pages 112-116 *in* W.F. Perrin, B. Würsig, and J.G.M. Thewissen, eds. Encyclopedia of Marine Mammals. San Diego: Academic Press.

Shoop, C.R. and R.D. Kenney. 1992. Seasonal distributions and abundance of loggerhead and leatherback sea turtles in waters of the northeastern United States. Herpetol. Monogr. 6: 43-67.

Southeast Fisheries Science Center (SEFSC). 2010. Sea Turtle Stranding and Salvage Network (STSSN) database. Available at: http://www.sefsc.noaa.gov/seaturtleSTSSN.jsp.

Stevenson, D., L. Chiarella, D. Stephan, R. Reid, K. Wilhelm, J. 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 Tech. Memo. NMFS-NE-181. 179 p.

Stein, A. B., K. D. Friedland, and M. Sutherland. 2004a. Atlantic sturgeon marine bycatch and mortality on the continental shelf of the Northeast United States. North American Journal of Fisheries Management 24: 171-183.

Stein, A.B., K. D. Friedland, and M. Sutherland. 2004b. Atlantic sturgeon marine distribution and habitat use along the northeastern coast of the United States. Transaction of the American Fisheries Society 133:527-537.

Swingle, W.M., S.G. Barco, T.D. Pitchford, W.A. McLellan, and D.A. Pabst. 1993. Appearance of juvenile humpback whales feeding in the nearshore waters of Virginia. Mar. Mamm. Sci. 9: 309-315.

Theroux, R.B. and M.D. Grosslein. 1987. Benthic fauna. Pp. 283-195 in: R.H. Backus (ed.), Georges Bank. MIT Press, Cambridge, MA.

Theroux, R.B. and R.L. Wigley. 1998. Quantitative composition and distribution of the macrobenthic invertebrate fauna of the continental shelf ecosystems of the northeastern United States. NOAA Technical Report NMFS 140. U.S. Dept. of Commerce, Seattle, WA.

Turtle Expert Working Group (TEWG). 1998. An assessment of the Kemp's ridley (Lepicochelys kempii) and loggerhead (Caretta caretta) sea turtle populations in the Western North Atlantic. NOAA Technical Memorandum NMFS-SEFSC-409. 96 pp.

Turtle Expert Working Group (TEWG). 2000. Assessment update for the Kemp's ridley and loggerhead sea turtle populations in the western North Atlantic. U.S. Dep. Commer. NOAA Tech. Mem. NMFS-SEFSC-444, 115 pp.

Turtle Expert Working Group (TEWG). 2009. An assessment of the loggerhead turtle population in the Western North Atlantic Ocean. NOAA Technical Memorandum NMFS-SEFSC-575:1-131.

Valentine, P.C. and R.G. Lough. 1991. The sea floor environment and the fishery of eastern Georges bank. Dept. of Interior, U.S. Geological Survey, Open File Report 91-439.

Waldman, J. R., J. T. Hart, and I. I. Wirgin. 1996. Stock composition of the New York Bight Atlantic sturgeon fishery based on analysis of mitochondrial DNA. Transactions of the American Fisheries Society 125: 364-371.

Waring, G.T. Elizabeth Josephson, Carol P. Fairfield, and Katherine Maze-Foley, Editors, with contributions from (listed alphabetically): Dana Beldon, Timothy V.N. Cole, Lance P. Garrison, Keith D. Mullin, Christopher Orphanides, Richard M. Pace, Debra L. Palka, Marjorie C. Rossman, and Fredrick W. Wenzel U.S. Atlantic and Gulf of Mexico marine mammal stock assessments - 2005. NOAA Technical Memorandum NMFS-NE-194

Waring, G.T., D.L. Palka, P.J. Clapham, S. Swartz, M. Rossman, T. Cole, L.J. Hansen, K.D. Bisack, K. Mullin, R.S. Wells, D.K. Odell, and N.B. Barros. 1999. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments - 1999. NOAA Technical Memorandum NMFS-NE-153.

Waring, G.T., J.M. Quintal, C. P. Fairfield (eds). 2002. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments - 2002. NOAA Technical Memorandum NMFS-NE-169. 318 p.

Waring, G.T., R.M. Pace, J.M. Quintal, C. P. Fairfield, K. Maze-Foley (eds). 2004. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments - 2003 . NOAA Technical Memorandum NMFS-NE-182. 287 p.

Waring, G.T., E. Josephson, C.P. Fairfield-Walsh, and K. Maze-Foley, (eds). 2006. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments - 2005. NOAA Technical Memorandum NMFS-NE-194. Available at: http://www.nmfs.noaa.gov/pr/sars/region.htm.

Waring, G.T., E. Josephson, C.P. Fairfield-Walsh, and K. Maze-Foley, (eds). 2009. Draft U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments – 2009. Available at: HYPERLINK "http://www.nmfs.noaa.gov/pr/sars/draft.htm" http://www.nmfs.noaa.gov/pr/sars/draft.htm .

Waring GT, Josephson E, Maze-Foley K, Rosel, PE, editors. 2011. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments -- 2010. NOAA Tech Memo NMFS NE 219; 598 p.

Watling, L. 1998. Benthic fauna of soft substrates in the Gulf of Maine. Pp. 20-29 in: Effects of fishing gear on the sea floor of New England, E.M. Dorsey and J. Pederson (eds.). MIT Sea Grant Pub. 98-4.

Wiley, D.N., R.A. Asmutis, T.D. Pitchford, and D.P. Gannon. 1995. Stranding and mortality of humpback whales, Megaptera novaengliae, in the mid-Atlantic and southeast United States, 1985-1992. Fish. Bull. (U.S.) 93:196-205.

Williamson, J. (1998). Gillnet fishing. In J. P. E.M. Dorsey, *Effects of fishing gear on the sea floor of New England* (pp. 87-89). MIT Sea Grant Pub.

Whitehead, H. 2002. Estimates of the Current Global Population Size and Historical Trajectory for Sperm Whales. Mar. Ecol. Prog. Ser. 242: 295-304.