



FEB 24 2014

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act (NEPA), an environmental review has been performed on the following action.

TITLE: Supplemental Environmental Assessment (EA) for a Bottom Gillnet/Longline Fishery in the Northwest Atlantic Fisheries Organization's Regulatory Area (NRA)

LOCATION: Atlantic International Waters

SUMMARY: This action would issue a High Seas Fisheries Conservation Act permit for up to 10 U.S. vessels to use bottom gillnets and longline gear within the NRA. An EA was originally developed in 2009 and then updated in 2012 to analyze the impacts associated with U.S. trawl fishing within the NRA. A supplemental EA is necessary to analyze the impacts associated with allowing vessels to use bottom gillnet and longline gear within the NRA.

RESPONSIBLE

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The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact (FONSI), including the EA, is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI we will consider any comments submitted that would assist us in preparing future NEPA documents. Please submit any written comments to the Responsible Official named above.

Sincerely,

Patricia A. Montanio
NOAA NEPA Coordinator

Enclosure



Supplemental Environmental Assessment for
A Gillnet/Longline Fishery in the
Northwest Atlantic Fisheries Organization's (NAFO)
Regulatory Area

Prepared by the Greater Atlantic Regional Fisheries Office
National Marine Fisheries Service

February 2014



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1.0 Executive Summary

This action would analyze the impacts of up to 10 U.S. vessels to fish with bottom longline and gillnet gear in the Northwest Atlantic Fisheries Organization (NAFO) Regulatory Area (NRA) through the issuance of permits under the High Seas Fishing Compliance Act (HSFCA). These vessels would be primarily targeting Atlantic halibut and skates in NAFO Divisions 3LNO, although other regulated and non-regulated species such as white hake, pollock, haddock, and monkfish may also be targeted as part of these operations. The purpose of this environmental assessment (EA) is to supplement the previous NAFO EA (November 2009) that analyzed the impacts on the human environment of issuing HSFCA permits to U.S. vessels to participate in the Northwest Atlantic trawl fishery, including any impacts to Endangered Species Act (ESA) listed species and marine mammals.

The proposed action is not expected to result in any significant impacts to target or non-target species, including Atlantic halibut, thorny skate, or other regulated and non-regulated species. U.S. vessels will be subject to applicable NAFO Conservation and Enforcement Measures (NCEM), including quotas allocated or available to the United States for each fishing year, as specified by NAFO at its annual meeting. Once any of the available quotas are projected to be harvested based on daily catch reports required by NAFO, the National Marine Fisheries Service (NMFS) will close the applicable directed fishery for applicable stocks to U.S. vessels. All U.S. vessels will be required to abide by the restrictive by-catch provisions established by NAFO, including for stocks currently under a moratorium, or when the “others” quotas for specific species are projected to be harvested. Additionally, should any management measures or quotas be developed for any of the species not currently regulated by NAFO, all U.S. vessels will be subject to such measures, as applicable. If the catch rates of currently unregulated species exceed sustainable levels in a manner that is inconsistent with the U.S. and NAFO fishery policy, NMFS could decide not to authorize the continuation of fishing operations that would affect such stocks in future years.

In terms of impacts to habitat, this action may result in a slight increase in overall fishing effort in the NRA. However, this action would involve the use of bottom longline and gillnet gear (i.e., non-mobile gear) in areas that have been subject to bottom trawl fishing for many years (the NAFO “Footprint Area”). Thus, it is unlikely that this action would have any additional adverse impact on habitat beyond that already analyzed for the trawl fishery. U.S. vessels will be required to abide by existing areas closed to protect sensitive habitats (seamount closures and coral protection zones), and provisions to protect vulnerable marine ecosystems (VME) and associated indicator species such as sea pens, corals, and sponges. Therefore, this action is not expected to result in any increased adverse impacts to habitat.

According to information provided by NAFO, there are no known interactions between bottom longline and gillnet gear and sea turtles or marine mammals listed under the Endangered Species Act (ESA) in the NRA. France (in respect of St. Pierre et Miquelon) has recorded the by-catch of one leatherback turtle in its coastal gillnet fishery, and Canada has recorded about 52 interactions with leatherback turtles in its Atlantic fisheries, although documented interactions in 2009 and 2010 all came from its tuna and swordfish fisheries that presumably use pelagic

longline gear rather than bottom longline or gillnet gear proposed in this action. There is documentation of a total of 3,048 unclassified sturgeon caught within the NAFO Convention Area since 1960 from all gear types. Of these, 137 have been caught between 2000–2011, with only 13 sturgeon identified as being caught within a particular area of the NAFO Convention Area, and all within Canadian Exclusive Economic Zone (EEZ) and outside of the NRA. Therefore, it is not possible to accurately evaluate how many Atlantic sturgeon were caught within the NRA using bottom longline and gillnet gear based on available data. Although it is recognized that Atlantic sturgeon are susceptible to being caught with gillnet gear, expected fishing operations under the proposed action would occur on the Grand Banks, an area where Atlantic sturgeon, particularly any of the distinct population segments (DPSs) recently listed under the ESA, are not likely to occur based on the depth of the fishing locations (approaching 200m – 2,000 m) and the distance from any rivers. Thus, although there is documentation of catch of ESA-listed species within the NAFO Convention Area, none of the catch has been documented using bottom longline or gillnet gear within the NRA. Accordingly, this action is not expected to increase the likelihood of interaction between ESA-listed species or marine mammals in the NRA, with any potential impacts to such species likely to be negligible.

Finally, this action is expected to have a positive impact on fishing communities since it would provide additional fishing opportunities to vessels, particularly those that participate in the Northeast multispecies (groundfish) fishery and the tuna/swordfish fisheries. In recent years, the groundfish fishery has been subject to substantial regulatory changes that have reduced available groundfish quotas and the ability of U.S. vessels to target species in the Northeast multispecies complex. Given recent reductions in quotas for groundfish stocks within U.S. waters, this action may provide additional groundfish fishing opportunities and associated revenue to help mitigate the impacts of reductions in the domestic groundfish fishery. Because tuna/swordfish vessels routinely use pelagic longline gear to target highly migratory species in the vicinity of the Grand Banks, opportunities to fish for other species within the NRA would provide additional fishing revenue to these vessels, and enhance the economic efficiency of vessel operations. Should NAFO establish allocations for any currently unregulated stocks within the NRA based on recent fishing history, landings of such stocks under this proposed action may result in additional fishing opportunities to U.S. vessels and affiliated fishing communities in the future. Therefore, any additional fishing opportunities that can be provided to these vessels are considered a positive benefit to the United States and affected entities. However, the degree of this positive impact is difficult to estimate due to the variable prices paid for certain species as well as the anticipated high operating costs associated with operating within the NRA.

2.0 Purpose and Need for Action

2.1 Background

The Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries (Convention), signed in Ottawa in October 1978, established NAFO. The prime objective of NAFO has been to contribute to the optimum utilization, rational management, and conservation of fishery resources in the NAFO Convention Area through consultation and cooperation among Contracting Parties. The NAFO Convention Area includes the NRA, with the NRA defined as the area within the NAFO Convention Area that lies outside the 200-mile maritime boundaries of

Canada and Denmark with respect to Greenland (see Figure 1). The United States became a member of NAFO following its accession to the Convention on November 29, 1995.

Prior to the United States becoming a member of NAFO, the organization established catch quotas for the species managed under the Convention, based upon prior catch history. Any country that became a party to NAFO following the establishment of these quotas was given a minimal quota, regardless of whether they had prior fishing history in the NRA. As a result, the United States received small quotas for some species (*Illex* squid and shrimp), and shared quotas for other species (redfish and yellowtail flounder) after it joined the organization. However, these quota allocations have been too small for U.S. vessels to conduct an economically viable fishery in the NRA. In 2008, the United States and Canada signed an arrangement concerning the transfer of up to 1,500 mt of 3LNO yellowtail flounder quota from Canada to the U.S. on an annual basis through December 31, 2018. Each year, the U.S. publishes a notice in the *Federal Register* soliciting members of the public that would be interested in harvesting available U.S. NAFO quota. Based on applications received, NMFS authorizes individual entities to harvest or charter vessels of other countries to harvest available U.S. allocations of NAFO-managed species based upon the greatest benefit to the United States. One U.S. vessel conducted trawl operations primarily for 3LNO yellowtail flounder in 2012, with two additional vessels authorized to conduct fishing operations on Atlantic halibut and skates using longline gear during 2013, pending analysis of the impacts of bottom longline and gillnet gear.

An EA that analyzed the U.S. participation in the Northwest Atlantic trawl fishery regulated under NAFO was completed on November 20, 2009. That analysis focused almost exclusively on the impacts of targeted fishing on yellowtail flounder and the associated bycatch of American plaice, and concluded that no significant impact was likely from the U.S. participation in the Northwest Atlantic trawl fishery. A supplement to the original EA was completed in May 2012, which analyzed the impacts of trawl operations on additional species of fish that are caught incidental to yellowtail flounder. That analysis also updated the previous analysis to account for changes in the status of several species listed under the Endangered Species Act, including the listing of several distinct population segments (DPSs) of loggerhead sea turtles and Atlantic sturgeon as endangered or threatened on September 22, 2011, and February 6, 2012, respectively.

2.2 Purpose and Need

Following substantial reductions in annual catch limits for several groundfish species managed under the Northeast (NE) Multispecies Fishery Management Plan (FMP) and the noted successes of the U.S. vessel fishing for yellowtail flounder in the NRA during 2012, several individuals expressed interest in fishing for other groundfish species using bottom gillnets and longline gear. At least one such individual owns a pelagic longline vessel that routinely fishes for tuna and swordfish on the Grand Banks under the provisions of the International Convention for the Conservation of Atlantic Tunas (ICCAT). Given the recent substantial reductions in domestic groundfish catch limits, the need of this action is to provide an economic opportunity to vessels that fish with bottom longline or gillnet gear to explore other fishing opportunities for groundfish species, including those on the Grand Banks and within the NRA.

The purpose of this action is to issue HSFCA permits authorizing U.S. fishing vessels to fish with bottom longline and gillnet gear in the NRA. These permits would be updated yearly to reflect quota available to U.S. vessels, and which vessels were selected to fish available U.S. quotas within the NRA.

3.0 Summary of Alternatives

Based on the stated purpose and need for this action, only two alternatives were considered, as described below. Separate alternatives to issue HSFCA permits only to vessels using either bottom longline or gillnet gear to fish in the NRA were not considered due to the similarity of the operations of both gear types and their associated impacts on targeted species and habitat. Although gillnet gear is more likely to interact with protected species such as Atlantic sturgeon, because the potential interactions are expected to be rare, it was determined that the difference in risk to protected species between the gear types was insufficient to warrant the consideration of a separate alternative to only allow HSFCA permits to be issued to bottom longline or gillnet vessels. Considering there is a discrete choice between issuing HSFCA permits and not issuing HSFCA permits, the following alternatives represent a reasonable range of alternatives for this action.

3.1 No Action (Do Not Issue HSFCA Permits)

Under this alternative, U.S. vessels would not be issued HSFCA permits to fish with bottom longline and gillnet gear in the NRA. Permits issued under the HSFCA are required for any U.S. fishing vessel that intends to fish on the high seas, waters outside of the territorial seas or outside of the EEZ of any nation. In order to fish for available U.S. quota within the NRA, U.S. vessels must obtain a HSFCA permit and comply with all the conditions of that permit, including compliance with the all management measures established by NAFO. Therefore, the No Action alternative would not issue any HSFCA permits to U.S. vessels. Without such permits, the vessels are prohibited from fishing within the NRA.

3.2 Preferred Alternative (Issue HSFCA Permits)

Under this alternative, up to 10 U.S. vessels would be issued HSFCA permits, and would be authorized to fish with bottom longline and gillnet gear within the NRA (Figure 1). Specifically, U.S. vessels issued a HSFCA permit would be authorized to fish for species allocated to the U.S. under NAFO within the NRA, including 3LNO yellowtail flounder, 3M redfish, Subareas 3 and 4 *Illex* squid, and 3L shrimp. U.S. vessels would also be able to land available amounts of species allocated to all Contracting Parties under the “others” quota for each species, including 3LN and 3O redfish, 3M cod, 3NO white hake, and 3LNO skates. Finally, U.S. vessels would be able to fish for and land any species within the NRA that is not currently regulated or actively managed by NAFO, including, but not limited to, Atlantic halibut, monkfish, pollock, and haddock.

4.0 Affected Environment

The current status of all stocks actively managed under NAFO, as listed in Annex I.A and B of the NAFO CEM, as well as the anticipated bycatch species associated with bottom longline and gillnet operations within the NRA. Scientific advice for other stocks can be obtained from the Scientific Council's annual reports, which are available to the public on NAFO's website at <http://www.nafo.int/publications/frames/science.html>. Please note that all stocks are not assessed annually.

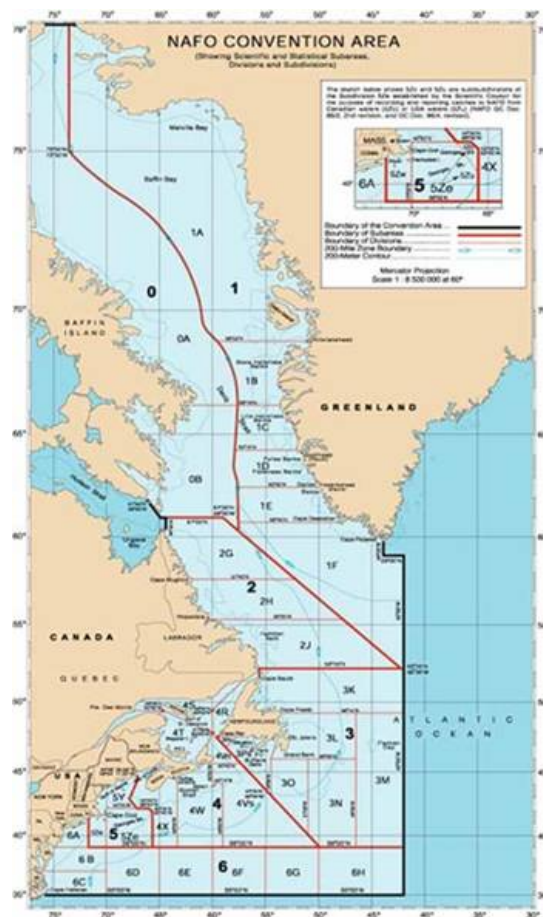


Figure 1. NAFO Convention Area

4.1 Target and Non-Target Species

The following includes a description of the past management and fishing history of each species, and the current stock status of each stock expected to be affected by this action, where available. If not available, information on catch history of that stock within the NRA, or stock status for the same species in an adjacent management area is presented to provide information necessary to characterize the relative status of the species and evaluate the impacts of this action. Information on the general biology of each species such as habitat and food preference and growth rates can be found in the sources cited for each species.

4.1.1 Yellowtail flounder (*Limanda ferruginia*) in Divisions 3LNO

There was a moratorium on directed fishing on 3LNO yellowtail flounder from 1994 to 1997, and small catches were taken as bycatch in other fisheries. The fishery was re-opened in 1998 and catches increased from 4,400 mt in 1998 to 13,900 mt in 2005. Total allowable catch levels (TACs) were exceeded each year from 1985 to 1993, and 1998-2001, but not since 2001. In 2006 and 2007, catches were much lower than the TACs, but this was due to an industry related issue (union strike), not a resource availability issue. Figure 2 illustrates historic catch of yellowtail flounder in Divisions 3LNO.

Table 1. 3LNO Yellowtail Catch in Relation to TACs (2005 - 2012)

Year	TAC (mt)	Catch (mt)
2005	15,000	13,900
2006	15,000	900
2007	15,500	4,400
2008	17,000	11,400
2009	17,000	6,200
2010	17,000	9,400
2011	17,000	5,200
2012	17,000	3,100

Source: June 2013 NAFO Scientific Council Report (NAFO 2013a)

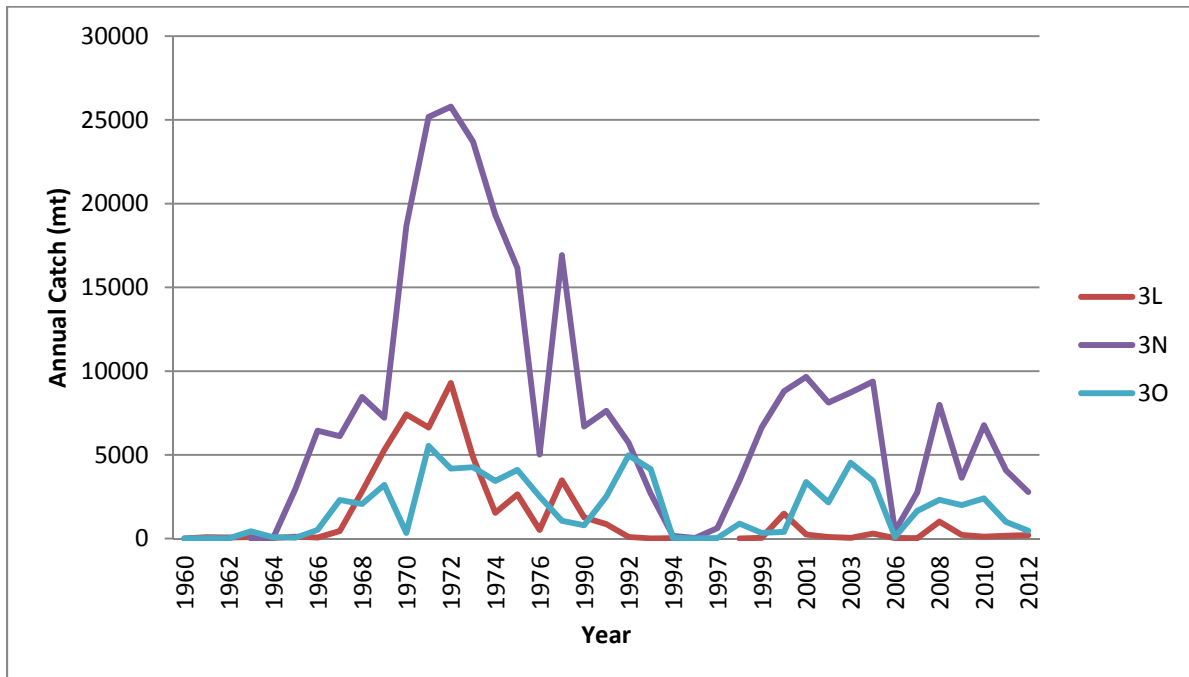


Figure 2. Historic Catch of Yellowtail Flounder in NAFO Divisions 3LNO

The fishing mortality rate (F) necessary to achieve maximum sustainable yield (MSY) is estimated to be 0.25. The F on 3LNO yellowtail flounder has been below F_{MSY} since 1994. In

2011, F was less than $1/3$ of F_{MSY} (NAFO 2011a). Stock size has steadily increased since 1994, and biomass (B) has been estimated to be above the level of B_{MSY} since 1999. Recent recruitment appears to be about average (NAFO 2013a). With biomass continuing to increase and F decreasing (see Figure 3), there is a very low risk of exceeding F_{MSY} or biomass dropping below B_{lim} (NAFO 2013a).

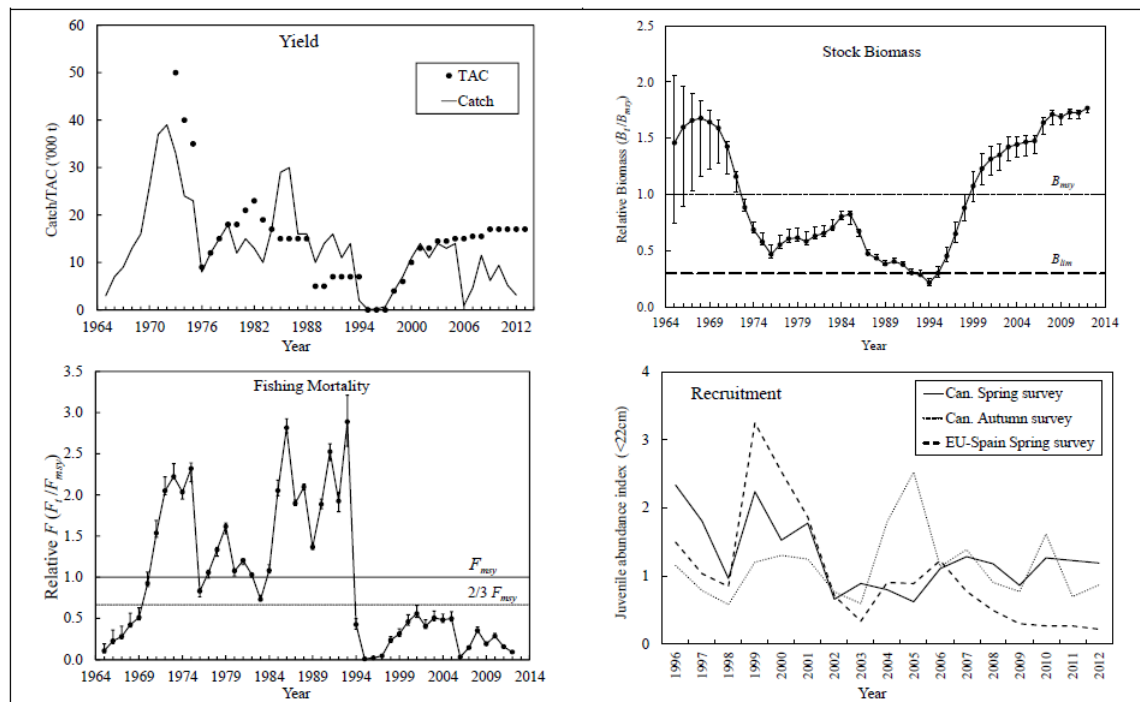


Figure 3. Yield, Fishing Mortality, Biomass, and Recruitment for 3LNO Yellowtail Flounder

Source: NAFO 2013a)

In its 2012 report (NAFO 2012a), the NAFO Scientific Council noted that the yellowtail flounder fishery takes cod and American plaice as bycatch. Thus, in establishing the TAC for yellowtail flounder, the Scientific Council noted that the impacts on Division 3NO cod and Division 3LNO American plaice of any increase in yellowtail flounder TAC should be considered. Further, because of the uncertainty in the estimation of F_{MSY} , the Scientific Council recommended in 2011 that catch levels should not be set above 85 percent F_{MSY} . Catch projections at various levels of F are provided in Table 2.

Table 2. Catch Projections for 3LNO Yellowtail Flounder for 2012 and 2013

Projected F	Catch 2012 (mt)	Catch 2013 (mt)
F_{2011} (catch=17,000mt)	8,900	9,000
$2/3 F_{msy}$	19,900	18,900
$75\% F_{msy}$	22,200	20,800
$85\% F_{msy}$	25,000	22,900
F_{msy}	28,800	25,700

Source: June 2011 NAFO Scientific Council Report (NAFO 2011a)

4.1.2 American plaice (*Hippoglossoides platessoides*) in Divisions 3LNO

This fishery has been under moratorium since 1995. Total catch in 2010 was 2,898 mt, mainly taken in the NRA as by-catch in the Canadian yellowtail flounder fishery (Table 3). Updated catch data for 2011 could not be estimated, however. Since 1995, catch increased, but has decreased since 2003. Figure 4 illustrates the historic catch of American plaice in NAFO Divisions 3LNO.

Table 3. Catch of 3LNO American Plaice in Relation to TACs (2005-2012)

Year	TAC (mt)	Catch (mt)
2005	Moratorium	4,100
2006	Moratorium	2,800
2007	Moratorium	3,600
2008	Moratorium	2,500
2009	Moratorium	3,000
2010	Moratorium	2,900
2011	Moratorium	1,200
2012	Moratorium	1,300

Source: June 2013 NAFO Scientific Council Report (NAFO 2013a)

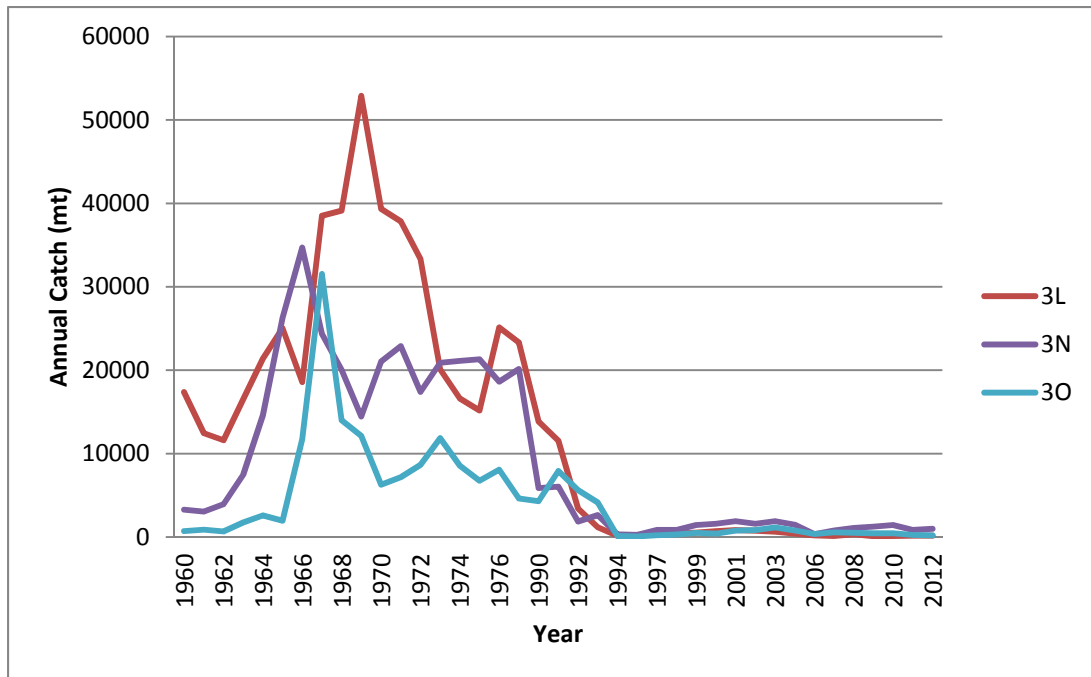


Figure 4. Historic Catch of American Plaice in NAFO Divisions 3LNO

Average F on ages 9 to 14 showed an increasing trend from about 1965 to 1985. There was a large unexplained peak in F in 1993. The average F on ages 9 to 14 increased since 1995, but has declined since 2001. However, considering the stock is under moratorium, average F remains high (Figure 5) according to the June 2011 Scientific Council report (NAFO 2011a).

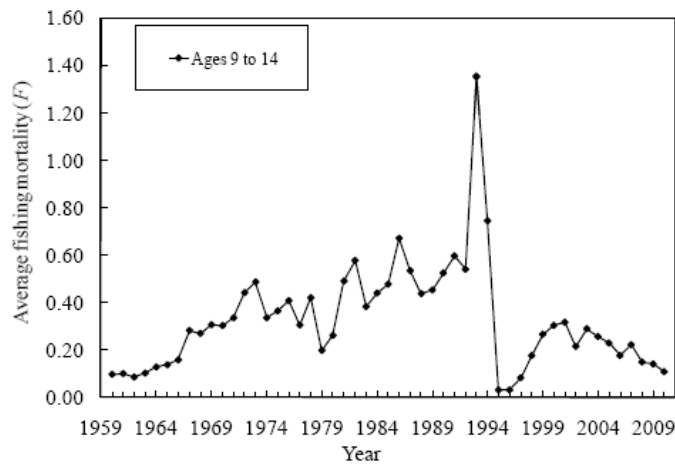


Figure 5. Estimated Average F for 3LNO American Plaice

Assessment results (conducted via Virtual Population Analysis) showed that population abundance and biomass declined fairly steadily from the mid-1970s to 1995. Spawning stock biomass has been steadily increasing since 1995, reaching 34,000 mt in 2011 (Figure 6). However, biomass is very low compared to historic levels. Previous estimates of SSB at 41,000 mt in 2009 have since been lowered. Therefore, projections that the stock would surpass B_{lim} (50,000 mt) by 2010 have yet to be realized, despite progress toward rebuilding this stock. Current fishing mortality is below the F_{lim} of 0.31 for this stock. According to the Scientific Council, bycatch should be maintained as low as possible and be restricted to unavoidable bycatch in other targeted fisheries (NAFO 2011a).

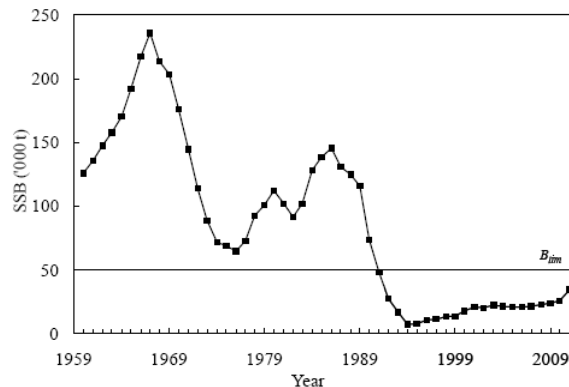


Figure 6. Estimated Biomass for 3LNO American Plaice

4.1.3 Witch Flounder (*Glyptocephalus cynoglossus*) in Divisions 3N and 3O

Like American plaice, this stock has been under a directed fishing moratorium since 1995. The stock mainly occurs in Division 3O along the deeper slopes of the Grand Bank. Catches exceeded 14,000 mt in 1971, fell to below 3,000 mt in 1980, increased to 9,100 mt in 1986, and have since declined to below 1,000 mt since 1994. During 1995-2002, bycatch (under the

moratorium) ranged between 300 and 800 mt. In 2003, catches were estimated to be between 844 mt and 2,239 mt. Since then, annual catches have ranged between 600 mt (in 2004) and 200 mt (Table 4), with 2011 catch estimated at 351 mt. Figure 7 depicts historic catch of witch flounder in NAFO Divisions 2NO since 1960.

Table 4. 3NO Witch Flounder Catch in Relation to TACs (2005-2011)

Year	TAC (mt)	Catch (mt)
2005	Moratorium	300
2006	Moratorium	500
2007	Moratorium	200
2008	Moratorium	300
2009	Moratorium	400
2010	Moratorium	400
2011	Moratorium	400

Source: 2012 NAFO Scientific Council Report (NAFO 2012a)

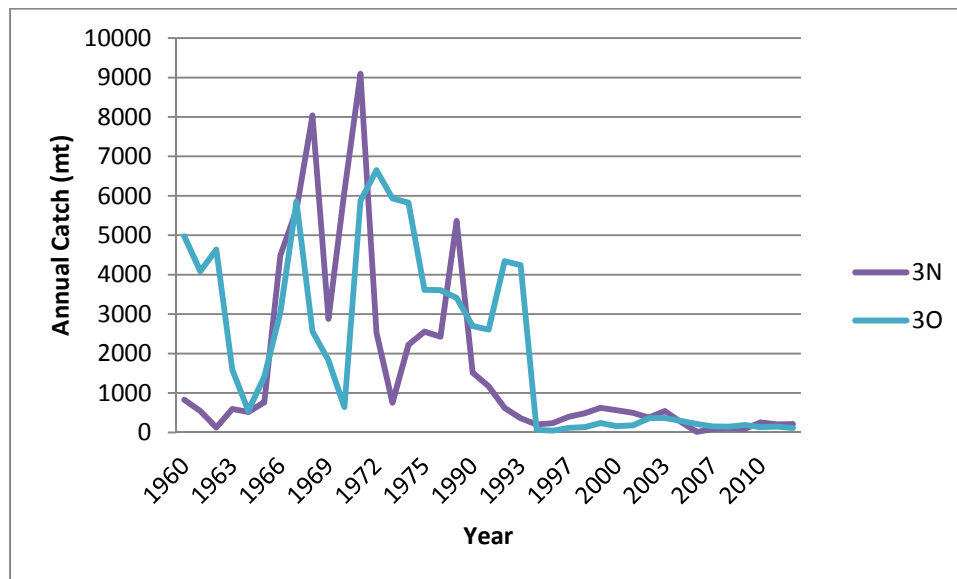


Figure 7. Historic Catch of Witch Flounder in NAFO Divisions 3NO

As noted in the NAFO Scientific Council's 2011 report, an analytical assessment is not possible for this species with current data (NAFO 2011). The Scientific Council noted that survey biomass indices declined from the mid-1980s through the late 1990s, reaching a record-low in 1998. Subsequently, the survey indices have been increasing in recent years, although they still remain relatively low and subject to considerable uncertainty. Thus, the stock remains at a low level. Recruitment has been poor since 2002.

4.1.4 Cod (*Gadus morhua*)

4.1.4.1 Divisions 3N and 3O

The cod stock in NAFO Divisions 3NO has been under a directed fishing moratorium since February 1994, both inside and outside the Regulatory Area. Catches increased from the implementation of the moratorium until 2003, when 4,800 mt was caught. Since 2006, catches have increased steadily to 1,100 mt in 2009, before declining to 826 mt in 2011 (Table 5). The rebuilding plan for Divisions 3NO cod states that for 2008 and subsequent years, Contracting Parties shall seek to achieve a targeted reduction of 40 percent from the average annual catch during the 2004-2006 period (700 mt) or, through best efforts. Figure 11 depicts historic catch of cod in NAFO Divisions 3MNO.

Table 5. 3NO Cod Catch in Relation to TACs (2005-2011)

Year	TAC (mt)	Catch (mt)
2005	Moratorium	700
2006	Moratorium	600
2007	Moratorium	800
2008	Moratorium	900
2009	Moratorium	1,100
2010	Moratorium	900
2011	Moratorium	800

Source: 2012 NAFO Scientific Council Report (NAFO 2012aa)

Based on the Canadian spring and fall surveys, both total stock biomass and SSB remained low through 2008. Recruitment during 1991-2004 was poor. However, the 2005 and 2006 year classes are the strongest since 1989 and 1990. The survey index for this stock substantially increased in 2009, resulting in the highest in survey index since 1993 due in large part to improved recruitment from the 2005-2007 year classes, but dropped in 2010 and 2011 to levels near those observed in 2008. A survey by Spain showed increase in the 2010 and 2011 survey index for this stock, with the 2011 index estimated as the highest in the time series (NAFO 2012a). The stock remains close to its historical low, with SSB well below B_{lim} (60,000 t), although there has been a dramatic increase in spawning biomass since about 2008 (see Figure 8).

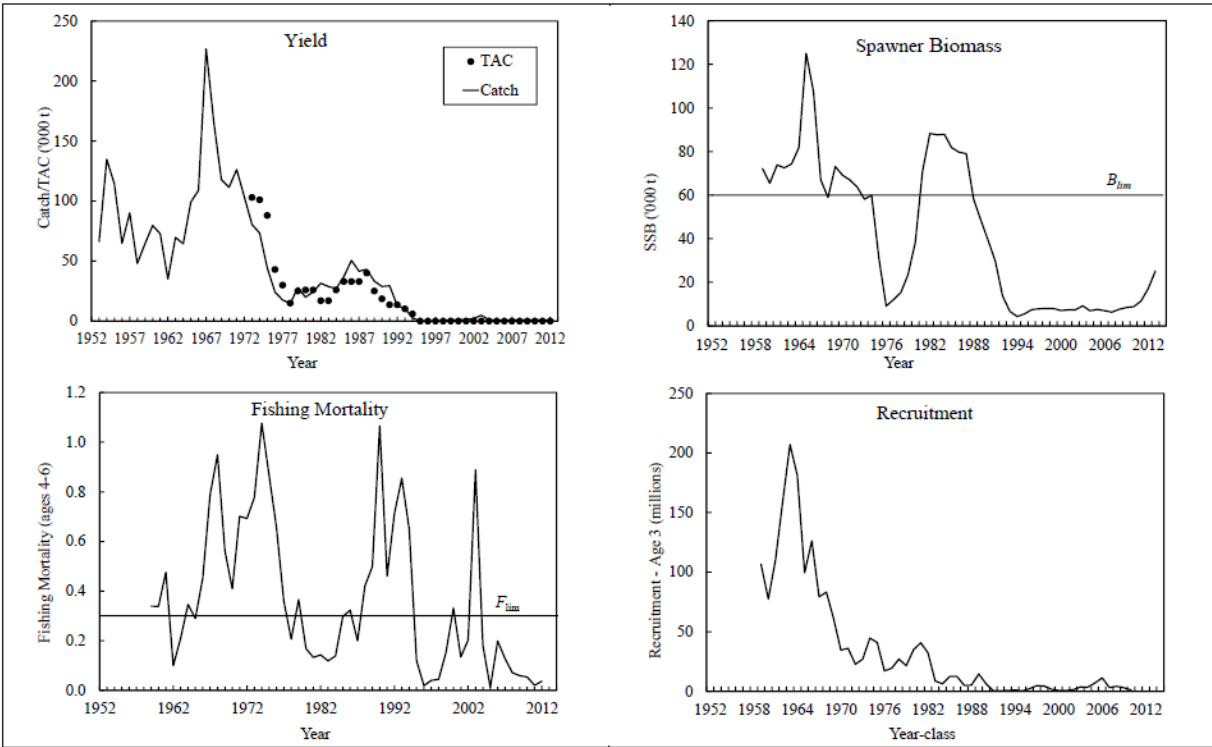


Figure 8. Yield, Fishing Mortality, Spawning Biomass, and Recruitment of 3NO Cod

Source: NAFO 2013a)

4.1.4.2 Division 3M

Cod catches on the Flemish cap exceeded the TAC from 1988 to 1994, but were below the TAC from 1995 to 1998. The directed fishery was closed in 1999, with bycatch estimated at 353 mt, mostly caught by non-Contracting Parties. Yearly bycatch was below 60 mt from 2000 to 2005, rising to 1161 mt by 2009. In 2010, the directed fishery was reopened, with a 5,500 mt TAC, although 2010 catch was estimated to be 9,192 mt. Catch in 2011 was estimated to be 13,900 mt (NAFO 2012a), above the 10,000 mt TAC. According to the 2012 Scientific Council report, SSB is the highest of the time series and well above B_{lim} of 14,000 mt (NAFO 2012b). Figure 11 depicts historic catch of cod in NAFO Divisions 3MNO.

SSB has been increasing since 2002, with sharp increases since 2008. This increase is largely due to reasonably abundant year classes during 2005-2010 (Figure 9). The F on 3M cod remained very low from 2001 to 2009, but increased in 2010-2012 due to the reopening of the directed fishery (Figure 10). The 2012 F is nearly twice F_{max} (0.135). Recruitment remains among the highest in the time series, but still lower than previously observed (NAFO 2013a). The Scientific Council suggests that maintaining current F is not sustainable in the long-term. Based on projections in the 2013 SC Report, SSB is expected to continue to increase, although not as high as if F would remain below F_{max} (NAFO 2013a).

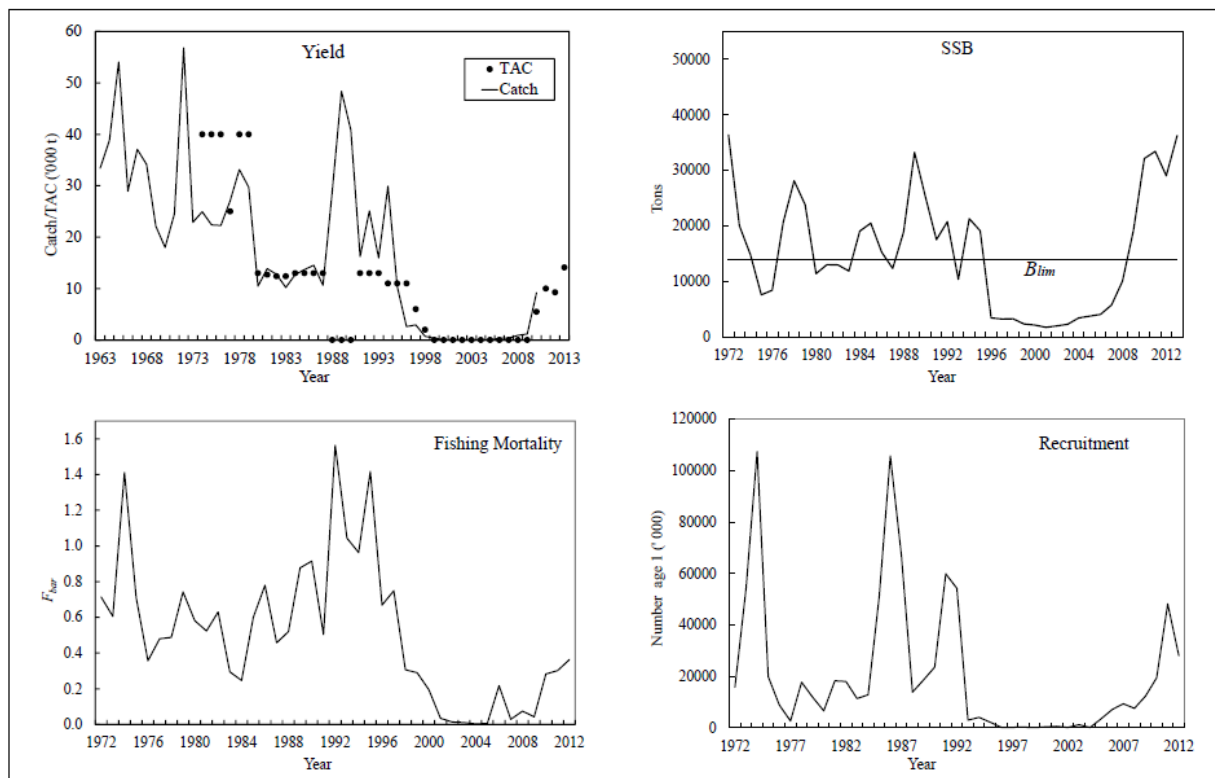


Figure 9. Yield, Fishing Mortality, Spawning Biomass, and Recruitment of 3M Cod
Source: NAFO 2013a

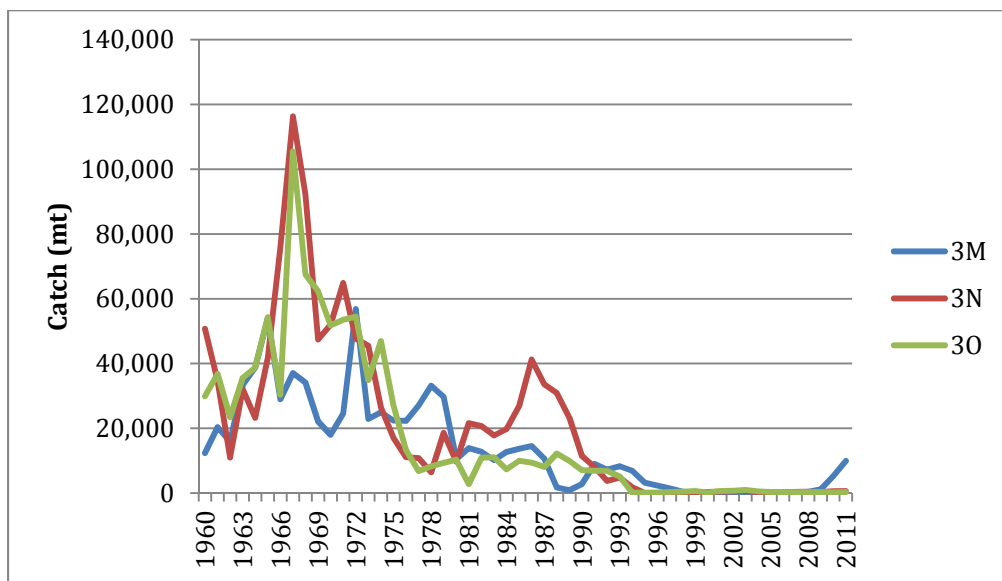


Figure 10. Historic Catch of Cod in NAFO Divisions 3MNO

4.1.5 White Hake (*Urophycis tenuis*) in Divisions 3N and 3O

Catch of white hake in Division 3NO peaked in 1987 at 8,100 mt, but then declined from 1988 to an average catch of 464 mt by 2001. Catch increased in 2002 and 2003 to 6,718 and 4,823 mt, respectively, before falling again to an average of 767 mt from 2005 – 2009. Catch in 2010 was 226 mt, substantially below the 6,000 mt TAC. Figure 11 depicts historic white hake catch in NAFO Divisions 3NO.

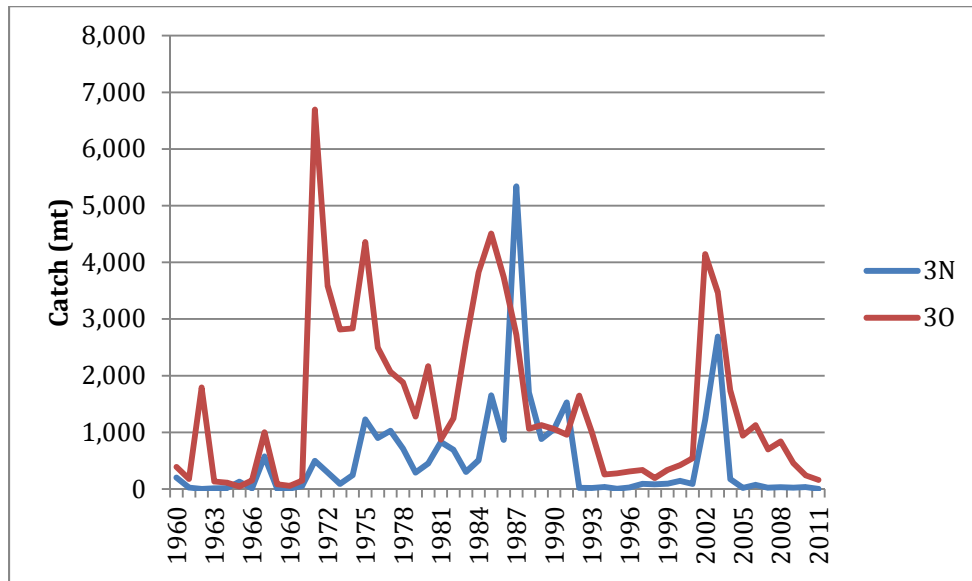


Figure 11. Historic Catch of White Hake in NAFO Divisions 3NO

Based on Canadian trawl surveys, the biomass index increased in 2000 due to the large 1999 year-class, but has since decreased. Currently, biomass is estimated to be comparable to the biomass index estimated during 1996 - 1999. A similar pattern is observed with estimated F (Figure 12). Because of low recruitment in recent years, the Scientific Council cautions that a 6,000 mt quota is unrealistic, recommending that catch remain at current levels (~100-300 mt) (NAFO 2013a).

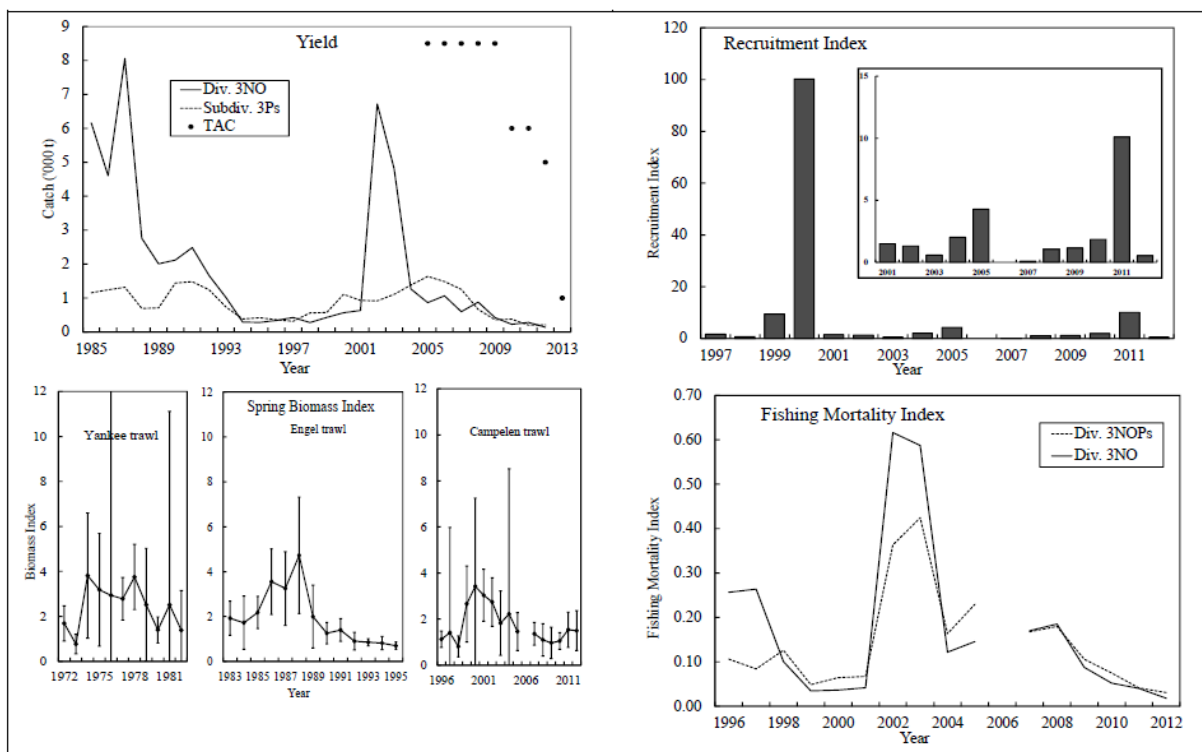


Figure 12. Yield, Fishing Mortality, Spawning Biomass, and Recruitment of 3NO White Hake

Source: NAFO 2013a

By-catch in the white hake fishery is primarily comprised of skates, particularly in Division 3O, Skate by-catch has ranged from 0.6 percent of total catch to 24 percent (NAFO 2012a).

4.1.6 Redfish (*Sebastes* spp.)

4.1.6.1 Division 3M

Three species of redfish are fished commercially in Division 3M: Deep-water redfish (*Sebastes mentella*), golden redfish (*Sebastes marinus*) and Acadian redfish (*Sebastes fasciatus*), although deep-water and Acadian redfish have dominated recent catch in this area. Redfish catch peaked at 81,000 mt in 1990, but has since decreased to a low of 1,100 mt in 1999. Catch increased beginning in 2005 due to the emergence of a golden redfish fishery in shallower waters. In 2011, total catch of deep-water and Acadian redfish reached 9,700 mt, with another 4,600 mt of golden redfish caught within Division 3M. With the exception of 2010 and 2011, catch of deep-water and Acadian redfish alone has exceeded established TACs (NAFO 2012a).

Fishing mortality has remained relatively stable since the late 1990s, with biomass increasing steadily since then (see Figure 10 from NAFO 2013a). Recruitment has declined substantially since peaking in 2006 and again in 2009 (Figure 13). Estimated F has remained substantially lower than F estimated in the late 1980s – mid 1990s. According to the Scientific Council, F should be maintained at the current levels (0.1) to sustain the female SSB over the short term.

This corresponds to a total redfish catch of 6,500 mt in 2012 and 2013 (NAFO 2011). The 2013 Scientific Council recommended that current TAC (6,500 mt) be maintained. Historic catch of redfish in NAFO Divisions 3LMNO is depicted in Figure 14.

Cod is the primary by-catch species in the 3M redfish fishery according to the 2012 Scientific Council report (NAFO 2012a).

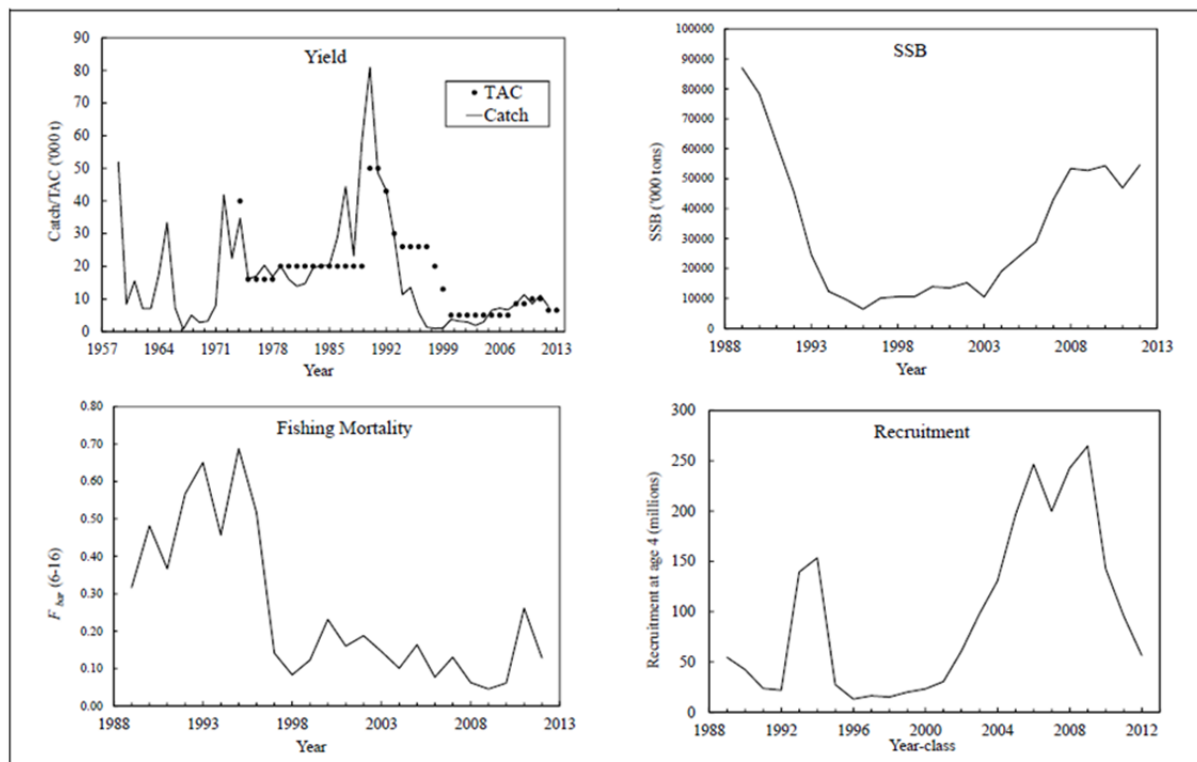


Figure 13. Yield, Fishing Mortality, Spawning Biomass, and Recruitment of 3M Redfish
Source: NAFO 2013a

4.1.6.2 Divisions 3LN and 3O

Similar to Division 3M, redfish catch in Division 3LN and 3O is dominated by deep-sea and Acadian redfish. In Divisions 3LN, catches averaged 21,000 mt from 1965-1985, increasing to an average of about 40,000 mt from 1986-1993, and then decreasing afterward to range between 450 – 3,000 mt each year. A moratorium was enacted on Division 3LN redfish from 1998 – 2009, with the directed fishery reopening in 2010, resulting in an estimated catch of 4,100 mt during 2010 and 5,400 mt in 2011 (NAFO 2012a). In Division 3O, catches have ranged between 3,000 to 15,000 mt since 1960, peaking at over 22,000 mt in 2001. Since then, catch has fluctuated, declining recently to an estimated 5,200 mt in 2010. Historic catch of redfish in NAFO Divisions 3LMNO is depicted in Figure 14.

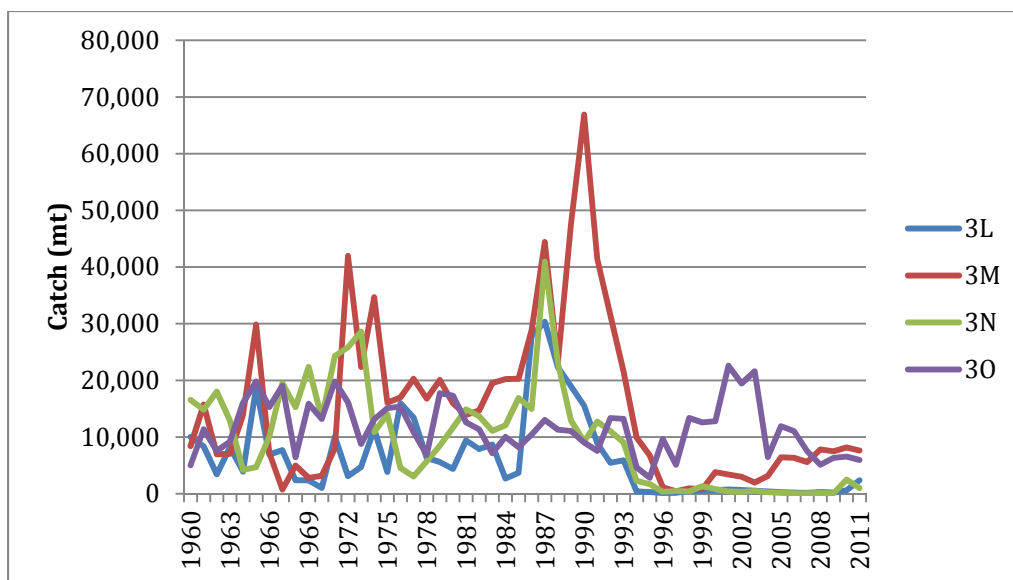


Figure 14. Historic Catch of Redfish in NAFO Divisions 3LMNO

In Divisions 3LN, estimated biomass indices decreased following the period of increased catch through the early 1990s, but have since increased, particularly since 2006. Estimated biomass indices appear to be above the long-term average during recent years, suggesting that there has not been a change in the status of the stock in recent years, particularly since the reopening of the fishery in 2010. Biomass appears to be above B_{MSY} , with F below F_{MSY} (NAFO 2012a). In Division 3O, despite considerable variability in previous survey catch, mean weight per tow has increased substantially since 2002, suggesting improvement in the status of the stock (NAFO 2011). The 2013 stock assessment indicated that both Spanish and Canadian biomass indices continue to increase, with F decreasing in 3O (NAFO 2013a). The Scientific Council suggests that catches at about 13,000 mt appear to be sustainable for 3O redfish.

According to the 2012 Scientific Council report (NAFO 2012a), Greenland halibut is the primary by-catch in the 3L redfish fishery, with only trace amounts of witch flounder and American plaice. In the 3O redfish fishery, witch flounder, white hake, haddock, skates, and cod are the primary by-catch species.

4.1.7 Northern Shortfin Squid (*Illex illecebrosus*) in Subareas 3+4

In the late 1970s, catch of *Illex* squid in Subareas 3+4 peaked at over 160,000 mt, but have more recently ranged between 57 – 7,000 mt, with about 123 mt being caught in 2011 and mostly from Division 3KL. Since 1980, catch has been well below established TACs. Historic catch of *Illex* squid in NAFO Subareas 3+4 within the NRA is depicted in Figure 15.

Canadian survey indices for *Illex* squid have varied substantially. Recent survey indices show a slight decline in abundance in recent years, with the 2010 and 2011 survey indices below the average since 1982. Mean body weight slightly increased in 2010, only to decline again in 2011,

with values only slightly above the average since 1982. Overall, the stock is considered to be in a state of low productivity (NAFO 2012a).

Table 6. Subareas 3+4 Illex Squid TACs and Catch Since 2003

Year	TAC (mt)	Catch (mt) ¹
2003	34,000	1,100
2004	34,000	2,600
2005	34,000	600
2006	34,000	7,000
2007	34,000	200
2008	34,000	500
2009	34,000	700
2010	34,000	100
2011	34,000	100

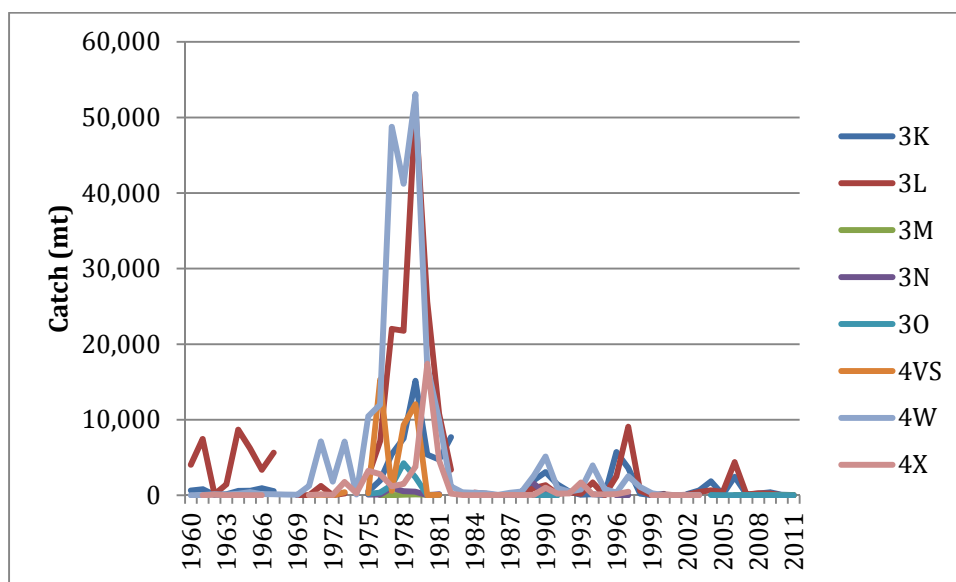


Figure 15. Historic Illex Squid Catch in NAFO Subareas 3+4 within the NRA

4.1.8 Northern Shrimp (*Pandalid* and *Penaeus Sp.*) in Divisions 3LNO

Shrimp found in the NRA include both *Pandalid* and *Penaeus* species. Exploratory fishing on 3LNO shrimp began in 1993. A TAC was set in 2000. As depicted in Figure 16, catch of shrimp takes place predominantly in NAFO Division 3L, with only trace amounts being caught in Division 3N.

In recent years, Denmark has objected to TACs recommended by the Scientific Council. Accordingly, agreed upon TACs are higher than Scientific Council recommendations. However, none of the annual TACs since 2005 have been exceeded based on catch data submitted by Contracting Parties. Based on survey biomass indices, biomass increased through 2007, but has

since decreased by 75 percent by 2012. No additional data regarding recruitment is available. Estimated exploitation rates have remained below 0.15 through 2010, but have since increased. If the 12,000 mt TAC is taken in 2012, the predicted exploitation rate would be 0.20. It is estimated that the female biomass is above, but approaching B_{lim} in 2011. That, in conjunction with the apparent decline in biomass over the past few years lead the Scientific Council to recommend that exploitation rates should be kept below current levels (NAFO 2011).

Table 7. 3LNO Northern Shrimp TACs and Catch Since 2007

Year	TAC (mt)	Catch (mt) ¹
2004	13,000	11,937
2005	13,000	,3,533
2006	22,000	21,426
2007	22,000	21,543
2008	25,000	21,121
2009	30,000 ²	24,142
2010	30,000 ²	16,310
2011	19,200 ²	12,836
2012	12,000	

¹STATLANT 21A data in the 2012 NAFO Scientific Council Report (NAFO 2012a). Note: These landings differ from landings recently downloaded using the STATLANT 21A extraction tool on the NAFO website and depicted in Figure 16.

²Although the recommended TAC was 25,000 mt and 17,000 mt in 2009 – 2010 and 2011, respectively, Denmark objected to the recommended quota, thereby increasing the agreed upon quota to that outlined in this table.

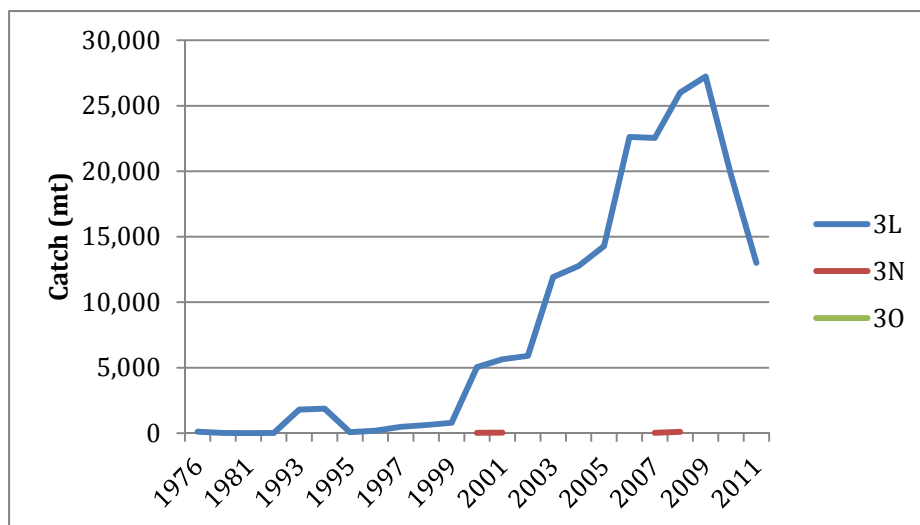


Figure 16. Historic Northern Shrimp Catch in NAFO Division 3LNO

4.1.9 Thorny Skate (*Amblyraja radiata*) in Divisions 3L, 3N, 3O and Subdivision 3Ps

Although commercial catches of skates in the NRA comprise a mix of skate species, the skate fishery on the Grand Banks can be considered a directed fishery for thorny skate since this

species comprises about 95 percent of the skate taken in Canadian and European Union (EU)-Spain catches. Nominal catches increased in the mid-1980s with the commencement of a directed fishery for thorny skate. The main participants in this fishery were EU-Spain, Canada, Russia and EU-Portugal. Canada fished for thorny skate in the western part of Division 3O and in Subdivision 3Ps while the remainder of the countries fished primarily in Division 3N and to a lesser extent in Division 3O. Prior to the mid-1980s, this species was commonly taken as a by-catch in other fisheries and continues to be taken as a by-catch, mainly in the Greenland halibut fishery and in the Canadian mixed fishery for thorny skate, white hake and monkfish in Division 3NOPs in the Canadian zone. Catches in Division 3LNOPs peaked at about 36,000 mt in 1991. From 1985 to 1991, catches averaged 25,000 mt but were lower during 1992-1995 (9,600 mt). During 2005 – 2012, catch averaged just under 5,400 mt in Division 3LNO, well below established quotas (Table 8). Historic catch of unclassified skate (most likely predominantly thorny skate) in NAFO Divisions 3LNO is depicted in Figure 17.

Table 8. 3LNO Thorny Skate Catch in Relation to TACs (2005 - 2010)

Year	TAC (mt)	Catch (mt)
2005	13,500	3,500
2006	13,500	5,500
2007	13,500	6,200
2008	13,500	7,100
2009	13,500	5,700
2010	12,000	5,400
2011	12,000	5,400
2012	8,500	4,200

Source: June 2013 NAFO Scientific Council Report (NAFO 2013a)

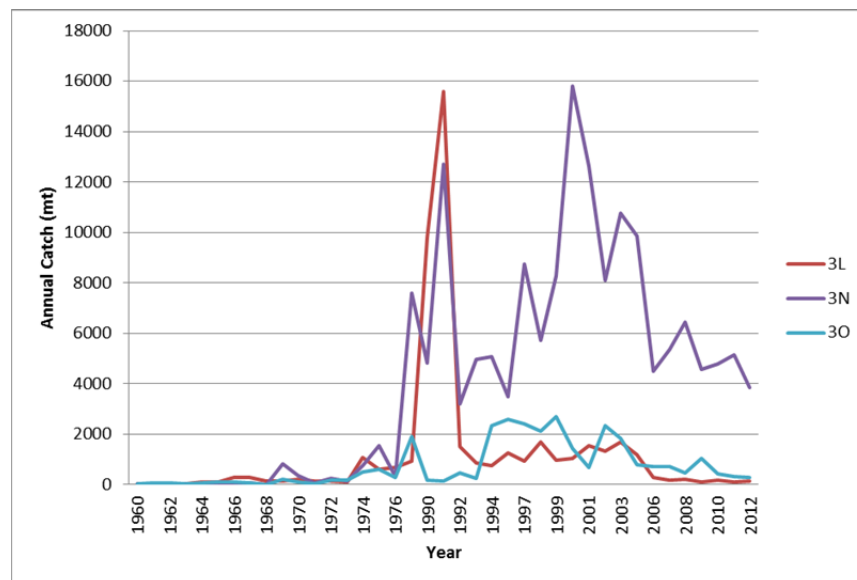


Figure 17. Historic Catch of Unclassified Skates in NAFO Divisions 3LNO

Canadian spring survey biomass indices fluctuated without trend prior to the mid-1980s, then rapidly declined until the early 1990s. Since 1997, Canadian spring survey biomass indices have shown an increasing trend, while the Canadian fall survey has been relatively stable (NAFO 2012a). The Spanish survey in the NRA shows a declining trend since 2007. Recruitment was stable from 1996-2009, but has since increased to about 50 percent above average in 2010 and 2011. At its 2013 meeting, the Scientific Council did not find any new information that would suggest the status of this stock has changed (NAFO 2013a).

Redfish, haddock, and white hake comprise the majority of by-catch in the 3LNO skate fishery based on the 2012 Scientific Council report (NAFO 2012a).

4.1.10 Atlantic Halibut in Divisions 3NOPs, 4VWX, and 5Zc

The Canadian Department of Fisheries and Oceans (DFO) established the extensive stock area (from the Grand Banks to the U.S. EEZ line on Georges Bank) for Atlantic halibut based on tagging studies indicating that this species migrates along the coast of Atlantic Canada. The DFO first managed Atlantic halibut in 1988 by imposing a TAC, followed by a minimum fish size of 81 cm in 1994 (DFO 2012a). The most recent stock assessment for the Atlantic halibut stock occurred in November 2010. The assessment indicated that the stock is in a productive period due to high recruitment in recent years. Estimates of F_{MSY} ranged from 0.2 to 0.36, with estimates of B_{MSY} ranging from 5,073 to 9,615 mt (DFO 2012a). A catch of 2,463 mt was estimated to produce a neutral probability of exceeding the target removal rate (F_{ref}) of 0.2. This level of catch is higher than recently observed catch amounts (with the exception of 2012), suggesting that overfishing is not occurring. A catch of 1,850 mt in 2012 is expected to result in an increase in biomass of about 9.5 percent. This increasing trend in SSB is expected to continue, provided catch remains below 4,000 mt (DFO 2012a). However, even if catch approaches 3,400 mt per year, Canadian projections suggest that there is a low risk (less than 1 percent) of exceeding the limit removal reference, F_{lim} , through 2014. However, the DFO (2012b) notes that the probability of exceeding F_{lim} approaches 50 percent if 2013 catch is greater than 3,800 mt.

Figure 18 depicts historic Atlantic halibut catch within NAFO Subareas 3 and 4. Within Subarea 3, Atlantic halibut catch has remained relatively stable at 200 mt or below since 1960 despite a surge in catch in the early 1960s and again during the mid-1980s. In contrast, Atlantic halibut catch within Subarea 4 has remained above 200 mt throughout the time series, and has steadily increased since 2000. Total catch from Subareas 3 and 4 has increased from 816 mt in 2000 to nearly 1,500 mt in 2011 before spiking to 3,100 mt in 2012. Since 2012 catch exceeded 2,463 mt, it is possible that F_{ref} of 0.2 was exceeded in 2012. Further, since the 2012 catch also exceeded 1,850 mt, it is possible that biomass may not have increased as expected.

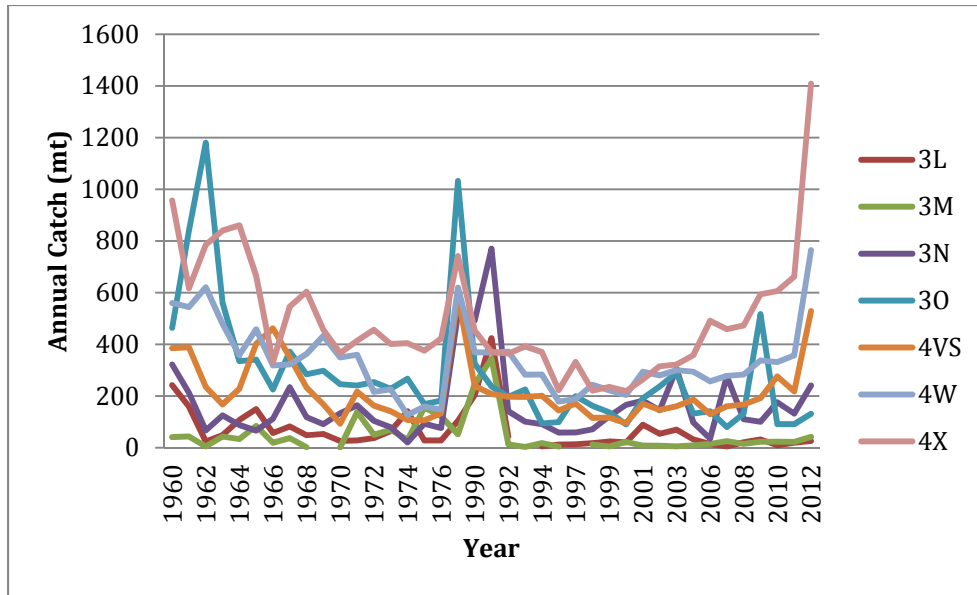


Figure 18. Historic Atlantic Halibut Catch within NAFO Subareas 3+4

4.1.11 Haddock in Division 3LNO

Due to excessive Canadian and international harvests in the 1960's, haddock in Division 3LNO were estimated to be at very low numbers with very few mature fish in 2004 (DFO 2004). Consequently, there was no directed haddock fishery in Divisions 3LNOP, and haddock was primarily landed as a by-catch species in the longline fisheries for skate, white hake, and Atlantic halibut (DFO, 2007). Figure 19 shows historic haddock catch within specific NAFO Subareas 3 and 4.

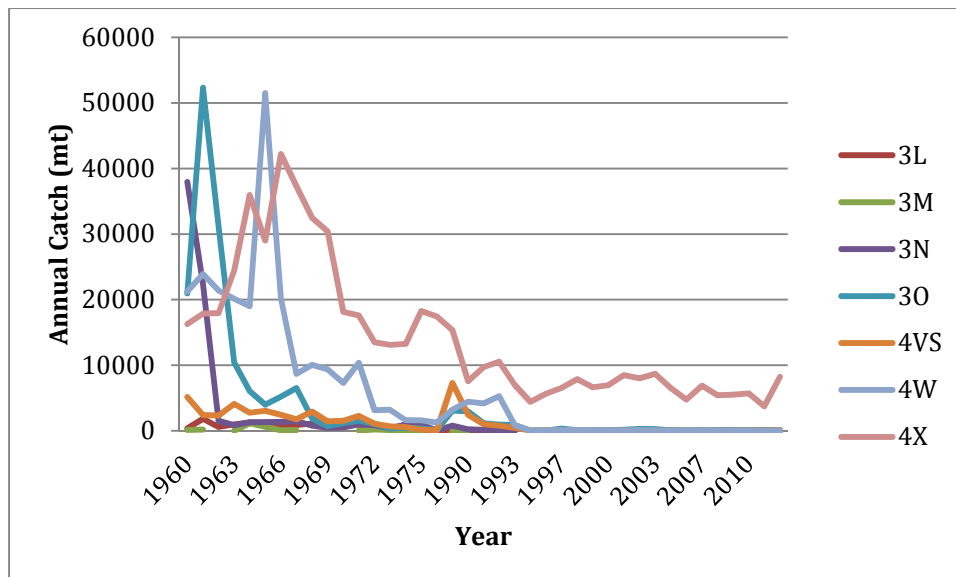


Figure 19. Historic Haddock Catch within NAFO Subareas 3+4

There are no recent stock assessments for haddock found on the Grand Banks. The most recent haddock stock assessment for haddock on the Grand Banks (Divisions 3LNO) dates back to 2005. That assessment relied upon Canadian research surveys. These surveys indicated that Division 3LNO haddock biomass increased in the mid 1980's as a result of a strong 1981 year class. Biomass declined until 1997, when biomass peaked again, only to gradually decline until the last assessment was recorded in 2005 (DFO 2005).

More recent haddock stock assessments have been conducted in NAFO Divisions 4X (Southern Scotian Shelf) and 5Y (Bay of Fundy) off the southern and western coasts of Nova Scotia, respectively. These stock assessments indicate that haddock catch has decreased substantially from average catch during the 1970s-1980s, averaging 5,600 mt since 2005 (DFO 2012b). Since about 2000, SSB has steadily increased to just over 80 percent of SSB_{MSY} . With large year classes observed in 2009 and 2010, it is likely that haddock SSB in Division 4X will continue to increase in the near term (DFO 2012b).

4.1.12 Pollock

The precursor to NAFO, the International Commission for the Northwest Atlantic Fisheries (ICNAF) established management areas for pollock in the 1970s. Initially, only Division 4X and Subarea 5 were designated pollock management areas, although Divisions 4V and 4W were later added (DFO 2009). Accordingly, the most recent pollock stock assessment conducted in 2009 only assessed the pollock resource in these areas, listing the status of both the eastern (Division 4V and W) and western (Division 4X and Subarea 5) components of the stock.

The 2009 Canadian assessment indicated that both Canadian and American bottom trawl surveys showed overall increasing biomass indices for the western component of the stock since 2002 (notwithstanding the spike in biomass in 2006), while the eastern component of the stock shows increasing biomass indices since 2004 (DFO 2009) (Figure 20). The assessment also indicated strong 1999 and 2001 year classes for the western component, although 2003 and 2004 year classes were weaker. Overall, the assessment noted that age structure appeared to be expanding for the western component of the stock. Since 2003, F has been substantially reduced for the western component of the stock, and was estimated to be below F_{ref} of 0.2 since 2006 (DFO 2009). No information on age structure or F for the eastern component of the stock was provided in this assessment. The assessment concluded that, although some amount of rebuilding of the eastern component of the stock has occurred prior to 2009, the stock is not rebuilt and any directed fishery for pollock should proceed with caution (DFO 2009).

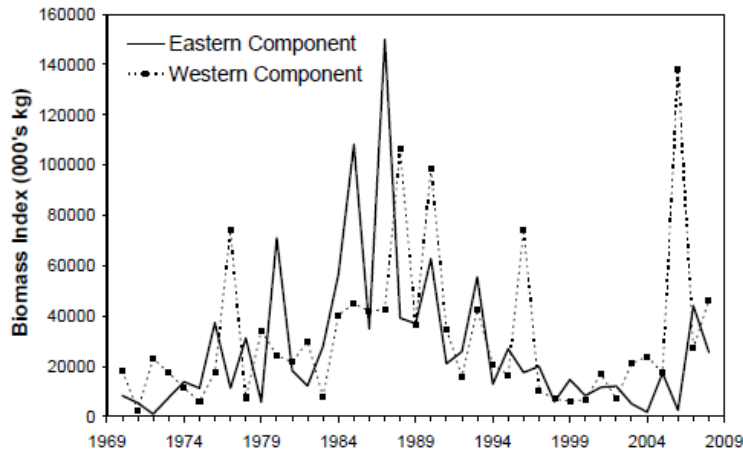


Figure 20. Trends in Pollock Biomass and Recruitment in NAFO Divisions 4VWX
Source: 2009 Canadian DFO Pollock Stock Assessment (DFO 2009)

Historically, pollock is predominantly caught in NAFO Divisions 4VWX. Less than 101 mt has been caught in Subarea 3 since 2002 (see Figure 21). On average, Canada has caught 93 percent of pollock landings from these areas from within the Canadian EEZ. Longline and gillnet gear represent only a very small portion of the total pollock catch from these areas.

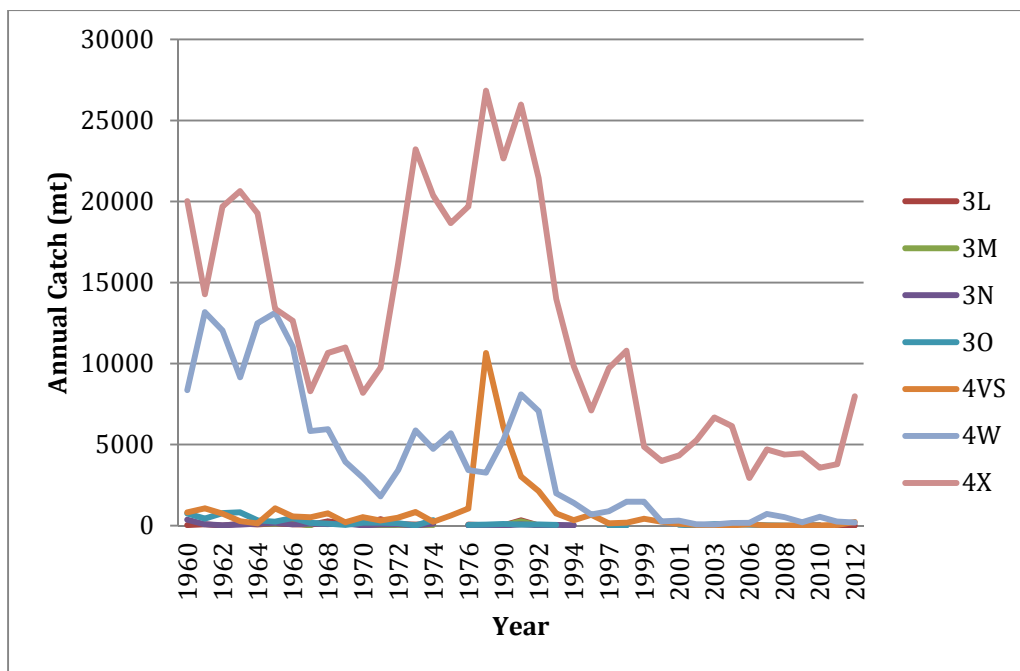


Figure 21. Historic Pollock Catch within NAFO Subareas 3+4

4.1.13 Monkfish in Divisions 3LNO

Monkfish was predominantly caught as by-catch in the trawl fishery within Divisions 3LNO until an experimental gillnet fishery developed in 1994. Since then, a small directed gillnet

fishery has continued in Division 3LNO through the latest available stock assessment conducted in 2003 (DFO 2003). Biomass indices from research surveys show a generally increasing trend from 1993-2003 (Figure 22). The 2003 Canadian assessment noted uncertainties in several fundamental biological parameters for monkfish, including age, growth rates, size, maturity, fecundity and stock structure. Based on survey exploitation indices (catch divided by survey biomass), it appears that F increased substantially through 2003. This seems to be reflected in the spike in catch seen in Figure 23. Comparing Figures 22 and 23 suggests a possible correlation between biomass index and catch, with a period of increased biomass associated with increased catch every 6-10 years. Since peaking at 2,412 mt in 2003, catch of monkfish within 3O declined through 2008, leveling out at about 200 mt since then. If the previous patterns persist, it is possible that monkfish biomass may increase again soon, with monkfish entering a period of elevated biomass levels.

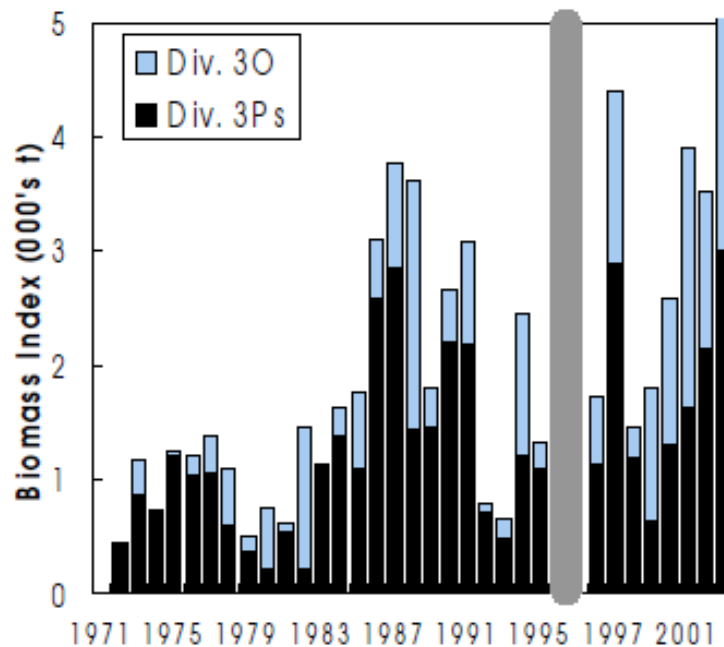


Figure 22. Relative Biomass Survey Indices for Monkfish in NAFO Divisions 3LNO

Source: 2003 Canadian DFO Monkfish Stock Assessment (DFO 2003).

Grey bar represents conversion to a different survey gear.

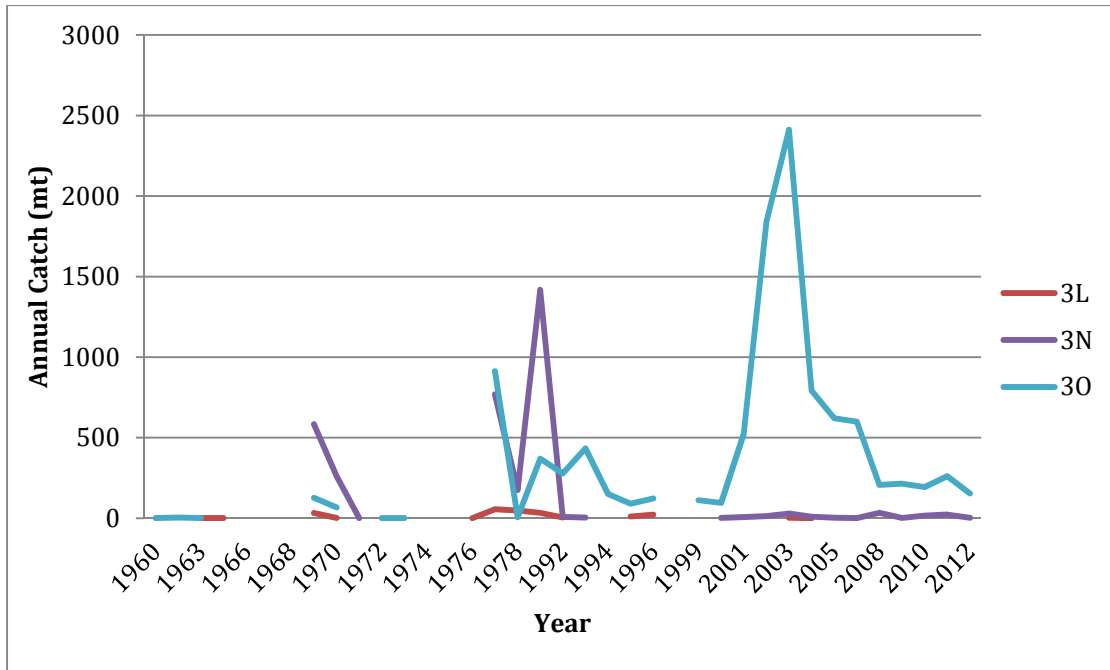


Figure 23. Historic Monkfish Catch within NAFO Subarea 3

According to STATLANT 21B data, bottom gillnet gear represents about 55 percent of annual monkfish catch from NAFO Divisions 3KLMNO and 4VsWX, with bottom longline gear contributing 3 percent of the annual monkfish catch (see Table 12). However, bottom gillnets represent 91 percent of the average catch in NAFO Divisions 3LNO since 2000, with the remaining 9 percent attributable to trawl gear. Since 2000, monkfish catch has averaged over 650 mt from NAFO Divisions 3LNO, but that includes the peak of 2,400 mt in 2003 that has since been reduced to an average annual catch of about 200 mt since 2008. Assuming bottom gillnets represent 91 percent of catch according to STATLANT 21B data, such gear accounted for approximately 182 mt of annual monkfish catch from these areas in recent years.

4.2 Marine Mammals and Protected Species

The following protected species are found in the NAFO Convention Area. A number of them are listed under the ESA of 1973 as endangered or threatened and/or protected under the Marine Mammal Protection Act of 1972 (MMPA).

Table 9. Species Protected Under the Endangered Species Act and Marine Mammal Protection Act that May Occur in the NAFO Convention Area

Species	Status
Cetaceans	
North Atlantic right whale (<i>Eubalaena glacialis</i>)	Endangered
Humpback whale (<i>Megaptera novaeangliae</i>)	Endangered
Fin whale (<i>Balaenoptera physalus</i>)	Endangered
Sei whale (<i>Balaenoptera borealis</i>)	Endangered
Blue whale (<i>Balaenoptera musculus</i>)	Endangered
Sperm whale (<i>Physeter macrocephalus</i>)	Endangered
Minke whale (<i>Balaenoptera acutorostrata</i>)	Protected
Long-finned pilot whale (<i>Globicephala melas</i>)	Protected
Short-finned pilot whale (<i>Globicephala macrorhynchus</i>)	Protected
Risso's dolphin (<i>Grampus griseus</i>)	Protected
Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>)	Protected
Common dolphin (<i>Delphinus delphis</i>)	Protected
Spotted dolphin (<i>Stenella frontalis</i>)	Protected
Bottlenose dolphin (<i>Tursiops truncatus</i>) ^b	Protected
Harbor porpoise (<i>Phocoena phocoena</i>)	Protected
Sea Turtles	
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	Endangered
Kemp's ridley sea turtle (<i>Lepidochelys kempii</i>)	Endangered
Green sea turtle (<i>Chelonia mydas</i>)*	Endangered ^c
Loggerhead sea turtle (<i>Caretta caretta</i>), Northwest Atlantic DPS	Threatened
Fish	
Atlantic salmon (<i>Salmo salar</i>)	Endangered
Atlantic sturgeon (<i>Acipenser oxyrinchus</i>)	
<i>Gulf of Maine DPS</i>	Threatened
<i>New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS</i>	Endangered
Cusk (<i>Brosme brosme</i>)	Candidate
Pinnipeds	
Harbor seal (<i>Phoca vitulina</i>)	Protected
Gray seal (<i>Halichoerus grypus</i>)	Protected
Harp seal (<i>Phoca groenlandicus</i>)	Protected
Hooded seal (<i>Cystophora cristata</i>)	Protected

*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.

It is expected that all of the species identified have the potential to be affected by the operation of bottom longline and gillnet fisheries in the NAFO Convention Area, including the NRA. However, given differences in abundance, distribution and migratory patterns, it is likely that any effects that may occur, as well as the magnitude of effects when they do occur, will vary among the species. Summary information is provided here that describes the general distribution of cetaceans, pinnipeds, sturgeon, and sea turtles within the NAFO Convention Area as well as the

known interactions of trawl gear with these protected species. 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 longline types) can be found in a number of published documents. 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. 1999, 2006, 2009, 2011), and other publications (e.g., Clapham et al. 1999, Perry et al. 1999, Best et al. 2001, and IWC 2001). Additional ESA background information on the range-wide status of these species and a description of critical habitat can be found in a number of published documents including recent sea turtle status reviews and biological reports (NMFS and USFWS 1995, TEWG 2000, NMFS SEFSC 2001, NMFS and USFWS 2007a), loggerhead recovery team report (NMFS and USFWS 2008), status reviews and stock assessments, Recovery Plans for the humpback whale (NMFS 1991), right whale (NMFS 1991, NMFS 2005), and fin and sei whale (NMFS 1998).

Sea Turtles

A working paper presented by the NAFO Secretariat at the 2007 Annual Meeting (NAFO 2007) noted, “Observer reports received so far do not indicate any incident of sea turtle interaction in the NRA.” Despite this, there are a number of species known to occur within the NRA based on existing literature, and an evaluation of leatherback sea turtle satellite telemetry data against maps of commercial fishing activity from 1999-2007 (DFO 2012c).

Species distribution information indicates that Kemp’s ridley and green turtles may occur in this area, albeit less frequently (NMFS and USFWS 2007b; NMFS and USFWS 2007c). In general, turtles 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). The trend is reversed in the fall as water temperatures cool. By December, turtles have passed Cape Hatteras, returning 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).

Loggerhead and leatherback sea turtles are known to occur in the NAFO Convention Area based upon recent fishery interaction data submitted by Contracting Parties (NAFO 2010). Bycatch of sea turtles are mostly associated with the pelagic longline fisheries for tuna and swordfish that occur south and west of the Flemish Cap. These large pelagic fisheries are not managed by NAFO. France (in respect of St. Pierre and Miquelon) has reported one incident of leatherback turtle bycatch in a gillnet in its coastal fishery. Canada has recorded about 50 interactions with leatherback sea turtles during 2007 and part of 2008, and 41 from July 2009 through August 2010 in their domestic longline fisheries. All turtles were released alive. However, a Canadian survey using gillnet and longline gear that has focused on assessing abundance of Atlantic halibut since the early 1990s has never encountered any leatherback sea turtles (DFO 2012c). Zero interactions between bottom longline gear and leatherback sea turtles were recorded in either the Canadian Atlantic halibut or groundfish fisheries (DFO 2012c). Mortality estimates

for leatherback sea turtle interactions with bottom longline and gillnet gear range from 20-70 percent according to some studies (DFO 2012c).

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). The Northwest Atlantic Ocean (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. 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 NRA is located entirely within the NWA DPS for loggerhead sea turtles and borders the NEA DPS, as defined in Conant et al. (2009). Although the NRA borders the NEA DPS for loggerhead sea turtles, the only loggerhead DPS that would be impacted by U.S. vessels operating within the NRA under this proposed action is the NWA DPS (P. Dutton, NMFS, personal communication, 2012).

Large Cetaceans (Baleen Whales and Sperm Whale)

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke) follow a general annual pattern of migration from high latitude summer foraging grounds, including the Gulf and Maine and Georges Bank, to low latitude winter calving grounds (Perry et al. 1999, Kenney 2002). However, this is an oversimplification of species movements, and the complete winter distribution of most species is unclear (Perry et al. 1999, Waring et al. 2012). 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 on the east coast of Canada, particularly in the Gulf of St. Lawrence, and occurs 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 396 animals in 2006 (Waring et al. 2012). The minimum rate of annual human-caused mortality and serious injury to right whales averaged 2.4 mortality or serious injury incidents per year during 2005 to 2009 (Waring et al. 2012). Of these, fishery interactions resulted in an average of 0.8 mortality or serious injury incidents per year. The potential biological removal (PBR) level for this stock is 0.8 animals per year (Waring et al. 2012).

The North Atlantic population of humpback whales is conservatively estimated to be 7,698 (Waring et al. 2012). The best estimate for the Gulf of Maine (GOM) stock of humpback whale population is 847 whales (Waring et al. 2012). The minimum rate of annual human-caused mortality and serious injury to humpback whales averaged 5.2 mortality or serious injury incidents per year during 2005 to 2009 (Waring et al. 2012). Of these, fishery interactions

resulted in an average of 3.8 mortality or serious injury incidents per year (3.4 from U.S. waters and 0.4 from Canadian waters). The PBR for this stock is 1.1 animals per year (Waring et al. 2012). 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) (Waring et al. 2012), 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 exists to determine trends for these other large whale species. The minimum rate of annual human-caused mortality and serious injury to fin whales averaged 2.6 mortality or serious injury incidents per year during 2005 to 2009 (Waring et al. 2012). Of these, fishery interactions resulted in an average of 0.8 mortality or serious injury incidents per year (0.6 from U.S. waters and 0.2 from Canadian waters). The PBR for this stock is 6.5 animals per year (Waring et al. 2012). For sei whales, the minimum rate of annual human-cause mortality and serious injury averaged 1.2 per year, of which 0.6 were a result of fishery interactions. PBR for the Nova Scotia sei whale stock is 0.4 (Waring et al. 2012). For both fin and sei whales, these estimates are likely biased low due to the low detection rate for these species. The most recent SAR for the North Atlantic sperm whale stock is from 2007 (covering the years 2001–2005) and during that time period, there were no recorded mortality or serious injury incidents due to entanglements (Waring et al. 2007). PBR for this stock is 7.1 animals per year. For minke whales, the minimum rate of annual human-caused mortality and serious injury averaged 5.9 per year during 2005 to 2009, and of these, 3.5 animals per year were recorded through observed fisheries and 0.8 per year were attributed to U.S. fisheries using stranding and entanglement data (Waring et al. 2012). PBR for this stock is 69 animals per year.

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.

Entanglement data analyzed by Benjamins et al. (2012) indicates that several species of large whales are located in NAFO Sub-areas 2 and 3 and Divisions 4R and 4S. Their study indicated that 1,209 large whales were caught in fishing gear during 1979–2008, with over 98 percent of such entanglements occurring in inshore waters (i.e., within the Canadian EEZ). Entanglements documented in offshore waters (i.e., waters outside of the Canadian EEZ) included 20 humpback whales, 1 minke whale, and 3 unknown species during this 29-year period, for an average of less than one entanglement per year. Figures 24 and 25 illustrate the distribution of total entanglements in these areas during this period among broad gear types and within specific gillnet fisheries, respectively. According to this study, a majority of entanglements occurred in benthic gillnet gear targeting groundfish species (Benjamins et al., 2012). It was also noted that at least 2 humpback whales were entangled with hook and line gear, while 1 was entangled with otter trawl gear.

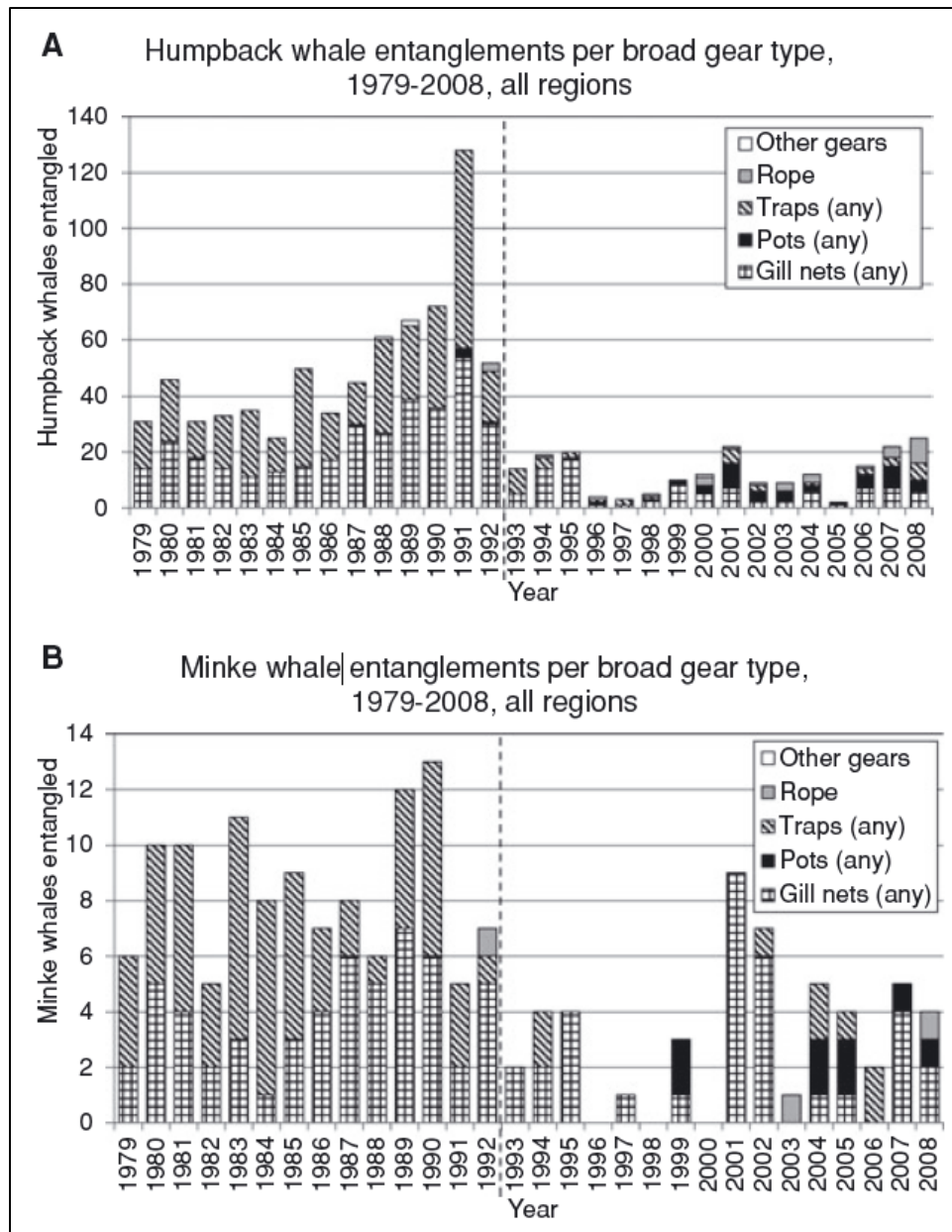


Figure 24. Entanglements of Humpback and Minke Whales in Broad Gear Types from 1979-2008 in NAFO Subareas 2+3 and Divisions 4R and 4S

Source: Benjamins, et al., 2012.

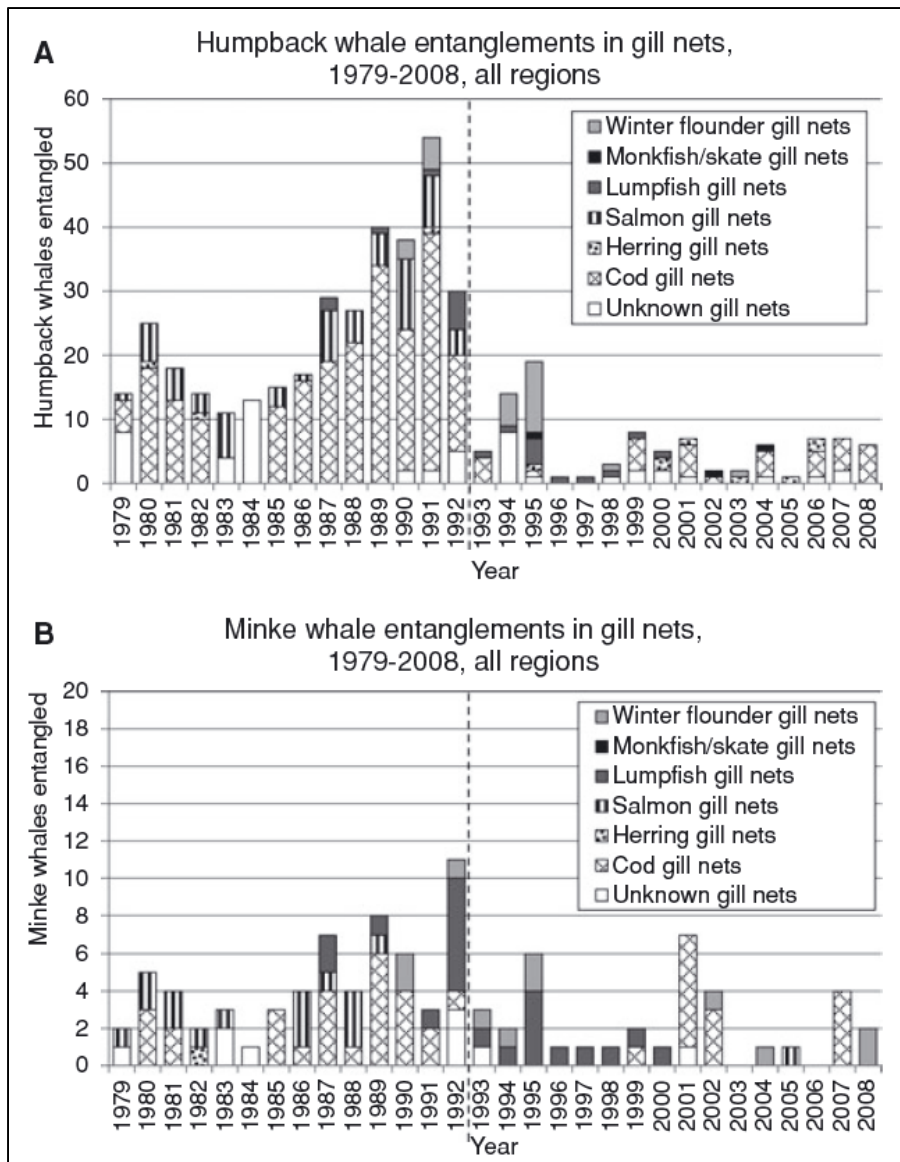


Figure 25. Entanglements of Humpback and Minke Whales in Different Gillnet Types from 1979-2008 in NAFO Subareas 2+3 and Divisions 4R and 4S

Source: Benjamins et al., 2012.

Small Cetaceans (Dolphins, Harbor Porpoise and Pilot Whale)

Stenson et al. (2011) noted occurrences of harbor porpoises, Atlantic white-sided dolphins, common dolphin, and long-finned pilot whales have been observed in the area where the proposed fishery may occur, including on the Flemish Cap (NAFO Division 3M), Grand Banks, and the Southern Slope and the Newfoundland Basin (waters south and east of the Grand Banks, respectively). Research suggests that the southern portions of the Grand Banks may serve as important overwintering grounds for several of these species during the winter and spring (Stenson et al. 2011). Small cetaceans are known to be captured in fishing gear, including trawl and gillnet gear (Waring et al. 2006, Stenson et al. 2011). There is anthropogenic mortality of numerous small cetacean species (dolphins, pilot whales, and harbor porpoise) in gear used by vessels that would operate in the NRA. Seasonal abundance and distribution of each species

varies with respect to life history characteristics. Some species such as white-sided dolphin and harbor porpoise primarily occupy continental shelf waters, while other species like the common dolphin and the spotted dolphin occur in continental shelf waters, continental shelf edge, and continental slope waters.

Waring et al. (2013) summarizes information on the western North Atlantic stocks of each species. Common dolphins are distributed along the continental slope (100 to 2,000 meters), and are associated with Gulf Stream features in waters off the northeastern U.S. coast. Migration onto the Scotian Shelf and continental shelf off Newfoundland occurs during summer and autumn when water temperatures exceed 11°C. In Canadian waters, bottlenose dolphins have occasionally been sighted on the Scotian Shelf, particularly in the Gully. White-sided dolphins are found in temperate and sub-polar waters of the North Atlantic, primarily in continental shelf waters to the 100 m depth contour. The species inhabits waters from central West Greenland to North Carolina (about 35°N) and perhaps as far east as 43°W. Distribution of sightings, strandings and incidental takes suggest the possible existence of three stocks units: Gulf of Maine, Gulf of St. Lawrence and Labrador Sea stocks. Atlantic spotted dolphins are distributed in tropical and warm temperate waters of the western North Atlantic. Off the northeast U.S. coast, spotted dolphins are widely distributed on the continental shelf, along the continental shelf edge, and offshore over the deep ocean south of 40° N. The distribution of this species off Canada is unclear. Minke whales have a cosmopolitan distribution in polar, temperate and tropical waters. In the North Atlantic there are four recognized populations: Canadian East Coast, west Greenland, central North Atlantic, and northeastern North Atlantic. Pilot whales (*Globicephala* sp.) are distributed principally along the continental shelf edge in the winter and early spring off the northeast U.S. coast. In general, pilot whales occupy areas of high relief or submerged banks. They are also associated with the Gulf Stream north wall and thermal fronts along the continental shelf edge. The long-finned pilot whale is distributed from North Carolina to North Africa (and the Mediterranean) and north to Iceland, Greenland and the Barents Sea, while the short-finned pilot whale occupies a more southerly distribution. Harbor porpoises are concentrated in the northern Gulf of Maine and southern Bay of Fundy region, generally in waters less than 150m deep, with a few sightings in the upper Bay of Fundy and on the northern edge of Georges Bank. Gaskin (1984, 1992) proposed that there were four separate populations in the western North Atlantic: The Gulf of Maine/Bay of Fundy, Gulf of St. Lawrence, Newfoundland and Greenland populations. Recent analyses involving mtDNA, organochlorine, heavy metals, and life history parameters support this proposal.

Pinnipeds

Four species of seals are expected to occur in the NAFO Convention Area. The following is a summary of the distribution of these four seal species, which has been pulled from Waring *et al.*, 2006. Of these four species, harbor seals have the most extensive distribution. In the western North Atlantic, they are distributed from the eastern Canadian Arctic and Greenland south to southern New England and New York, and occasionally to the Carolinas. Grey seals are the second most common seal species in the Northwest Atlantic. This species is found on both sides of the North Atlantic, with three major populations: Eastern Canada, northwestern Europe and the Baltic Sea. The western North Atlantic population occurs from New England to Labrador and is centered in the Sable Island region of Nova Scotia. The harp seal occurs throughout much of the North Atlantic and Arctic Oceans. The largest stock of harp seals in the world occurs in

the western North Atlantic off eastern Canada and is divided into two breeding herds which breed on the pack ice. The front herd breeds off the coast of Newfoundland and Labrador, and the Gulf herd breeds near the Magdalen Islands in the middle of the Gulf of St. Lawrence. The hooded seal occurs throughout much of the North Atlantic and Arctic Oceans preferring deeper water and occurring farther offshore than harp seals. The world's hooded seal population is divided into three separate stocks, each identified with a specific breeding site. One stock, which whelps off the coast of eastern Canada, is divided into two breeding herds (Front and Gulf) which breed on the pack ice. The front herd (largest) breeds off the coast of Newfoundland and Labrador and the Gulf herd breeds in the Gulf of St. Lawrence. The second stock breeds in the Davis Strait, and the third stock occurs on the West Ice off eastern Greenland.

Fish

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 (ASSRT 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 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, as well as sink gillnet and drift gillnet gear (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 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 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.

Since the ESA listing of Atlantic sturgeon, the NEFSC has completed new population estimates using data from the Northeast Area Monitoring and Assessment (NEAMAP) survey (Kocik et al.

2013). Atlantic sturgeon are frequently sampled during the NEAMAP survey. NEAMAP has been conducting trawl surveys from Cape Cod, Massachusetts to Cape Hatteras, North Carolina in nearshore waters at depths to 18.3 meters (60 feet) during the fall since 2007 and depths up to 36.6 meters (120 feet) during the spring since 2008 using a spatially stratified random design with a total of 35 strata and 150 stations per survey. The information from this survey can be directly used to calculate minimum swept area population estimates during the fall, which range from 6,980 to 42,160 with coefficients of variation between 0.02 and 0.57 and during the spring, which range from 25,540 to 52,990 with coefficients of variation between 0.27 and 0.65. These are considered minimum estimates because the calculation makes the unlikely assumption that the gear will capture 100% of the sturgeon in the water column along the tow path. Efficiencies less than 100% will result in estimates greater than the minimum. The true efficiency depends on many things including the availability of the species to the survey and the behavior of the species with respect to the gear. True efficiencies much less than 100% are common for most species. The NEFSC's analysis also calculated estimates based on an assumption of 50% efficiency, which reasonably accounts for the robust, yet not complete sampling of the Atlantic sturgeon, oceanic temporal and spatial ranges, and the documented high rates of encounter with NEAMAP survey gear and Atlantic sturgeon. For this analysis, NMFS has determined that the best available scientific information for the status of Atlantic sturgeon at this time are the population estimates derived from NEAMAP swept area biomass (Kocik et al. 2013) because the estimates are derived directly from empirical data with few assumptions. NMFS has determined that using the median value of the 50% efficiency as the best estimate of the Atlantic sturgeon ocean population is most appropriate at this time. This results in a total population size estimate of 67,776 fish, which is considerably higher than the estimates that were available at the time of listing. This estimate is the best available estimate of Atlantic sturgeon abundance at the time of this analysis. The ASMFC has begun work on a benchmark assessment for Atlantic sturgeon to be completed in 2014, which would be expected to provide an updated population estimate and stock status. The ASMFC is currently collecting public submissions of data for use in the assessment: <http://www.asmfc.org/uploads/file/pr20AtlSturgeonStockAssmtPrep.pdf>.

Sturgeon have been caught within the NAFO Convention Area. However, neither the specific species, nor the exact location within the NAFO Convention Area or the NRA in which a majority of sturgeon were caught are identified in the available data. For example, from 2001 – 2010, a total of 131 sturgeon were caught within the NAFO Convention Area. Of these, 7 sturgeon were caught within Division 4T (at the mouth of the St. Lawrence River within the Canadian EEZ), while 124 sturgeon, nearly 95 percent of the sturgeon caught during this period, were caught in unspecified areas. Therefore, it is not possible to accurately determine whether there is sturgeon take within the NRA based on available data. Genetic data that could be used to evaluate whether any of these sturgeon originated within any of the five DPSs listed under the ESA are also not available. According to the DFO (2010) and Wirgin and King (2011), sturgeon from the Gulf of Maine and the New York Bight DPSs have been incidentally caught in Canadian fisheries within the Bay of Fundy. However, it is not known whether any sturgeon from any of the five DPSs have been caught on the Grand Bank or Flemish Cap, the area that would be fished under the proposed action. Therefore, it is not possible to accurately identify whether Atlantic sturgeon, including one or more of the DPSs listed as endangered under the ESA, have been caught within the area in which U.S. vessels would operate under the proposed action.

4.3 Physical Environment - Habitat Information

The Grand Bank is an extension of the continental shelf located southeast of Newfoundland and Labrador that comprises approximately 280,000 km² (26 percent) of the Canadian Atlantic Shelf (Kulka 1991). This region is relatively flat, having an average depth of about 100 m. In general, the habitat can be described as being pebbly to the east changing to sand and mud bottoms westward (Kulka 1991). However, some areas of the Grand Bank are covered with an overlay of scattered boulders (Kulka 1991). The yellowtail flounder fishery typically occurs over the sand and muddy portions of the Bank, with the yellowtail fishery outside of the Canadian EEZ occurring in a very small region on the upper tail of the Grand Bank (Kulka 2009) (Figure 26). Historically, the Atlantic halibut, monkfish, pollock, and haddock fisheries occur in Canadian waters along the south west-facing slope of the Bank in NAFO Division 3O (DFO 2006).

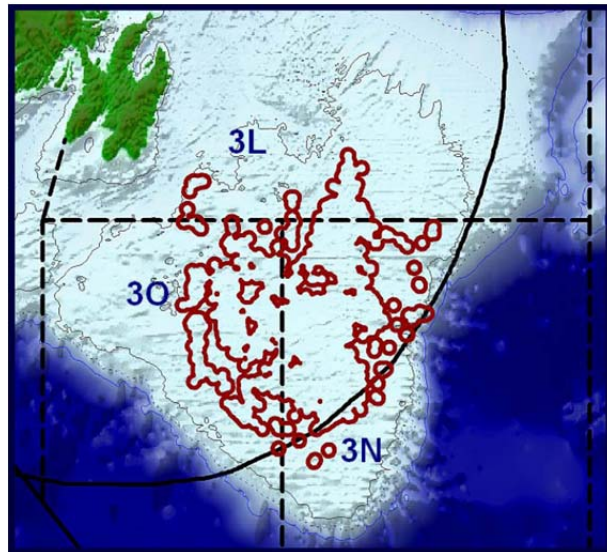


Figure 26. Cumulative Yellowtail Flounder Fishing Effort on the Grand Banks During 2000 - 2008

Solid black arc is the Canadian EEZ, while dashed lines are the boundaries of NAFO Divisions 3LNO

Source: Kulka 2009

On December 8, 2006, the United Nations General Assembly (UNGA) passed resolution 61/105, which called upon States “to take action immediately, individually and through regional fisheries management organizations and arrangements (RFMOAs), to sustainably manage fish stocks and protect vulnerable marine ecosystems (VME), including seamounts, hydrothermal vents and cold water corals, from destructive fishing practices.” As a result, NAFO began development of measures in early 2008 to identify existing bottom fishing areas (i.e., establish a footprint); identify VMEs in the NRA; establish a protocol for exploratory fisheries; and establish provisions for encounters with VMEs, including the reporting of such encounters to the NAFO Secretariat. In 2008, the Fisheries Commission proposed new VME measures (NAFO 2008a) and interim encounter provisions (NAFO 2008b) that have since been integrated into the NCEM. Among these provisions are seamount, coral, and sponge protection zones that are closed to bottom fishing activities through December 31, 2014 (see Article 16 of the NCEM and Figures

27-28) and mechanisms to evaluate the impacts of fishing activities beyond areas previously fished (i.e. beyond the NRA “footprint” specified in Article 17 of the NCEM – see Figure 29). The seamount, coral, and sponge protection zones may be extended based upon a review of further data on bottom fishing activity and interactions with VME. These measures are intended to prevent fishing activity from disturbing areas in which VMEs are known to occur as well as collect information on the location of VMEs when encountered.

Threshold encounter provisions were adopted by NAFO and integrated into the NCEM in Article 22 to help further identify locations of VME and minimize the impact of fishing operations on VMEs. Such provisions require vessels to quantify any catch of VME indicator species (defined in Article 15 of the CEM), report such locations to the NAFO Executive Secretariat, and move at least 2 nautical miles away from the endpoint of the tow/set in a direction least likely to result in further encounters. Based on information provided by such encounters, NAFO may further restrict fishing operations in areas in which VME are known to occur.

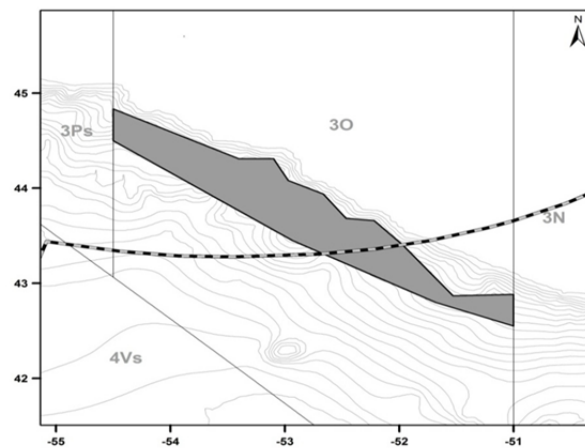


Figure 27. Coral Area Closed to Bottom Fishing (Article 16.4 of the NCEM)

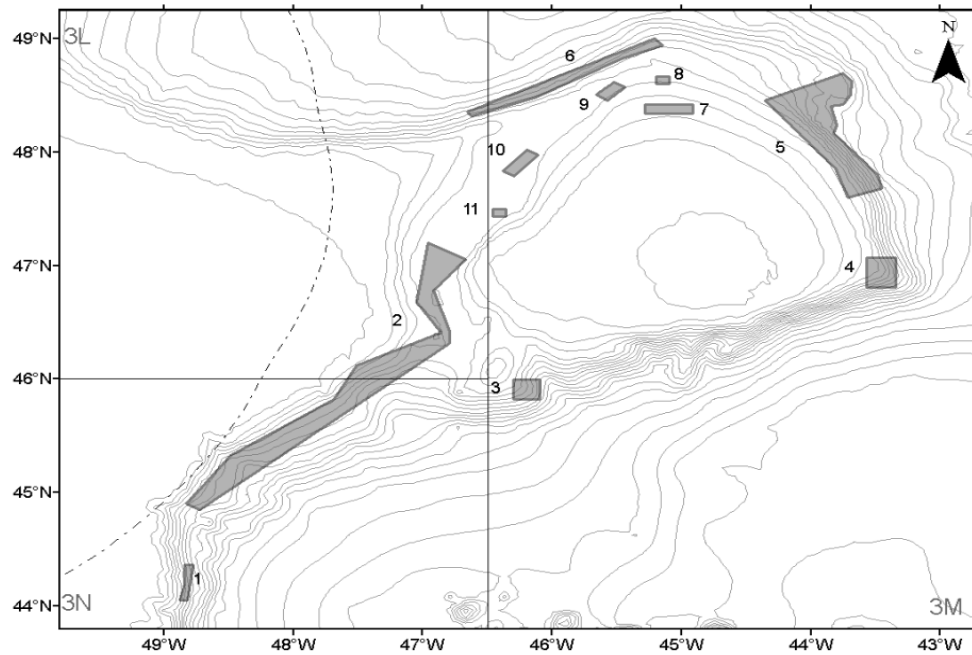


Figure 28. Locations of Sponge and Coral Concentrations Closed to Bottom Fishing (Article 16.5 of the NCEM)

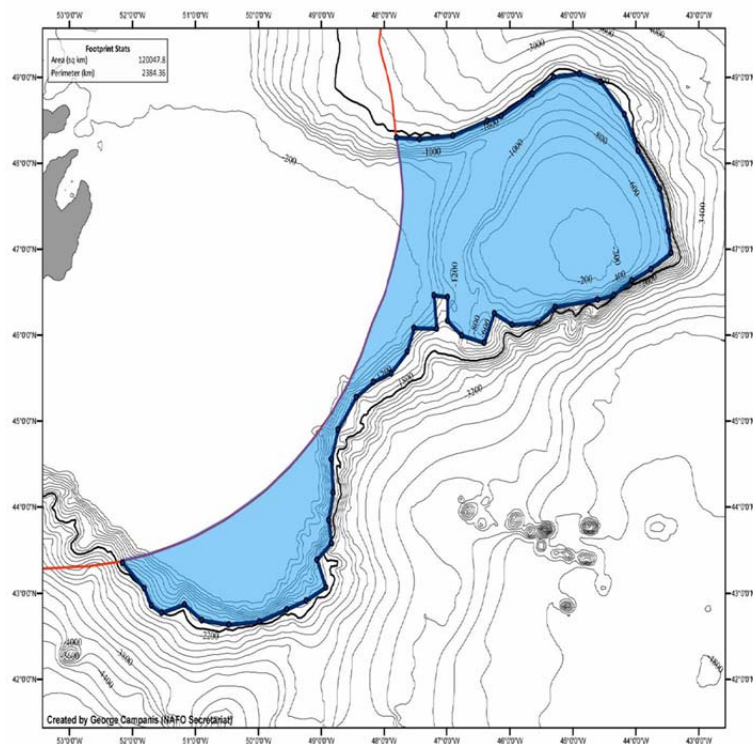


Figure 29. NAFO Regulatory Area Footprint

4.4 Human Environment

4.4.1 Vessels and Ports

The U.S. currently only has a very small fishing presence in the NRA. Each year, NMFS publishes a notice in the *Federal Register* notifying the public that quota and effort allocation for species managed by NAFO is available to U.S. entities, soliciting public interest in harvesting these quotas or using available effort allocations. A decision to distribute available quota or effort allocation is based on an evaluation of the greatest overall net benefit to the U.S. In previous years, owners of trawl vessels with a history of fishing in the Northeast multispecies fishery have expressed interest in fishing in the NRA. However, none have actually fished in the NRA until 2012, when one U.S. bottom trawl freezer vessel targeted yellowtail flounder within the NRA, landing frozen product in Canada for shipping and later processing in the U.S.

In response to the most recent solicitation of interest to fish the U.S. NAFO quotas, several vessel owners indicated that they were interested in fishing for Atlantic halibut and skates with bottom longline gear within the NRA during 2013. At least one of these vessels already fishes for swordfish and tuna on the Grand Bank and Flemish Cap (NAFO Subarea 3) under the provisions of the International Convention for the Conservation of Atlantic Tunas (ICCAT), and wanted to increase the efficiency of their operations by targeting other species within the same area. Other applicants target fish stocks within the U.S. EEZ, but are seeking additional fishing opportunities due to the reduction in available domestic groundfish quotas in 2013 and other considerations. Thus, the human environment affected by this action includes owners of commercial fishing vessels interested in and capable of using bottom longline and gillnet gear (most likely those already involved in the groundfish fishery), along with their respective vessel captains, crew, and shoreside processors.

In 2013, 25 U.S. vessels have been issued permits to fish for tuna and swordfish under ICCAT using longline gear. Such vessels ranged from 60-120 feet in length and from 53-199 gross registered tons. The average size and tonnage of such vessels was 73 feet long and 134 gross tons.

In 2011, 422 vessels were considered active in the domestic groundfish fishery, employing 2,129 crew (NEFMC 2013). Such vessels landed 61.7 million pounds of groundfish species with associated revenues of \$90.1 million in 2011. These vessels also landed 213.8 million pounds of non-groundfish species in 2011, resulting in \$240.7 million in revenue in 2011. Vessels greater than 75 feet long, vessels most capable of fishing in the rougher waters of the Grand Banks, comprised just 16 percent of the number of active domestic groundfish fleet in 2011 (NEFMC 2013). Most domestic groundfish vessels operated out of ports in Massachusetts, Maine, and Rhode Island, with Gloucester, MA; Boston, MA; New Bedford, MA; and Point Judith, RI being the home of notable numbers of groundfish vessels.

In 2010, 84 vessels landed skates from U.S. waters in 75 ports. Total annual revenue from such landings amounted to over \$7.6 million from skate landings alone (NEFMC 2012b). Ports most involved in the domestic skate fishery based on volume and value of skates landed include Barnegat Light/Long Beach, NJ; Boston, MA; Chatham, MA; Gloucester, MA; Montauk, NY;

New Bedford, MA; Newport, RI; Point Judith, RI; Provincetown, MA; and Tiverton, RI (NEFMC 2012b).

Based on previous and current interest in fishing for U.S. NAFO quotas and experience targeting groundfish or other species found in the NRA, the following U.S. ports are likely to be impacted by the issuance of permits to fish in the NRA: Boston, MA; Gloucester, MA; New Bedford, MA; Portland, ME; Barnegat Light, NJ; Cape May, NJ; Montauk, NY; and Point Judith, RI. However, other ports may be affected based on future applications or expressions of interest to fish within the NRA. An in-depth discussion of 177 fishing communities from Maine through Virginia, including historic, demographic, cultural, and economic information for such communities can be found on Northeast Fisheries Science Center's website (<http://www.nefsc.noaa.gov/read/socialsci/communityProfiles.html>).

In terms of non-U.S. vessels fishing in the NRA, it should be noted that the number of active vessels targeting groundfish species such as yellowtail flounder, steadily declined from 2004-2008, rebounding slightly through 2011. In 2004, there were 63 vessels fishing for groundfish species in the NRA, but has dropped to 44 in 2012. In addition, the number of days present by groundfish vessels has also declined from 2004-2008, before rising through 2012. In 2004, vessels spent 9,966 days within the NRA, but only spent 5,050 days within the NRA in 2012 (see Figure 30 and Table 1, from NAFO 2013b).

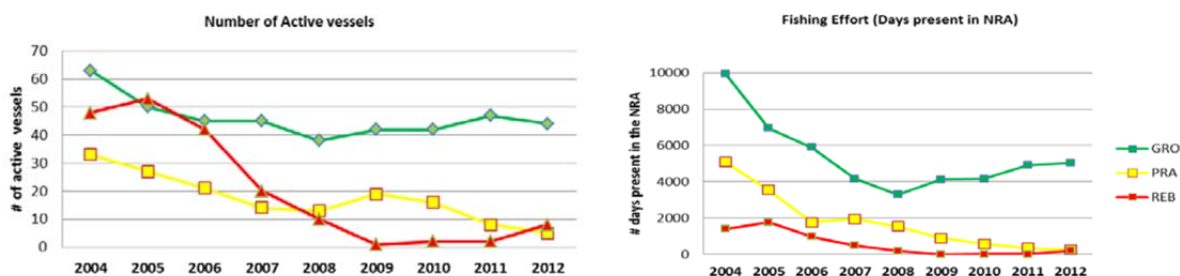


Figure 30. Number of Vessels and Days Present in the NAFO Regulatory Area by Fishery Type

4.4.2 Landings

Recent landings of target and bycatch species by vessels fishing in the NRA are provided in Section 4.1 **Error! Reference source not found.** of this document. Specific to this action, Table 10 summarizes average yearly catch and Table 11 summarizes average monthly catch by bottom gillnet and longline gear within the NRA from 2000–2011 within Divisions 3KLMNO and 4VsWX of the NRA (areas that include waters outside of the EEZ of coastal states). Bottom gillnets were used to catch predominantly groundfish species such as Greenland halibut, Atlantic halibut, Atlantic cod, pollock, white hake, and monkfish, although a large amount of Atlantic herring and dogfish were also caught. Similarly, bottom longlines were used to catch Atlantic cod, haddock, Greenland and Atlantic halibut, cusk, white hake, and dogfish. In recent years, substantial portions of Atlantic cod, pollock, winter flounder, monkfish, and lumpfish have been caught within the NRA by bottom gillnets, while substantial portions of haddock, Atlantic

halibut, wolfish, and Atlantic herring have been caught by bottom longline gear (see Table 12). For example, bottom gillnets caught 32 percent of Atlantic cod, 29 percent of pollock, 55 percent of monkfish, and 100 percent of lumpfish caught within Divisions 3KLMNO and 4VsWX of the NRA during 2000-2011. Bottom longline gear caught 26 percent of Atlantic cod, 71 percent of Atlantic halibut, 96 percent of cusk, 100 percent of wolfish, and 48 percent of Atlantic herring caught within these divisions during that same period. From 2000-2011, bottom gillnet gear amounted to 7 percent of total catch of all species within Divisions 3KLMNO and 4VsWX of the NRA, while bottom longline catch represented only 2 percent of total catch of all gear types within these areas during this period (Table 12).

Table 10. Average Yearly Catch (tons, live weight) by Types of Bottom Gillnet and Longline Gear within NAFO Divisions 3KLMNO and 4VsWX from 2000-2011

SPECIES	BOTTOM GILLNETS	BOTTOM LONGLINES
ATLANTIC COD	82	44
HADDOCK	2	67
REDFISHES	2	2
SILVER HAKE	5	0
RED HAKE	0	1
POLLOCK	105	6
AMERICAN PLAICE	2	0
WITCH FLOUNDER	1	0
YELLOWTAIL FLOUNDER	1	0
GREENLAND HALIBUT	156	12
ATLANTIC HALIBUT	3	24
WINTER FLOUNDER	34	0
FLATFISH (NOT SPECIFIED)	5	0
ANGLER (GOOSEFISH/MONKFISH)	57	7
CUSK	1	28
LUMPFISH	8	0
TILEFISH	0	1
WHITE HAKE	38	30
WOLFFISHES	2	5
ATLANTIC WOLFFISH	0	0
GROUND FISH (NOT SPECIFIED)	9	1
ATLANTIC HERRING	295	1
ATLANTIC MACKEREL	24	6
STURGEONS (NOT SPECIFIED)	0	0
SPINY DOGFISH	45	119
DOGFISHES (NOT SPECIFIED)	98	242
SKATES (NOT SPECIFIED)	11	22
FINFISHES (NOT SPECIFIED)	0	0
NORTHERN SHORTFIN SQUID	0	0

Table 11. Average Monthly Catch (tons, live weight) by Bottom Gillnet and Longline Gear within NAFO Divisions 3KLMNO and 4VsWX During 2000-2011

SPECIES	BOTTOM GILLNETS	BOTTOM LONGLINES
ATLANTIC COD	18	9
HADDOCK	0	8
REDFISHES	0	0
SILVER HAKE	0	0
RED HAKE	0	0
POLLOCK	7	0
AMERICAN PLAICE	0	0
WITCH FLOUNDER	0	0
YELLOWTAIL FLOUNDER	0	0
GREENLAND HALIBUT	28	1
ATLANTIC HALIBUT	0	4
WINTER FLOUNDER	2	0
ANGLER (GOOSEFISH/MONKFISH)	4	0
CUSK	0	4
TILEFISH	0	0
WHITE HAKE	4	5
WOLFFISHES	0	0
ATLANTIC WOLFFISH	0	0
GROUNDFISH (NOT SPECIFIED)	0	0
ATLANTIC HERRING	16	0
ATLANTIC MACKEREL	1	0
STURGEONS	0	0
SPINY DOGFISH	1	3
DOGFISHES (NOT SPECIFIED)	1	3
SKATES (NOT SPECIFIED)	1	1
NORTHERN SHORTFIN SQUID	0	0

Table 12. Proportion of Total Catch by Bottom Gillnet and Longline Gear within NAFO Divisions 3KLMNO and 4VsWX During 2000-2011

SPECIES	BOTTOM GILLNETS	BOTTOM LONGLINES
ATLANTIC COD	32%	16%
HADDOCK	0%	26%
REDFISHES	0%	0%
SILVER HAKE	0%	0%
RED HAKE	0%	0%
POLLOCK	29%	2%
AMERICAN PLAICE	1%	0%
WITCH FLOUNDER	0%	0%
YELLOWTAIL FLOUNDER	0%	0%
GREENLAND HALIBUT	19%	1%
ATLANTIC HALIBUT	4%	71%
WINTER FLOUNDER	31%	0%
FLATFISH (NOT SPECIFIED)	3%	0%
ANGLER (GOOSEFISH/MONKFISH)	55%	3%
CUSK	1%	96%
LUMPFISH	100%	0%
TILEFISH	0%	0%
WHITE HAKE	0%	0%
WOLFFISHES	0%	100%
ATLANTIC WOLFFISH	0%	0%
GROUND FISH (NOT SPECIFIED)	0%	0%
ATLANTIC HERRING	0%	48%
ATLANTIC MACKEREL	19%	0%
STURGEONS (NOT SPECIFIED)	0%	0%
SPINY DOGFISH	0%	0%
DOGFISHES (NOT SPECIFIED)	0%	0%
SKATES (NOT SPECIFIED)	0%	0%
FINFISHES (NOT SPECIFIED)	0%	0%
NORTHERN SHORTFIN SQUID	0%	0%
ALL SPECIES COMBINED	6%	2%

There are several important limitations to the data presented in Tables 10-12. These data are derived from STATLANT 21B data. This data source is different from the STATLANT 21A data that were used to derive annual catch figures for each species in Section 4.0. STATLANT 21A data represent yearly catch by area and species, as submitted by individual Contracting Parties. STATLANT 21B data represent monthly catch broken down by target species, area fished, and gear used, as submitted by individual Contracting Parties, and are the only source of gear-specific catch data available for the NRA. Not all contracting parties submit STATLANT 21B data. Therefore, it represents an incomplete summary of catch by gear type. Further,

STATLANT 21A data are considered a more accurate source of overall catch data based on discussions at the 2013 NAFO annual meeting. Therefore, it is not appropriate to compare yearly catch data between the two sources. Moreover, because NAFO divisions span territorial waters of Contracting Parties, at least some of the catch is attributable to vessel operations within the territorial waters of Canada and Denmark, with respect to Greenland. Accordingly, these data are not entirely representative of catch by these gear types within the NRA alone. Because it is difficult to accurately determine exactly the scale of bottom gillnet and longline landings within the NRA and outside the territorial waters of adjacent Contracting Parties, the estimates in these tables likely overestimate the catch of bottom gillnet and bottom longline gear within the NRA. Comparability and applicability of NAFO data is an issue that is currently being investigated by all NAFO bodies. NAFO will continue to evaluate the accuracy of data sources and work to improve the reliability and comparability of different data sources.

5.0 Environmental Consequences of the Proposed Action and Alternatives

Data used in the analyses below were obtained from the NAFO Secretariat, the Greater Atlantic Regional Fisheries Office and the Northeast Fisheries Science Center of NMFS, and the Department of Fisheries and Oceans Canada (DFO). As noted above, there are limitations to the data available to conduct this analysis, including the inability to compare STATLANT 21A and 21B data. Since there is no data available to indicate how many vessels use each gear type, or their average catch rate for each species, it is not possible to precisely estimate the scale of gear-specific impacts associated with the proposed action. Accordingly, the proportion of catch by gear type summarized in Table 12 and the scale of the proposed action (the potential permitting of up to 10 additional gillnet and longline vessels) will be used to provide a means to evaluate the relative impacts on total yearly catch, as derived from STATLANT 21A data, under the proposed action.

5.1 Target and Non-Target Species

Since the proposed action essentially represents an exploratory fishery on Atlantic halibut and skates within the NRA using bottom gillnet and longline gear, little is known about the expected scale or catch composition of proposed fishing operations. While the proposed action may primarily target skates and Atlantic halibut, it is likely that haddock, pollock, and possibly monkfish will also be caught. For the purpose of this section, no distinction between target and non-target species will be made, save for identifying the applicable bycatch restrictions for managed stocks.

The NCEMs contain specific provisions to minimize bycatch of non-target species, such as a requirement that the vessel move 10 nautical miles if the bycatch of a moratorium species (such as 3L or 3NO cod, 3NO capelin, 3L and 3NO witch flounder, and American plaice) in any one haul exceeds 5 percent of the total weight of catch retained on board (Article 6.3 of the NCEM). Thus, existing NAFO bycatch provisions will serve to mitigate the potential impact of the U.S. fishing operations on these regulated species within the NRA.

5.1.1 No Action Alternative

Under the No Action alternative, NMFS would not issue an HSFCA permit to any U.S. vessel to fish with bottom longline or gillnet gear within the NRA. This would prevent any U.S. vessel fishing with bottom gillnet or longline gear from harvesting any NAFO-managed species, including any currently regulated species such as skates, or un-regulated species such as Atlantic halibut, haddock, or pollock. As a result, the no action alternative is expected to have slightly less of a biological impact on target species in comparison to the proposed action because fishing effort would be slightly less than if these vessels are permitted. Since the projected catch from the proposed vessels is so minor (see discussion below), it is likely that the no action alternative would have a negligible impact on target and non target species when compared to the proposed action. It is also not expected that the the No Action alternative would cause effort to increase in the future on stocks already being impacted by existing operations, and as such impacts are likely to be negligible.

5.1.2 Proposed Action

Under the proposed action, NMFS would issue a HSFCA permit to up to 10 U.S. vessels to fish with bottom gillnet or longline gear in the NRA for species allocated or available to the United States. In comparison to the No Action alternative, the proposed action is likely to result in slightly higher, though difficult to quantify, catch of both target and non-target species, including managed species allocated directly to the U.S. (3M redfish, 3LNO yellowtail flounder, Subareas 3 and 4 *Illex* squid, and 3L shrimp) or available to the U.S. as part of the “others” quotas for each species (3LN and 3O redfish, 3M cod, white hake, and skates).

NAFO establishes quotas for each managed stock on an annual or multi-year basis using the best available scientific advice provided by the Scientific Council. As noted in Section 4.1.1, yellowtail stock size is currently well above B_{MSY} . The 1,500 mt of yellowtail flounder quota that could be transferred to the U.S. from Canada on a yearly basis represents approximately 9 percent of the total quota allocated for this fishery in 2013. Similarly, U.S. quotas for other species (69 mt of 3M redfish, 453 mt of Subareas 3 and 4 *Illex* squid, and 96 mt of 3L shrimp in 2013) represent a fraction of the total available catch (1.1 percent, 1.3 percent, and 1.1 percent, respectively). Under the proposed action, U.S. fishing vessels would be subject to the quotas established by NAFO. Of the species managed by “others” quotas, only white hake and skates are possibly impacted by the proposed action. According to Table 12, very little, if any, white hake or skates are caught by bottom longline or gillnet gear within Divisions 3KLMNO and 4VsWX of the NRA. Thus, catch of these species under the proposed action is expected to be negligible. Nevertheless, in order to avoid exceeding the U.S. or “others” quotas, NMFS will closely monitor landings and close the appropriate fishery for the remainder of the year (i.e., prohibit a vessel from targeting such stocks in a manner that such stocks represent the majority of catch in any one haul) once it is projected that the U.S. or “others” quota has been harvested. To account for any potential bycatch of such species following the closure of the directed fishery, to the extent practicable, NMFS will close the directed fishery after taking into consideration projected bycatch amounts when targeting other species. Therefore, while the proposed action is expected to result in increased catch of NAFO-regulated species, it is unlikely

that catch by U.S. vessels will cause any quotas established to ensure the long-term sustainability of each stock will be exceeded. Accordingly, any impacts of the proposed action on regulated species will be negligible and unlikely result in long-term impacts to regulated species.

In contrast to the impacts to regulated species, the potential impacts to unregulated species that may be caught under this proposed action are more difficult to evaluate. Because these species are not currently regulated by NAFO, stock assessments are not conducted within the NRA or evaluated by the Scientific Council. Thus, the Scientific Council has not recommended scientifically-derived harvest levels that would ensure that overfishing does not occur and that biomass for these species could be maintained at a sustainable level. The stock assessments that are available for these species are often several years old, and some do not cover the areas that may be fished within the NRA as part of this action. Therefore, it is unclear what the proper level of harvest within the NRA is for these stocks to ensure their long-term sustainability.

Notwithstanding the lack of recent and area-specific stock assessments for unregulated species that may be caught under this action, the proposed action is not expected to have an appreciable impact on the primary unregulated species that may be caught by proposed fishing operations, including Atlantic halibut, haddock, pollock, or monkfish. As noted above in Table 12, bottom gillnet and longline gear represented just 6 percent and 2 percent, respectively, of the total annual average catch of all species by all gear types within Divisions 3KLMNO and 4VsWX of the NRA (the primary area to be fished as part of the proposed action) during 2000-2011. Similarly, the number of hours fished by bottom gillnets represented only 8 percent of the total number of hours fished by all gear types in these areas during this period, while bottom longline gear amounted to only 2 percent of the total hours fished by all gear types in these areas during this period. As noted above, this is likely an overestimate of the amount of catch and effort attributable to these gear types within the NRA, as available STATLANT 21B data regarding gear-specific catch and effort includes areas within the territorial waters of coastal States. Under the proposed action, a maximum of 10 vessels could be permitted to fish with bottom gillnet or longline gear, although it is likely that less than 5 U.S. vessels will actually fish in the NRA. Thus, these vessels fishing with these gear types represent a very small fraction of the total amount of catch and associated fishing effort within the NRA each year.

Compared to the No Action alternative, the proposed action would increase catch of Atlantic halibut, but such an increase is not expected to result in substantial adverse impacts to this species. A 2010 survey by the Canadian DFO indicated that Atlantic halibut SSB is increasing and would continue to increase, provided catch remained below 4,000 mt (DFO 2012a). Even though catch in 2012 spiked to over 3,100 mt, it is unclear whether this trend will continue. As shown in Figure 18, landings have increased since about 1995. Between 2000-2011, the average annual landings was just under 1,300 mt. Factoring in the spike in landings in 2012 does not substantially affect the average annual landings, with the average annual landings increasing to just over 1,400 mt since 2000. Even if catch would remain at 2012 levels, there is still a low risk (less than 1 percent) that catch at this level would exceed the F_{lim} through 2014 according to a 2012 Canadian assessment (DFO 2012a). In fact, catch could increase to approximately 3,800 mt per year and still have a neutral probability of exceeding F_{lim} according to that assessment. Thus, catch could increase by about 700 mt while still maintaining a neutral probability of exceeding F_{lim} assuming 2012 catch rates continue. If the relative proportion of catch by gear

type derived from STATLANT 21B data is correct, catch of Atlantic halibut by gillnet and longline gear could increase by 525 mt (75% of the potential 700 mt increase) compared to 2012 levels without exceeding F_{lim} . If catch rates more closely reflect the average landing rate since 2000 (about 1,400 mt), then catch by bottom gillnet and longline vessels could increase even further without harming Atlantic halibut. However, Atlantic halibut catch is not likely to be substantial or even approach the potential allowable increases under the proposed action.

Under the proposed action, fishing will likely occur within NAFO Divisions 3N and 3O, as most of the fishable areas within NAFO Subareas 3 and 4 lies predominantly within the Canadian EEZ. Recent Atlantic halibut catch in NAFO Divisions 3N and 3O has averaged less than 350 mt per year since 2000, while catch in NAFO Divisions 4Vs, 4W, and 4X has averaged nearly 1,200 mt during that period (over three times the amount caught in Divisions 3N and 3O). STATLANT 21B data indicate that bottom gillnet and longline gear represent 3 percent and 24 percent of the total Atlantic halibut catch in NAFO Divisions 3KLMNO and 4VsWX of the NRA during 2000 – 2011. Applying these ratios to average annual catch from NAFO Divisions 3N and 3O results in an expected potential Atlantic halibut catch of about 11 mt for bottom gillnet gear and 84 mt for bottom longline gear under this proposed action, assuming the proposed action doubles current Atlantic halibut landings by such gear types. This amount of catch (95 mt) is substantially less than the maximum increase in Atlantic halibut catch that could be accommodated without exceeding F_{lim} . Therefore, while the proposed action is likely to increase catch of Atlantic halibut compared to the No Action alternative, it is not expected that this level of additional catch will result in substantial adverse impacts to this stock, especially considering that a majority of Atlantic halibut catch is coming from areas not likely to be affected by this proposed action.

Canadian surveys of Division 4X haddock indicate that SSB has steadily increased to just over 80 percent of SSB_{MSY} as of 2012 (DFO 2012b). Haddock catch within NAFO Subareas 3 and 4 has been under 10,000 mt since 1993, ranging from 3,700 mt to 8,600 mt, with the majority of the catch coming from NAFO Division 4X. In 2011, total haddock catch from NAFO Subareas 3 and 4 was just under 4,000 mt, but spiked to just over 8,400 mt in 2012 (see Figure 19). If the relative proportion of catch by gear type derived from STATLANT 21B data is correct (see Table 12), annual haddock catch by bottom gillnet and longline gear represented about 2,200 mt of the 2012 catch. Even if the proposed action doubled the haddock landings by bottom gillnet and longline gear, total haddock catch would be just over 10,000 mt under the proposed action. Given the recent upward trajectory of SSB since 2000, a period that included catch in excess of 8,000 mt from 2001-2003, the amount of additional catch that may come from the proposed action may not change the trajectory of haddock rebuilding, particularly considering the good year classes observed in 2009 and 2010 and the fact that the fishery has historically observed catches well in excess of 10,000 mt from at least 1960 through 1988. However, such high catch is not expected given the proposed action is likely going to occur predominantly in Subarea 3 by approximately 5 U.S. vessels. Since 2000, just under 1,500 mt of haddock has been caught in Subarea 3 by all gear types according to STATLANT 21A data, with an average annual landings of 115 mt. Using the relative proportion of total catch attributed to bottom gillnet and longline gear (26 percent), it is possible that the proposed action could increase haddock catch from NAFO Subarea 3 by 30 mt annually, assuming the proposed action doubles current haddock landings by such gear types. This is a more realistic estimate of the potential impact of the

proposed action, but still likely overestimates potential increase in catch. A 30 mt increase in haddock catch represents less than 1 percent of the total average annual haddock catch from NAFO Subareas 3 and 4 from 2000 – 2011, suggesting that such additional catch would be negligible, and would not adversely impact the stock.

Pollock biomass appeared to be increasing in Division 4X according to a 2009 DFO assessment, with low F and signs of recent good recruitment (DFO 2009). The assessment warned that the stock is not rebuilt, and that a directed fishery, particularly for the eastern and western components of the stock in NAFO Subarea 4, should proceed with caution. According to STATLANT 21B data, bottom gillnet and longline gear represent about 31 percent of the total pollock catch in recent years from NAFO Divisions 3KLMNO and 4VsWX, with 68 percent of pollock catch harvested by bottom trawl gear. Since the proposed action would likely occur predominantly in NAFO Subarea 3, it is more appropriate to evaluate the potential increase in pollock catch from that area. Since 2000, a total of 407 mt of pollock has been caught in NAFO Subarea 3, averaging 31 mt each year. If bottom gillnet and longline gear represent 31 percent of total yearly catch, the proposed action would likely increase pollock catch by about 10 mt annually compared to the No Action Alternative, assuming the proposed action doubles pollock catch. This represents less than 0.2 percent of the average annual pollock catch from NAFO Divisions 3KLMNO and 4VsWX since 2000. Accordingly, this amount of additional catch is negligible, and will not adversely impact the stock compared to the No Action alternative.

Evaluating trends in both historic catch and survey data presented in a 2003 Canadian assessment (DFO 2003) suggests that monkfish biomass in Divisions 3LNO may be increasing in recent years (see Figure 23 and the discussion in Section 4.1.13). If true, monkfish catch rates may be expected to continue to increase over the next several years as biomass also increases, before declining again. Accordingly, in the short-term, the proposed action is not expected to result in adverse impacts to monkfish in Divisions 3LNO compared to the No Action Alternative.

While the proposed action is expected to increase monkfish catch compared to the No Action alternative, it is unclear how much additional monkfish will be caught as a result of the proposed action. Average annual monkfish catch has remained stable at about 200 mt since 2008, and seems to have risen and fallen in conjunction with increases in biomass. Assuming bottom gillnet and longline gear represent 91 and 0.01 percent of annual monkfish catch from NAFO Divisions 3LNO, respectively, and that recent landings trends continue, the proposed action could result in an additional 182 mt of additional monkfish catch, assuming the proposed action doubles catch by such gear types. This is not a realistic estimate of the potential impacts on monkfish resulting from the proposed action, however, since only longline vessels have expressed an interest in fishing within the NRA through 2013, and none of these vessels have indicated any interest in targeting monkfish at this time. In the domestic monkfish fishery, longline and hook gear represent less than a fraction of a percent (e.g., 0.3 percent in 2009) of yearly monkfish landings (see Table 15 in NEFMC 2011). Accordingly, assuming that predominantly longline vessels will seek permits to fish in the NRA, monkfish catch is expected to be minimal under the proposed action.

Since bottom gillnet and longline vessels very rarely operate outside of the Canadian EEZ and within the NRA, anticipated catch rates are uncertain and difficult to predict. All vessels that

would be permitted under this proposed action would be subject to the existing NAFO reporting and recordkeeping requirements, including mandatory observer coverage, use of VMS, daily catch reports, and logbook requirements. Thus, catch and effort data would be collected as part of the proposed action. This additional information could facilitate a more comprehensive evaluation of bottom gillnet and longline catch within the NRA. This data could be used to evaluate the continuation of such operations in future years to ensure that catch and bycatch rates are consistent with the NCEM and U.S. and NAFO fishery policy. Because the authorization to fish within the NRA is a yearly decision by NMFS, should such data indicate that excessive amounts of any species are being caught, NMFS could decide not to authorize the continuation of such operations in future years.

5.2 Impact on Protected Species

5.2.1 No Action

Taking no action would maintain fishing effort in the NRA at existing levels. As a result, it is likely that there would be no additional opportunity for interactions to occur between the bottom gillnet and longline gear and marine mammals or turtles listed under the ESA. Therefore, taking no action would likely have little effect on protected species, but would have a low positive impact relative to the proposed action, as there would be the potential for fewer interactions with such species. However, given the small amount of projected effort from the vessels proposed to be permitted, it is not likely that this benefit would be substantial.

5.2.2 Proposed Action

The proposed action is expected to result in a small, though negligible, increase in potential interactions and, therefore, adverse impacts to marine mammals or sea turtles compared to taking no action (i.e., levels already occurring in the fishery). Both bottom gillnet and longline gear are known to interact with protected species, including turtles and marine mammals, as discussed in Section 4.2 above. Longline interactions with sea turtles are predominantly in the pelagic longline fishery for swordfish, not the bottom longline fishery for groundfish species. There have been no documented interactions with leatherback sea turtles in a Canadian Atlantic halibut survey using gillnets and longline, or the Canadian Atlantic halibut directed fishery using the same gears (DFO 2012c). Thus, this action is not expected to have a negative impact on the sea turtle population in the Western North Atlantic. Benjamins et al. (2012) note that only about 2 percent of large whale entanglements occur outside of the Canadian EEZ. Of the 24 large whales (mostly humpback and minke whales) that were entangled outside of the Canadian EEZ, 21 were entangled with gillnet gear, while 2 were entangled in hook and line gear. Most of these entanglements were attributed to particular gillnet fisheries for groundfish. However, humpback whale entanglements have been recorded with gillnet gear targeting monkfish or skates since 2004, and minke whale interactions with any of the gillnet gear fisheries were recorded (Benjamins et al., 2012). Since this proposed action will not target fisheries with higher large whale interactions (cod or winter flounder – see Figure 25), potential interactions with large whales are expected to be minimal. This risk is particularly reduced if only longline gear is used by additional U.S. vessels permitted under the proposed action, as expected based on permitting

inquiries through 2013. Under the proposed action, all vessels would be informed about their responsibilities for avoiding any interactions and reporting any interactions with marine mammals to NMFS. Because the authorization to fish within the NRA is a yearly decision by NMFS, such data would be used when evaluating whether to authorize the continued use of bottom gillnets and longline gear in the NRA during future years, or whether to impose permit restrictions requiring the use of gear modifications that would reduce or minimize the impact of any interactions with protected species.

Sturgeon have been caught within the NAFO Convention Area. However, neither the specific species, nor the exact location within the NAFO Convention Area or the NRA in which a majority of sturgeon were caught are identified in the available data. For example, from 2001 – 2010, a total of 131 sturgeon were caught within the NAFO Convention Area. Of these, 7 sturgeon were caught within Division 4T (at the mouth of the St. Lawrence River within the Canadian EEZ), while 124 sturgeon, nearly 95 percent of the sturgeon caught during this period, were caught in unspecified areas. Therefore, it is not possible to accurately determine whether there is sturgeon take within the NRA based on available data. Genetic data that could be used to evaluate whether any of these sturgeon originated within any of the five DPSs listed under the ESA (see Section 4.1.2 above) are also not available. Therefore, it is not possible to accurately identify whether Atlantic sturgeon, including one or more of the DPSs listed as endangered under the ESA, have been caught within the area in which U.S. vessels would operate under the proposed action.

Operations by U.S. vessels within the NRA under the proposed action are not expected to appreciably increase interactions with Atlantic sturgeon. Despite the fact that the proposed action would authorize the use of bottom gillnet, gear known to interact with Atlantic sturgeon, proposed operations would occur offshore, in deeper water, and far removed from the mouths of any river. Because expected operations would not occur within the area in which Atlantic sturgeon are likely to occur, it is unlikely that there will be any interactions with Atlantic sturgeon and, more specifically, a DPS listed as endangered under the ESA as part of the proposed action. Finally, as noted above, quotas for species managed within the NAFO Convention Area that are available to U.S. vessels represents a very small fraction of the available quota for each species in 2013. Accordingly, U.S. operations under the proposed action would not greatly affect the amount of fishing effort occurring within the NAFO Convention Area or the NRA, and would be terminated once available quota has been harvested. Thus, the proposed action would pose little to no risk of increasing the potential impacts on Atlantic sturgeon compared to the no action alternative.

5.3 Habitat Impacts

5.3.1 No Action

Taking no action would maintain fishing effort in the NAFO Convention Area and the NRA at or below existing levels. For the reasons described below, the no action alternative would have negligible impacts on benthic habitat in the NRA when compared to the proposed action as the expected fishing effort is small from the proposed permitted vessels. Additional effort would be using gear that has less of an impact on habitat. The fishing activities that would occur without the permitted vessels would continue to impact the seabed habitats in the region.

5.3.2 Proposed Action

The proposed action is not expected to result in any negative impacts to benthic habitat in the NRA in comparison to taking no action since participating vessels will be fishing in areas already subject to bottom trawl fishing activity. Furthermore, this action would authorize a minimal additional amount of fishing effort using gear that has less detrimental impacts to bottom habitat than trawl gear. Accordingly, such additional effort in an area already exposed to trawl gear is not expected to increase habitat impacts. Finally, participating vessels will be required to comply with NAFO measures to protect VMEs contained in Chapter II (Articles 15 – 24 of the 2013 NCEMs), including interim encounter provisions which require vessels to move a minimum distance if they encounter VME indicator species above a threshold level specified in the NCEMs. U.S. vessels will also be required to abide by the seamount closure areas and coral protection zone established in the NCEMs, as noted above.

5.4 Economic Impacts

There are negative economic impacts associated with taking no action, since it would preclude U.S. vessels from taking advantage of quota allocated or available to U.S. vessels, causing these vessels to miss out on a potential economic opportunity. Conversely, the proposed action would provide additional economic opportunity to U.S. vessels that have the ability to harvest NAFO stocks allocated or available to U.S. vessels, or to catch stocks that are not currently managed by NAFO within the NRA. This economic opportunity is particularly important in light of recent economic losses associated with reductions in the U.S. Northeast multispecies fishery. A discussion of the possible economic benefits associated the proposed action is provided in the following paragraphs.

It is difficult to predict the economic value of the proposed action, since it is largely dependent on which species vessels catch, the volume of catch, and the ability of vessel owners to market the catch in either the U.S. or Canada. Costs associated with selling particular species will vary, and will affect vessel operation and associated expected revenue. For example, thorny skate is the predominant skate species caught within the NRA. It can be landed in Canada, but because it is a prohibited species under the Northeast Skate Complex Fishery Management Plan (FMP), the Magnuson-Stevens Fishery Conservation and Management Act (MSA) prohibits the import of thorny skate into the United States. In contrast, winter skate are allowed to be landed in the United States, but cannot be landed in Canada. To comply with both U.S. and Canadian fisheries law, vessels would likely have to sell different species of skates in different markets, thereby affecting potential return based on different prices and shipping/processing costs in each market. Therefore, expected revenue from landing skates will vary based on what is caught and where it is sent for processing and further sale.

Average ex-vessel prices observed during 2013 from both Canadian and U.S. markets¹ are provided in Tables 13 and 14. Table 13 provides an estimate of the potential revenue associated with the proposed action during 2014, assuming that U.S. vessels would land all quotas available

¹ Ex-vessel prices from January 1, 2013, through November 5, 2013, were taken from DFO 2013 and NMFS 2013b.

to U.S. vessels, including for stocks allocated directly to the United States (3M redfish, *Illex* squid), as well as stocks available to U.S. vessels under the “others” quotas (3M cod, 3LN redfish, 3O redfish, 3NO white hake, and 3LNO skates). Since other Contracting Parties will also be catching stocks under the “others” quotas, realized landings of both allocated and “others” stocks will likely be less than shown in Table 13. Accordingly, Table 13 represents the maximum potential value under the proposed action. Table 14 provides an estimate of potential revenue associated with expected landings of unregulated NAFO stocks under the proposed action during 2014. Because yellowtail flounder, American plaice, *Illex* squid, and shrimp cannot be effectively targeted using bottom gillnet or longline gear, such species are not included in this analysis.

Table 13. Potential Revenue in 2014 for Regulated Stocks Under the Proposed Action

Species	Division	2014 Quotas (lb) ¹	Avg. 2013 Canadian Price/lb (USD)	Avg. 2013 U.S. Price/lb (USD)	Potential Revenue Using Canadian Prices (USD)	Potential Revenue Using U.S. Prices (USD)
Atlantic cod	3M	127,868	\$0.48	\$2.66	\$61,377	\$340,203
Redfish	3LN	92,594	\$0.35	\$0.76	\$32,408	\$70,120
	3M	152,119	\$0.35	\$0.76	\$53,242	\$115,197
	3O	220,462	\$0.35	\$0.76	\$77,162	\$166,953
White hake	3NO	130,073	\$0.38	\$1.88	\$49,428	\$244,382
Skates (unclassified)	3LNO	568,793	\$0.18	\$0.98	\$102,383	\$560,146

¹Quota allocated or available to U.S. vessels, including "others" quotas.

Table 14. Potential Revenue in 2014 for Unregulated Stocks Under the Proposed Action

Species	Expected Catch (lb)	Avg. 2013 Canadian (Price/lb, USD)	Avg. 2013 U.S. (Price/lb, USD)	Potential Value Using Canadian Prices (USD)	Potential Value Using U.S. Prices (USD)
Haddock	66,139	\$0.36	\$2.05	\$23,810	\$135,485
Atlantic halibut	209,439	\$3.65	\$7.69	\$764,453	\$1,610,522
Pollock	22,046	\$0.30	\$1.21	\$6,614	\$26,689
Monkfish	Unknown	\$0.81	\$1.57	Unknown	Unknown

As noted above, it is unclear how much monkfish, if any, would be landed under the proposed action. This is because monkfish is predominantly landed using bottom gillnet gear in Division 3NO. However, because only vessels using bottom longline gear have expressed an interest in fishing in the NRA and very few, if any, monkfish are historically landed using longline or hook gear in either the NAFO or domestic fisheries, it is unlikely that much monkfish will be landed under the proposed action. Thus, no estimates are provided of the potential economic benefits associated with landing this species at this time.

Based on Tables 13 and 14, the maximum potential revenue associated with the proposed action is estimated to range from just under \$1.2 million to just under \$3.3 million using recently observed Canadian and U.S. ex-vessel prices during 2013, respectively. Based on public inquiries to date, it is likely that bottom longline vessels will target Atlantic halibut and skates,

with potential bycatch of haddock and pollock. If this is the case, realized revenues under the proposed action would more likely range between \$900,000 to just over \$2.3 million using Canadian and U.S. ex-vessel prices observed during 2013, respectively.

Another factor that should be considered when assessing the potential economic impact of the proposed action is the high operating costs associated with sending a U.S. vessel to the Grand Banks. Vessels that participate in the U.S. NAFO fishery must steam approximately 1,000 miles (5 days) out to the Grand Bank, resulting in high fuel costs. Additionally, vessel owners must comply with NAFO's VMS and catch reporting requirements. Further, if vessel owners decide to land their catch in Canada, they will be required to obtain the necessary licenses and comply with prior notice requirements (of entry into EEZ, landing, etc.), all of which must be done through a shore agent (as required by Canadian fisheries law), which carries an associated cost. Offloading and shipping catch to U.S. markets would be an additional cost to vessel owners. Based on 2012 NAFO operations by a trawl vessel, such costs are estimated in Table 15.

Table 15. Estimated Operational Costs Associated with Each Fishing Trip within the NRA

Expense	Cost (USD)
Canadian agent	\$800 per trip
Canadian weighmaster	\$350 per landing event
Offloading	\$9,000 – \$12,000 per trip
U.S. Customs fees	\$1,000 per shipment
Shipping	\$15,000 – \$20,000 per shipment
Fuel	\$4.00 per gallon

Several of the costs listed in Table 15 are already incorporated into the operational budgets of vessels that fish with pelagic longline gear for tuna and swordfish under ICCAT, including costs associated with Canadian agents or permits. Therefore, such vessels may be able to reduce operational costs by only paying for such services once if they can fish for both tuna and swordfish under ICCAT and also for species managed under NAFO on the same trip.

Although the economic benefit of allowing additional U.S. vessels to fish within the NRA is highly uncertain, the proposed action is expected to have a positive impact on U.S. vessels compared to the No Action alternative, since it would provide additional fishing opportunities beyond those available to the domestic fishery.

5.5 Social Impacts

Not issuing HSFCA permits to U.S. bottom gillnet and longline vessels so that they may participate in the NAFO fishery (No Action alternative) would prevent these vessels from taking advantage of the additional fishing opportunities presented by regulated species allocated or available to U.S. vessels operating in the NRA, as well as unregulated species caught on the Grand Banks. As a result, the No action Alternative would have a negative social impact.

The proposed action to issue HSFCA permits to U.S. vessels in order for them to participate in a NAFO bottom gillnet or longline fishery is expected to provide additional fishing opportunities in comparison to taking no action. Many of these vessels are located in some of the larger ports

throughout the Northeast. These ports have experienced substantial economic impacts in recent years due to reductions in fishing opportunities, particularly in the Northeast Multispecies FMP. Thus, the additional fishing opportunities provided by the proposed action represents potential additional income to such vessels from these ports. As noted in Section 5.4, the magnitude of this additional income is difficult to fully assess, but is largely based on where the vessel owners are able to land their catch, the form of the catch landed, and the markets available. Regardless of the price offered, the volume of quota available is expected to be sufficient to fully cover operational costs and enable participating vessels to generate additional fishing revenue unavailable under the No Action alternative.

In addition to the potential for increased income, in comparison to taking no action, the proposed action would enable vessel owners and their crew, as well as those associated with the shorside vessel support industries, to keep working when they otherwise might not be able to. The ability to keep working has a positive social impact on both the individuals that participate in the U.S. NAFO fishery and the communities in which they live. The proposed action would represent a gain in operational efficiency for vessels that already fish for tuna and swordfish on the Grand Banks under ICCAT because such vessels could fish in this area for additional species, thereby increasing revenue while maintaining or reducing operational costs. Providing additional fishing opportunities to a beleaguered industry would also help to improve relations between commercial vessel operators and NMFS that have been strained by ongoing reductions in fishing effort and changing regulations, particularly in the Northeast groundfish fishery.

In contrast with the No Action alternative, under the proposed action, there may be negative social impacts in terms of periods of separation between vessel crew members and their friends and families, as the NRA is over 1,000 miles away from the U.S., necessitating upwards of 5 days to arrive on the fishing grounds. For vessels that already spend several months fishing in these waters for tuna and swordfish, this may mean more time away from family and friends, thereby increasing stress and tension in those relationships and, thereby, adverse negative social impacts compared to the No Action alternative.

5.6 Cumulative Effects

5.6.1 Introduction to Cumulative Effects

A cumulative effects analysis (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 in terms of the specific resource, ecosystem and human community being affected. This section serves to examine the potential direct and indirect effects of the alternatives in this action summarized in Section 3.0, together with past, present, and reasonably foreseeable future actions that affect the baseline described in Section 4.0. It should also be noted that the predictions of potential synergistic effects from multiple actions, past, present and/or future will generally be qualitative in nature. This analysis has taken into account, to the extent possible, the relationship between the

historical and present condition of the regulated and unregulated NAFO stocks which may be affected by this action. This analysis also takes into account the relationship between this action and past, present and future actions involving the Northeast multispecies fishery and the tuna and swordfish fishery under ICCAT.

Temporal Scope of the VECs

The temporal scope for this analysis is primarily focused on the time period from 1994 forward five years since this was the year Amendment 5 to the NE Multispecies FMP was implemented establishing effort controls in form of days-at-sea (DAS) for this fishery, and this is also the year the cod stock in NAFO Division 3NO went under moratorium. For endangered and other protected species, the context is largely focused on the 1980's and 1990's, when NMFS began generating stock assessments for marine mammals and sea turtles that inhabit waters of the U.S. EEZ. In terms of future actions, the analysis examines fishing and non-fishing actions that are in the development or permitting stage, or are in some way proposed or under discussion.

Geographic Scope of the VECs

The geographic scope of this cumulative effects analysis of impacts to fish species, endangered and protected species, and habitat for this action is the area in which fishing activities are expected to occur in the NRA. Most of the fishing activity under the proposed action would occur within the footprint of existing bottom fishing activity (see Figures 1 and 29) located on the southeastern tail of the Grand Bank outside the Canadian EEZ. The geographic range for community impacts is defined as those fishing communities located in New England (Maine, New Hampshire, Massachusetts, Rhode Island, New York, and New Jersey) that contain vessels capable of participating in a bottom gillnet or longline fishery for groundfish species on the Grand Bank. The communities most likely impacted by this action are Portland, ME; Gloucester, MA; Boston, MA; New Bedford, MA; Point Judith, RI; Montauk, NY; Barnegat Light, NJ; and Cape May, NJ.

Valued Ecosystem Components (VEC)

As noted in Section 4.0 (Description of the Affected Environment), the VECs that exist within the groundfish fishery are identified and the basis for their selection is established. Those VECs were identified as follows:

1. Target species (primarily skates and Atlantic halibut)
2. Non-target species (incidental catch and bycatch)
3. Protected species
4. Habitat, and
5. Communities (includes social and economic impacts).

Analysis of Total Cumulative Effects

A cumulative effects analysis ideally makes effect determinations based on the culmination of the following: (1) impacts from past, present and reasonably foreseeable future actions; PLUS (2) the baseline condition for resources and human communities (note – the baseline condition consists of the present condition of the VECs plus the combined effects of past, present and reasonably foreseeable future actions); PLUS (3) impacts from the Preferred Alternative and other alternatives.

NMFS staff determined that the 5 VECs (target species, non-target species, protected species, habitat and communities) are appropriate for the purpose of evaluating cumulative effects of the proposed action based on the environmental components that have historically been impacted by fishing, and statutory requirements to complete assessments of these factors under the MSA, ESA, Marine Mammal Protection Act, Regulatory Flexibility Act, and several Executive Orders. The VECs are intentionally broad (for example, there is one devoted to protected species, rather than just marine mammals, and one on habitat, rather than essential fish habitat (EFH)) to allow for flexibility in assessing all potential environmental factors that are likely to be impacted by the action. While subsistence fishing would ordinarily fall under the “communities” VEC, no subsistence fishing or Indian treaty fishing takes place in the area affected by this action.

U.S. vessels interested in fishing within the NRA may participate in any number of domestic or international fisheries, including the Northeast multispecies fishery, skate fishery, and the tuna and swordfish fishery under ICCAT, among others. Given that NAFO species primarily involve groundfish species (redfish, cod, white hake, American halibut, haddock, pollock, and skates), this cumulative effects analysis focuses on management initiatives within the Northeast Multispecies FMP. However, consideration of management initiatives under ICCAT is also considered due to the potential interest of tuna and swordfish vessels in fishing with bottom longline gear in the NRA. Because interested vessels are likely currently issued one or more domestic fishery permits, these vessels must comply with all Federal air quality (engine emissions) and marine pollution regulations, and, therefore, do not significantly affect air or marine water quality. Consequently, this action would not likely result in any additional impact to air or marine water quality. Thus, this issue is not discussed further in the analyses below.

5.6.2 Past, Present, and Reasonably Foreseeable Future Actions

This section describes the past, present, and reasonably foreseeable future actions that may affect the proposed action. A summary of the effects of past, present and reasonably foreseeable future actions is presented in Table 16. A thorough summary of the primary past, present, and reasonably foreseeable future actions effecting this proposed action can be found in Section 7.6 of the Framework Adjustment 50 EA (NEFMC 2013), as actions taken in the NE Multispecies FMP are most influential over the potential issuance of HSFCA permits to bottom gillnet and longline vessels interested in targeting groundfish stocks in the NRA. The baseline conditions of the resources and human community are also summarized in Table 17, although it is important to note that beyond the stocks subject to the NAFO quota and protected species, quantitative metrics for the baseline conditions are not readily available. Most of the actions affecting this supplemental EA come from fishery-related activities (e.g., Federal and international fishery management actions). As expected, these activities have fairly straightforward effects on environmental conditions, and were, are, or will be taken, in large part, to improve those conditions. The MSA 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.

5.6.2.1 Non-fishing Actions and Activities

There are several ongoing, non-fishing actions that could potentially impact the Northwest Atlantic trawl fishery governed under NAFO. These activities include: Chemical (e.g., pesticides and oil pollution), biological (e.g., invasive species and pathogens), and physical (e.g., dredging and disposal, coastal development) disturbances to riverine, inshore and offshore habitats; power plant operations (thermal pollution and entrainment of larvae); global warming; and energy projects such as oil platforms. Most of these activities tend to affect inshore areas and have a localized impact, and, therefore, will not have an impact on the region affected by this action. The types of activities that are most likely to affect the NAFO fishery and the species targeted in this fishery are oil platforms. Since 1997, three oil platforms have been installed on the Grand Bank. All three existing platforms are within the Canadian EEZ, but some of their exploration licenses extend beyond the 200-mile limit. The construction of the Hibernia platform, the world's largest oil platform, was completed in 1997. This oil platform is a permanent structure called a Gravity Base Platform (GBP) that is built to withstand the rough seas, winds, and icebergs of the Grand Bank, and is located approximately 200 miles east-southeast of St. John's, Newfoundland. Conversely, the Terra Nova and Sea Rose platforms, which were completed in 2002 and 2005, respectively, are Floating Production, Storage and Offloading (FPSO) vessels, which are not permanent structures. The Terra Nova platform is located approximately 220 miles east-southeast of St. John's, and the Sea Rose platform is located approximately 220 miles east of St. John's. There is a fourth oil platform, the Hebron, still in development. After several delays, construction of the stand-alone concrete gravity based structure (GBS) structure began in 2012 and is not expected to be completed and operational until 2016 or 2017. The Hebron platform will be situated approximately 220 miles southeast of St. John's, Newfoundland.

5.6.2.2 U.S. Fishery Management Actions

The MSA, as revised, was enacted to promote long-term positive impacts on the environment in the context of fisheries activities. 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.

Several actions have taken place since the mid-90s to reduce fishing effort in the Northeast multispecies fishery in an effort to rebuild stocks of species such as cod, haddock, and yellowtail flounder. Collectively, these actions have had a substantial effect on reducing fishing effort, which has generated interest in exploring new fishing opportunities to help offset some of the financial losses associated with actions in this fishery. A summary of the past, present, and foreseeable future management actions in the Northeast multispecies fishery resulting in a

substantial decline in fishing effort is included in Section 3.3 of the EA prepared for Framework Adjustment 50 to the FMP (NEFMC 2013). Updated assessments completed in late 2011 and early 2012 indicated slower than expected progress toward rebuilding overfished groundfish stocks. To comply with established rebuilding timelines, substantial reductions in annual catch limits were necessary in 2013 to ensure that overfishing is ended and stocks continue to rebuild. This has resulted in further effort reductions beyond those already achieved, and increased adverse economic impacts to affected entities. This could prompt vessels to seek additional fishing opportunities in other fisheries, including bottom gillnet and longline fisheries within the NRA.

A recent history of the Northeast Skate Complex FMP is summarized in Section 3.2.3 of the 2012-2013 specifications document (NEFMC 2012b). The domestic skate fishery began in the 1990s as an underutilized species. Following a request to list barndoor skates as endangered or threatened under the ESA, a benchmark assessment was conducted in 1999. This precipitated the development of a formal FMP, which was implemented in 2003. Measures include catch limits in both the wing and bait (whole skate) fisheries. Specifications have been implemented over the years to control the overall harvest of skates in directed and incidental fisheries. Another specifications package is under development that may reduce annual catch limits by upwards of 30 percent beginning in 2014.

The most recent history of management actions in the monkfish fishery is summarized in Section 2.1.1 of the environmental assessment prepared for a 2013 emergency action in the Monkfish FMP (NMFS 2013c). The Monkfish FMP was developed in 1999 to control bycatch of monkfish in several fisheries, including the groundfish and Atlantic sea scallop fishery. Primary management measures include days-at-sea restrictions and trip limits. A series of actions has refined such measures, with annual catch limits implemented in 2011. Catch limits and landings rose until about 2003, before bottoming out in 2006 and 2007, and again increasing through 2013. It is expected that annual catch limits will remain steady through 2016 as part of a specifications package currently under development under Framework Adjustment 8 to the FMP.

As noted above, on February 6, 2012, NMFS issued two final rules (77 FR 5880-5912; 77 FR 5914-5982) listing five DPSs of Atlantic sturgeon as threatened or endangered. Four DPSs (New York Bight, Chesapeake Bay, Carolina and South Atlantic) are listed as endangered and one DPS (Gulf of Maine) is listed as threatened. The effective date of the listing is April 6, 2012. The NEFSC prepared an estimate of the number of encounters of Atlantic sturgeon in fisheries authorized by Northeast FMPs. The analysis estimates that from 2006 through 2010, there were averages of 1,239 and 1,342 encounters per year in observed gillnet and trawl fisheries, respectively, with an average of 2,581 encounters combined annually. Mortality rates in gillnet gear were approximately 20 percent. Mortality rates in otter trawl gear observed are generally lower, at approximately 5 percent. The highest incidence of sturgeon bycatch in sink gillnets is associated with depths of <40 meters, larger mesh sizes, and the months April-May. Sturgeon bycatch in ocean fisheries is actually documented in all four seasons with higher numbers of interactions in November and December in addition to April and May. Mortality is also correlated to higher water temperatures, the use of tie-downs, and increased soak times (>24 hours). Most observed sturgeon deaths occur in sink gillnet fisheries. For otter trawl fisheries, Atlantic sturgeon bycatch incidence is highest in depths <30 meters and in the month of June.

Following the listing of several DPSs of Atlantic sturgeon under the ESA, NMFS reinitiated formal consultation under Section 7 of the ESA for 10 fisheries, including the NE Multispecies FMP. On December 16, 2013, a final batched biological opinion (NMFS 2013a) concluded that the more recent larger population estimate derived from NEAMAP data (Kocik et al. 2013) suggests that the level of interactions with the NE multispecies fishery is not likely to have a significant adverse impact on the overall Atlantic sturgeon population, or any of the DPSs. Accordingly, NMFS concluded that the actions considered would not jeopardize the continued existence of any listed species, including all five DPSs of Atlantic sturgeon (NMFS 2013a).

5.6.2.3 NAFO Actions

NAFO implemented a moratorium on fishing for cod in Divisions 3LNO in 1994 due to the poor status of the resource. One year later, NAFO implemented moratoriums on American plaice and witch flounder. In 1999, a moratorium was placed on 3M cod, but was later removed in 2010 following stock recovery. The remaining moratoriums are still in effect, since the Grand Bank stocks of all these three species are slow to rebuild. However, American plaice in NAFO Division 3LNO has shown an increase in biomass and declines in fishing effort since 2003, while the stocks of cod and witch flounder have remained at low levels.

In 1999, NAFO implemented bycatch provisions aimed at protecting stocks under moratorium and/or under a rebuilding plan (FC Doc. 99/12). These bycatch provisions were updated in 2000 to include a requirement that vessels move 5 nautical miles if they exceed the bycatch limits in any one haul, and change fishing area for a minimum of 48 hours if they exceed the bycatch limits on any future haul (FC Doc. 00/15). The bycatch provisions were again updated in 2006 to include a requirement that vessels move 10 nautical miles if they exceed the bycatch limits in any one haul, leave that NAFO Division for a minimum of 60 hours if they exceed the bycatch limits on the next haul, and a 3-hour trial tow provision (FC Doc. 06/11). Furthermore, a footnote was added to the quota table at the 2008 Annual Meeting that specifically modified the bycatch provisions with respect to the bycatch of American plaice in the NAFO Divisions 3LNO yellowtail flounder fishery. This footnote was later revised in 2010 to state that Contracting Parties are subject to an overall American plaice bycatch of 15 percent of the yellowtail flounder quota allocation (i.e., a total bycatch cap for the yellowtail flounder fishery) versus a 5 percent bycatch allowance for each trip.

In response to UNGA Resolution 61/105, NAFO implemented and subsequently revised measures to protect VMEs including closure areas and interim encounter provisions (NAFO 2012c). Similar to the bycatch provisions discussed above, if a vessel encounters VMEs beyond specified thresholds (60 kg of live coral, 7 kg of sea pens, or 300 kg of sponges per set in existing fishing areas), it is required to move at least 2 nautical miles away from the last tow to avoid future encounters. In addition, NAFO will establish a temporary closure of 2 mile radius surrounding tows that exceed the VME indicator species thresholds referenced above. Additional VME closure areas were adopted at the 2013 NAFO annual meeting based on updated data regarding VME indicator species locations (NAFO 2013c).

Finally, in response to efforts by the Food and Agricultural Organization of the United Nations (FAO) to develop a Global Agreement on Port State Measures, NAFO developed a Port State Control scheme, which was adopted at the 2008 Annual Meeting. The purpose of this scheme is to curb illegal, unregulated, and unreported fishing activities in the NAFO Convention Area by establishing a program that requires the port state to verify that a vessel is authorized to fish in the NAFO Convention Area, and that the catch on board is within the limits authorized, prior to that vessel being authorized to land its catch in a port of another Contracting Party.

In terms of reasonably foreseeable future actions, NAFO continues to make updates to its existing VME provisions based on the best scientific information available. It is anticipated that over the next several years, areas within the NAFO Convention Area and the NRA may be closed due to the verified presence of VMEs (based on results of research surveys and other information), and interim encounter threshold levels will be adjusted. Other than this ongoing work concerning protection of VMEs, and annual updates to the quota allocation table (based on the most recent scientific advice) it is difficult to predict the future actions at NAFO since they are highly dependent on issues that are raised at the global level by organizations such as the UNGA and FAO, or by other Regional Fishery Management Organizations or Contracting Parties themselves based on national initiatives.

5.6.2.4 ICCAT Actions

Management actions under ICCAT also affect this proposed action given the interest of several pelagic longline tuna and swordfish vessels to fish for groundfish within the NRA. A general overview of past management actions is found in Section 1.5 of the environmental assessment prepared for Amendment 8 to the Consolidated Atlantic Highly Migratory Species FMP (NMFS 2013d). Tuna and tuna-like species (including swordfish and billfish) have been managed by ICCAT since 1966. Domestic management of such species began in the 1980s. Highly migratory species were managed by regional fishery management councils until 1990, when the Fishery Conservation Amendments of 1990 amended the MSA to authorize the Secretary of Commerce to manage Atlantic tunas, swordfish, billfish, and sharks within the U.S. EEZ. Basic management measures currently include area closures, size and possession limits, target catch requirements, quotas, and gear restrictions.

In 2009, swordfish stocks were declared rebuilt and have remained so through the most recent assessment in 2013. The biomass of most tuna and tuna-like stocks are currently above 50 percent of B_{MSY} . The status of western Atlantic bluefin tuna is currently listed as overfished and subject to overfishing, but questions remain regarding the future productivity potential of the stock, which is based on future recruitment. The scientific body of ICCAT has indicated there is no strong evidence to favor either the low recruitment scenario, under which the stock is above the biomass that can support MSY (i.e., it is considered rebuilt, and overfishing is not occurring), and the high recruitment scenario, under which the stock remains overfished with overfishing occurring and will not rebuild by the end of 2018.

Amendment 8 to the 2006 Consolidated Highly Migratory Species FMP was implemented in August 2013. That action created new permits that allow commercial vessels fishing with rod and reel, handline, harpoon, green-stick, or bandit gear to land and sell swordfish. Amendment 7 to the FMP is currently under development. That action would continue to refine existing

measures, including reallocating bluefin tuna quotas, establishing individual quotas for pelagic longline vessels, mandating retention of legal-sized tunas, creating new gear restricted areas, and closing the pelagic longline fishery when bluefin tuna annual catch limits are reached, among other monitoring and management measures. Implementation of Amendment 7 measures would likely occur in mid-2014 and early 2015.

Table 16. Criteria Used to Evaluate the Potential Impacts of Past, Present, and Reasonably Foreseeable Future Actions

Regulated Groundfish Stocks, Non-groundfish species, Endangered and Other Protected Species	Positive = actions that increase stock size Negative = actions that decrease stock size
Habitat	Positive = actions that improve or reduce disturbance of habitat 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 Negative = actions that decrease revenue and well being of fishermen and/or associated businesses
All VECs	Mixed = both positive and negative

Table 17. Summary Effects of Past, Present, and Reasonably Foreseeable Future Actions on the VECs Identified for the Bottom Gillnet and Longline Fishery within the NRA

VEC	Past Actions	Present Actions	Reasonably Foreseeable Future Actions	Combined Effects of Past, Present, Future Actions
Target Species	Mixed Combined effects of past actions have decreased effort, improved habitat protection, and implemented rebuilding plans when necessary. However, some stocks remain at low biomass levels	Positive Current regulations continue to manage for sustainable stocks and have increased biomass for most species	Positive Future actions are anticipated to continue rebuilding and strive to maintain sustainable stocks, provided catch does not exceed with established quotas or that which is expected to result in a neutral probability of preventing overfishing	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-target Species	Positive Combined effects of past actions have decreased effort, improved habitat protection, and implemented incentives to minimize bycatch and discards	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 stocks, thus limiting the take of discards/bycatch, , provided catch does not exceed with established quotas or that which is expected to result in a neutral probability of preventing overfishing	Short-term Negative Several stocks are currently overfished, have overfishing occurring, or both. Long-Term Positive Continued management of targeted stocks and bycatch interactions will also reduce and control incidental catch/bycatch.
Endangered and Other Protected Species	Positive Elimination of U.S. sturgeon fishery and reduced amount of effort has reduced interactions with protected resources	Positive Current operations do not result in many interactions with protected species, particularly in the NRA. Existing regulations continue to control effort, thus reducing opportunities for interactions.	Mixed Continuation of current regulations and decreasing trends in fishing effort should keep interactions to a minimum, although additional gillnet operations may increase interactions with protected resources	Positive Relatively rare interactions with protected resources, along with continued effort controls will likely help keep protected species interactions to a minimum
Habitat	Mixed Combined effects of effort reductions and better control of non-fishing activities have been positive but fishing activities and non-fishing activities continue to reduce habitat quality	Positive Effort reductions have had positive effect. VME measures and establishment of “footprint” should maintain or minimize future impacts.	Mixed Future regulations will likely control effort and thus habitat impacts but as stocks improve, effort will likely increase, particularly into areas beyond the existing footprint.	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	Mixed Historic U.S. participation in NRA declined as vessels concentrated effort on domestic fisheries, reducing fishing activity and associated costs, but also time away from family	Positive Efforts to reinitiate U.S. participation in the NRA increases fishing opportunities and associated revenue. Long separations may have minor negative effect on communities.	Positive Successful operations in 2012 has led to increased interest in participating in the NAFO fishery by other U.S. vessels, increasing fishing opportunities and revenue to vessels and surrounding communities, but also increasing time away from family.	Positive Additional fishing opportunities should provide much needed additional revenue to vessels and supporting industries.

Baseline Conditions for Resources and Human Communities

For the purposes of a cumulative effects analysis, the baseline conditions for resources and human communities is considered the present condition of the VECs (described in Section 4.0), plus the combined effects of the past, present, and reasonably foreseeable future actions. Table 18 illustrates the baseline conditions found as part of the CEA for this action.

Table 18. Summary of Baseline Conditions for Each VEC

Valued Ecosystem Component	Cumulative Effects Analysis Baseline Condition
Target Species	Negative – Short term overharvesting in the past contributed to several stocks being overfished or where overfishing is occurring; Positive – Long term regulatory actions taken over time have reduced fishing effort and stocks are expected to rebuild in the future
Other Species	Positive – Although prior domestic groundfish management measures likely contributed to redirecting effort onto non-groundfish species, as groundfish rebuild this pressure should lessen and all of these species are also managed through their own FMP.
Endangered and other protected species	Positive – Reduced gear encounters through effort reductions and additional management actions taken under the ESA and MMPA.
Habitat, including non-fishing effects	Mixed - Reduced habitat disturbance by fishing gear, but impacts from non-fishing actions, such as global warming and offshore oil development, could increase and have a negative impact despite recent measures to protect VME within the NRA
Human Communities	Negative – Short term lower revenues in the domestic groundfish fishery would continue until stocks are sustainable. Positive – Long term sustainable resources should support viable communities and economies.

5.5.2 Cumulative Impacts on Target Species

As found in the cumulative effects analysis for Framework Adjustment 50 to the FMP (NEFMC 2013), the long-term trend for target and non-target stocks has been positive for cumulative impacts. While several groundfish species within the U.S. EEZ remain overfished or overfishing is occurring, substantial effort reductions since implementation of the NE Multispecies FMP have allowed several stocks to rebuild, and the rebuilding process for others is underway. Similarly, actions taken by NAFO such as the establishment of rebuilding plans for overfished stocks, annual quotas that more directly reflect recent scientific advice, and increased compliance with fishery closures have led to rebuilding overfished stocks within the NRA. Although several stocks remain overfished, biomass is generally increasing for many stocks.

This action is not expected to have a significant cumulative impact on target or non-target species, since U.S. fishing vessels will be fishing under, and constrained by, an existing quota authorized by NAFO for regulated stocks (primarily skates), which are updated on an annual basis based on the best scientific advice. Although there are no established quotas for non-regulated stocks (Atlantic halibut, haddock, pollock, and possibly monkfish), it is unlikely that catch of these stocks will be minimal compared to catch of these stocks by other vessels,

particularly within the Canadian EEZ. Even with the addition of several U.S. vessels under this proposed action, catch and effort by bottom gillnet and longline gear is likely to continue to represent a small fraction of the total annual average catch and hours fished (such gear represented 8 percent of the total average catch and 10 percent of hours fished during 2000 – 2011). Overall fishing effort (number of vessels) in the NRA may increase as a result of this action, with up to 10 new vessels fishing for groundfish stocks within the NRA. However, only five or fewer U.S. vessels are likely to participate in the bottom gillnet or longline fishery within the NRA. This increase in fishing effort could increase the incidence of bycatch. However, all U.S. vessels issued HSFCA permits under this action would be required to abide by all applicable NAFO bycatch provisions. Therefore, any impact of additional fishing effort by U.S. vessels will be mitigated by NAFO's existing bycatch provisions. All U.S. vessels will be subject to NAFO's daily catch reporting requirements, allowing NMFS to closely monitor quotas available to U.S. vessels and terminate fishing activities to ensure that quotas are not exceeded. This data could be also used to evaluate the continuation of such operations in future years to ensure that catch and bycatch rates are consistent with the NCEM and U.S. and NAFO fishery policy. Because the authorization to fish within the NRA is a yearly decision by NMFS, should such data indicate that excessive amounts of any species are being caught, NMFS could decide not to authorize the continuation of such operations in future years.

The cumulative impact from non-fishing activities is not likely to be significant since the only such activities that would affect this action are those associated with oil platforms and any no-fishing zones surrounding them. As previously mentioned, there are currently three oil platforms on the southeastern tail of the Grand Bank, with one additional platform scheduled to begin construction in 2012. All three existing platforms are located within the Canadian EEZ, but some of their exploration licenses extend beyond the 200-mile limit. Thus, although U.S. vessels may currently not be impacted by no-fishing zones surrounding these oil platforms, they may be in the future. Any positive impacts to species managed by NAFO resulting from any no-fishing zones are expected to be localized and minimal in nature.

Therefore, the combined impact of past, present, future actions with the proposed action would continue the sustainable harvest of regulated species and authorize minimal additional catch of unregulated species. In total, the proposed action is not expected to result in any significant cumulative effects.

5.5.3 Cumulative Impacts on Protected Species

Historically, the implementation of FMPs has resulted in reductions in fishing effort and as a result, past fishery management actions are thought to have had a slightly positive impact on strategies to protect protected species. Gear entanglement continues to be a source of injury or mortality, resulting in some adverse effects on most protected species to varying degrees. As summarized in Section 7.6.5 of Framework 50, the current management measures are expected to continue to control effort and catch and, as a result, to reduce interactions with protected resources. This proposed action would increase the use of gear known to interact with protected species, particularly bottom gillnet gear, within the NRA. Longline interactions with sea turtles are predominantly in the pelagic longline fishery for swordfish, not the bottom longline fishery

for groundfish species. There have been no documented interactions with leatherback sea turtles in a Canadian Atlantic halibut survey using gillnets and longline, or the Canadian Atlantic halibut directed fishery using the same gears. There is some documentation of interactions between bottom gillnets and large whales in some directed groundfish fisheries within Canadian waters. However, there are no documented interactions for such gear types within the NRA. Although there is also documentation of sturgeon catch within the NAFO Convention Area, available information is not sufficient to accurately determine whether any Atlantic sturgeon from one or more of the five DPSs listed under the ESA would be affected by this proposed action within the NRA. The only documented sturgeon catch (no species was identified) within the NAFO Convention Area that can be attributed to a particular area emanated from well within the Canadian EEZ at the mouth of the St. Lawrence river and far removed from any current or future operations within the NRA. Thus, even though this action may result in a slight increase in fishing activity in the NRA, because of the location of proposed fishing operations, this increased activity is not expected to increase the likelihood of interactions taking place between listed marine mammals, sea turtles, or Atlantic sturgeon and bottom gillnets or longline gear. Therefore, this action, in combination with past, present, and reasonably foreseeable future actions, would not be expected to result in any significant cumulative effects.

5.5.4 Cumulative Impacts on Habitat

Cumulative impacts of past, present, and reasonably foreseeable future actions on habitat are expected to be mixed. Within the NRA, areas that have been fished historically have been specified as the “footprint” (see Figure 29). Any proposed operations outside of the footprint are considered exploratory fishing, and are subject to an evaluation of potential impacts on habitat and VMEs. Closure areas have been enacted to protect VMEs, along with threshold encounter provisions to minimize further interactions with VME indicator species. Fishing effort has gradually decreased overall within the NRA, with the number of vessels and fishing hours reduced by 30 percent and 49 percent, respectively, since 2004. Accordingly, the negative impacts of fishing operations have decreased over time, resulting in a positive overall impact to habitat from fishery management measures. Although this proposed action would increase fishing activity within the NRA, it would do so using gear types that have minimal impact on bottom habitat. Therefore, it is not expected that the proposed action, in conjunction with past, present, and reasonably foreseeable future actions would result in any further degradation to habitat as a result of fishing operations.

There are a number of non-fishing impacts that must be considered when assessing cumulative impacts. Many of these activities are concentrated near-shore and likely work either additively or synergistically to decrease habitat quality. Other non-fishing factors such as climate change and ocean acidification are also thought to play a role in the degradation of habitat. The effects of these actions, combined with impacts resulting from years of commercial fishing activity, have negatively affected habitat and EFH within the U.S. EEZ.

5.5.5 Cumulative Impacts on Communities

Past management actions have had significant negative impacts on communities that depend on the groundfish fishery, particularly as a result of decreases in revenue. Although special

programs implemented through Amendment 13 and subsequent framework actions have provided the industry additional opportunities to target healthier groundfish stocks, substantial increases in landings and revenue will likely not take place until further stock rebuilding occurs under the recently implemented rebuilding plans. Current management measures 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, particularly recent substantial reductions in available domestic groundfish quotas. Despite potential long separations from friends and family, the proposed action would likely have a positive impact on communities in that it will provide additional fishing opportunities to vessels owners, operators, and crew than would otherwise be available. However, the degree of this positive impact is expected to be minimal given the relatively small amount of quota available, and the high operating costs associated with prosecuting this fishery. Regardless of the degree of impact, this action is particularly important in light of past and likely future actions that have reduced or will reduce the ability of vessels to participate in the Northeast multispecies fishery by further decreasing DAS allocations, limiting quota availability, revising or expanding establishing closed areas, or other appropriate measures. Therefore, the cumulative impact of this action in conjunction with other past, present and reasonably future actions is slightly positive, although it would likely do little to offset the trend of significant negative impacts on communities until future stock rebuilding occurs.

5.5.6 Summary of Cumulative Effects

This action, to issue HSFCA permits to U.S. vessels authorizing them to fish with bottom gillnet and longline gear within the NRA, would not result in any significant cumulative impacts on the primary target species (skates, Atlantic halibut, pollock, haddock), non-target species, habitat, protected species, or communities. This action may result in a slight increase in fishing effort within the NRA, but because fishing effort has been steadily declining in this region and the projected effort increase is likely to be minimal, the cumulative impact of this additional effort in the context of past, present, and future actions is expected to be negligible. Conversely, this action is expected to have a slightly positive cumulative impact to fishing communities since it provides additional fishing opportunities to U.S. vessels that have been impacted by past, present, and future actions in the Northeast multispecies fishery.

6.0 Finding of No Significant Impact (FONSI) Statement

National Oceanic and Atmospheric Administration Order (NAO) 216-6 (revised May 20, 1999) provides nine criteria for determining the significance of the impacts of a final fishery management action. These criteria are discussed below:

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

Based on expressions of interest received to date, the target species for this proposed action will likely be skates and Atlantic halibut within NAFO Subareas 3 and 4, but primarily in NAFO Divisions 3N and 3O. However, because these gear types are not often used within the NRA, there is some uncertainty as to the composition of the catch, including target species. Canadian

skate surveys have shown an increasing or flat trend in biomass during recent years, although Spanish surveys show a slight decreasing trend in biomass. Catch that has been well below established quotas since at least 2005, and recruitment has been 50 percent above average in 2010 and 2011, suggesting that there may be positive indications that skate biomass will increase. Atlantic halibut biomass is expected to continue to increase, provided catch remains below 4,000 mt. While the proposed action would increase catch of all of these species, expected catch is likely to be minimal and not likely to exceed levels that would jeopardize the sustainability of any target species. Since most of the catch of these target species occurs within the Canadian EEZ, catch of these species under the proposed action is expected to be relatively minor. Further, bottom gillnet and longline gear is a small fraction of overall fishing effort within these areas, representing just 10 percent of landings of all species within the NRA and 8 percent of hours fished since 2000, including operations within the Canadian EEZ. Vessels issued HSFCA permits under the proposed action would be required to comply with NAFO VMS and reporting requirements, as well as any closures of any directed fishery if the U.S. allocations of any stock is projected to be harvested. For unregulated stocks, NMFS will closely monitor catch and reconsider future authorizations to fish in the NRA if such operations would jeopardize the sustainability of any unregulated stock.

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

As noted above, there is some uncertainty in the composition of the catch in this proposed action. It is likely that non-target species will include haddock and pollock, although a small amount of monkfish may also be caught during operations. There is not a recent haddock assessment in the areas most likely to be fished under the proposed action (NAFO Divisions 3N and 3O). However, assessment in adjacent areas suggest that large yearclasses in 2009 and 2010 has helped haddock biomass increase since 2000, with haddock biomass current estimated to be 80 percent of SSB_{MSY} in NAFO Division 4X. These larger yearclasses should help to continue to increase haddock biomass in the future. Pollock also shows signs of good recruitment and low F in recent years. Although not rebuilt, Canadian assessments suggest that any directed fishery should proceed with caution. There is no recent information on the status of monkfish in NAFO Division 3LNO, although available data suggest a 10-year cycle of increased biomass. This would suggest that biomass should be increasing in the short term. As noted above, catch and fishing effort by bottom gillnet and longline gear is a small fraction of overall fishing effort in these areas. Given recent increases in biomass for non-target species and the small amount of catch of non-target species that is expected under the proposed action, it is unlikely that the proposed action would jeopardize the sustainability of non-target species.

3. Can the proposed action be reasonably expected to allow substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and identified in FMPs?

The vessels that would be issued HSFCA permits under the proposed action would use bottom gillnets and longline gear in areas of the Grand Bank where trawl fishing activity already occurs (see Figures 1 and 26). These areas are outside of the U.S. EEZ and are not subject to the EFH definitions within the MSA. Since such gear types are non-mobile and have fewer habitat impacts than mobile gear such as trawls, the proposed action is not expected to increase impacts

to ocean and coastal habitats and/or fish habitat beyond those already occurring in the fishery. Furthermore, NAFO has implemented measures to protect VMEs to comply with UNGA Resolution 61/105, such as closures and steps vessels must take if they encounter specific VME elements above a certain threshold. Thus, the proposed action is not expected to allow substantial damage to the ocean and coastal habitats.

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

The proposed action would not create a safety or public health concern. The proposed action would simply allow U.S. vessels to be issued permits under the HSFCA so that they can fish with bottom gillnet and longline gear within the NRA. While this entails fishing far from U.S. waters, the vessels would be required to comply with all existing U.S. safety requirements and pass a U.S. Coast Guard fishing vessel safety inspection prior to fishing within the NRA.

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

The fishing activities that would be authorized by the proposed action are not expected to adversely affect endangered or threatened species, marine mammals, or the critical habitat of these species. Although some endangered or threatened species and marine mammals are known to occur in the area, the likelihood of interaction between these species and bottom gillnets and longline gear in the NRA based on NAFO observer data and information submitted by Contracting Parties is minimal. In fact, the only documented interactions with protected species using such gear types were within the Canadian EEZ targeting other groundfish species than those in this proposed action. Although the unclassified sturgeon catch was recorded within the NAFO Convention Area, because expected vessel operations under this proposed action would occur in areas where sturgeon, particularly Atlantic sturgeon DPSs listed as threatened or endangered under the ESA, are not known to occur (depths approaching 200m in offshore waters far from river mouths), it is unlikely that the proposed action would have more than a negligible impact on sturgeon.

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

The proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. As stated previously, the proposed action would authorize U.S. vessels to fish primarily for yellowtail flounder in NAFO Divisions 3LNO through the issuance of permits under the HSFCA. Due to the distance from U.S. waters and the relatively small amount of yellowtail flounder quota transferred to the U.S. by Canada (in comparison to the total amount allocated) and quota for other species allocated or available to U.S. vessels, it is expected that no more than 10 vessels will participate in this fishery. In addition, vessels will be subject to closure of the directed fishing operations once the yellowtail flounder quota, the associated bycatch limit for American plaice, or available quotas for any other species is projected to be reached. In addition, vessels are also required to abide by the NCEMs when fishing in the NRA, which include bycatch mitigation measures and measures to protect VMEs.

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

There are no significant social or economic impacts, nor are there any significant natural or physical environmental effects expected to result from the proposed action (Section 0, Environmental Consequences). This action will positively affect those vessels, and their corresponding communities, that are able to increase fishing opportunities and potential associated revenue in the NRA. Engaging in this fishery could result in additional fishing revenues between \$900,000 to \$2.3 million based on expected catch of skates, Atlantic halibut, haddock, and pollock. Potential revenue would be even higher if participating vessels land other regulated species managed by “others” quotas such as 3M cod, 3LN and 3O redbfish, and 3NO white hake. Given the high operating costs associated with participating in this fishery, the overall economic impact is expected to be less than expected revenues. Overall, the social impacts associated with participating in this fishery may be greater than the overall economic effect if this fishery enables vessels to continue fishing when they otherwise would be docked, and vessels owners to explore new markets and fishing opportunities.

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

The effects of the proposed action on the human environment are not expected to be highly controversial, as they are based on the best and most recent scientific information available and offer additional fishing opportunities to the fishing industry.

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?

The area impacted by this action is the Grand Bank off the southeastern edge of Newfoundland. The only unique areas on the Grand Bank would be areas associated with VME under NAFO. As noted above, several areas of known concentrations of VME are already closed to bottom fishing activities within the area currently fished by participating vessels. In addition, the NCEM includes protocols to identify and avoid additional concentrations of VME indicator species once detected within or outside of the existing NAFO Footprint (see Figure 26). Further research is being conducted on areas in which VMEs are found to determine if they are indeed unique and should closed to bottom fishing activities. Given the limited scope and magnitude of this action in relation to bottom fishing activities already occurring on the Grand Bank, this action is not expected to result in substantial impacts to unique areas.

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

This action is not expected to have substantial effects on the human environment due to its limited scope and magnitude. However, due to the uncertainty concerning where vessel owners will land their catch (U.S. or Canada), how much they will receive for the catch, and overhead costs, it is difficult to fully assess the potential economic effect of this action. As noted in Section 5.4, there appears to be a large price differential for several species between the U.S. and Canada, with the price of these species driven by the market, causing it to vary widely either upward or downward. Additional uncertainty is known to occur within stock assessments.

These risks are known and are being investigated by assessment biologists. Specific to this action, there is some uncertainty with the appropriate level of catch for stocks that are not currently managed under NAFO and do not have frequent stock assessments, particularly monkfish. However, given that the proposed action is not expected to result in much, if any, catch of monkfish, the risks associated with the proposed action are minimal.

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

The proposed action builds upon an EA developed in November 2009 and May 2012 to issue HSFCA permits for up to 10 vessels to fish for NAFO-managed species available to U.S. vessels within the NRA. Those analyses concluded that the impacts of such permit issuance would be insignificant to the human environment. This action is similar to those previous actions, with the exception that it supplements the both EAs to provide updated information on stock status and the status of species listed under the ESA. It builds upon those previous actions to also consider the impacts of issuing HSFCA permits to up to 10 additional U.S. vessels that would fish within the NRA using bottom gillnet and longline gear. The addition of this new information and these new vessels does not lead to significant impacts on the human environment. For the reasons stated in Sections 5, it is not expected that the proposed action, when combined with other past, present, or reasonably foreseeable future actions, is likely to have 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 historic resources?

The proposed action is not likely to directly or indirectly affect objects listed in the National Register of Historic Places or cause significant impact to scientific, cultural or historical resources due to the spatial remoteness of the proposed activity relative to listed sites. The fishing activities that would be authorized under the proposed action would take place in international waters off the southern tail of the Grand Bank, where no listed sites occur.

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

The proposed action would authorize U.S. vessels to participate in an ongoing NAFO managed fishery in an area that is already subject to bottom fishing activity. Given the limited number of vessels expected to participate in this fishery and the limited amount of quota available to U.S. vessels, the proposed action is not expected to have a substantial effect on overall fishing effort in the area. As a result, the proposed action is not expected to result in the introduction or spread of non-indigenous species.

In 2002, an invasive colonial sea squirt (*Didemnum sp.*) was observed on Georges Bank. The tunicate occurs on pebble gravel habitat, and does not occur on moving sand. NMFS has surveyed the area and is monitoring the growth. At this time, there is no evidence that fishing spreads this species more than it would spread naturally, however, the role of fishing gear in the

spread of invasive tunicates should be regularly evaluated and monitored. There is currently no evidence that this invasive tunicate occurs on the Grand Bank where U.S. vessels will be fishing.

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

The proposed action is not likely to establish a precedent for future action with significant effects, and it does not represent a decision in principle about future consideration. This action is being taken to authorize U.S. vessels to participate in a bottom gillnet or longline fishery in international waters that is regulated by an international body (NAFO). There are currently no implementing regulations for U.S. participation in this fishery under the MSA. However, those regulations will be formulated as this fishery develops and evolves, providing NMFS with the flexibility to address issues in the regulatory context as they arise. The impact of any future regulations governing the NAFO fishery will be analyzed with respect their significance in the process of developing and implementing them.

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?

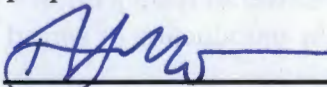
The proposed action is not reasonably expected to threaten a violation of Federal, State or local laws or requirements imposed for the protection of the environment. This action does not propose any changes that would provide incentives for environmental laws to be broken.

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

Cumulative effects on target and non-target species related to the proposed action are discussed in Section 5.6 of this document. Based on that discussion, the cumulative effects are not expected to be significant.

FONSI Statement

In view of the analysis presented in this document, it is hereby determined that the proposed action will not significantly impact the quality of the human environment, as described above. The impacts and alternatives in this document were analyzed with regard to both context and intensity, and are deemed not to be significant. Accordingly, the preparation of an Environmental Impact Statement (EIS) or Supplemental EIS for the proposed action is not necessary.

 for JOHN BULLARD
NMFS, Greater Atlantic Regional Administrator

2/20/2014
Date

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