An Analysis of the Environmental Impacts of a U.S. Northwest Atlantic Trawl Fishery in the Northwest Atlantic Fisheries Organization's (NAFO) Regulatory Area

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National Marine Fisheries Service

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List of Acronyms

ACL = Annual Catch Limit
AM = Accountability Measure
B = Biomass
BRT = Biological Review Team
CEQ = Council on Environmental Quality
DAS = Days-at-Sea
DFO = Department of Fisheries and Oceans Canada
DPS = Distinct Population Segment
EEZ = Exclusive Economic Zone
EFH = Essential Fish Habitat
ESA = Endangered Species Act
EU = European Union
F = Fishing Mortality
FAO = Food and Agriculture Organization of the United Nations
FMP = Fishery Management Plan
FPSO vessel = Floating Production, Storage, and Offloading vessel
GBP = Gravity Base Platform
HSFCA = High Seas Fishing Compliance Act
MMPA = Marine Mammal Protection Act
NAFO = Northwest Atlantic Fisheries Organization
NERO = Northeast Regional Office
NCEM = NAFO Conservation and Enforcement Measures
NMFS = National Marine Fisheries Service
NOAA = National Oceanic and Atmospheric Administration
NRA = NAFO Regulatory Area
RFMO = Regional Fishery Management Organization
RFMOAs = Regional Fishery Management Organizations and Arrangements
SSB = Spawning Stock Biomass
TAC = Total Allowable Catch
UNGA = United Nations General Assembly
USFWS = U.S. Fish and Wildlife Service
VEC = Valued Environmental Component
VME = Vulnerable Marine Ecosystem
VMS = Vessel Monitoring System
WGFSM = Ad Hoc Working Group of Fisheries Scientists and Managers

1.0 Executive Summary

This action would authorize up to 10 U.S. vessels to participate in the Northwest Atlantic trawl fishery governed by the Northwest Atlantic Fisheries Organization (NAFO) through the issuance of permits under the High Seas Fishing Compliance Act (HSFCA). These vessels would be targeting yellowtail flounder in NAFO Divisions 3LNO under a 1,500 mt quota that has been transferred to the U.S. by Canada under a special arrangement, signed in September 2008. The purpose of this document is to assess 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 negative impacts to the target species of yellowtail flounder or non-target species (American plaice, cod, witch flounder, and thorny skate). U.S. vessels will be subject to the 1,500 mt yellowtail flounder quota transferred from Canada, as well as a 13 percent (in 2009) bycatch limit of American plaice. Once the yellowtail flounder quota and/or American plaice bycatch limit is projected to be harvested based on daily catch reports required by NAFO, the National Marine Fisheries Service (NMFS) will close this fishery to U.S. vessels. Additionally, all U.S. vessels will be required to abide by the restrictive bycatch provisions established by NAFO when fishing in the NAFO Divisions 3LNO.

In terms of impacts to habitat, this action may result in a slight increase in overall fishing effort in the NAFO Regulatory Area (NRA), but fishing activities will occur in areas already subject to bottom trawl fishing. Furthermore, U.S. vessels will be required to abide by existing areas closed to protect sensitive habitats (seamount closures and coral protection zone) as well as provisions to protect vulnerable marine ecosystems (VME). Therefore, this action is not expected to result in any negative impacts to habitat.

According to information provided by NAFO, there are no known interactions between bottom trawl gear and ESA-listed species or marine mammals in the NRA other than one incident between a blue whale and a 167 ft (51 m) factory trawl vessel in 2006. Therefore, although this action may result in a slight increase in fishing effort in the NRA, it is not expected to increase the likelihood of interaction between ESA-listed species or marine mammals and trawl gear in the NRA, which is negligible.

Finally, this action is expected to have a positive impact on fishing communities since it would provide additional fishing opportunities to vessels that also participate in the Northeast multispecies fishery. In recent years, this fishery has been subject to substantial regulatory changes that have reduced the ability of U.S. vessels to target species in the Northeast multispecies complex, such as yellowtail flounder. Therefore, any additional fishing opportunities that can be provided to these vessels are considered a positive benefit. However, the degree of this positive impact is difficult to estimate due to the large difference between the price of yellowtail flounder and American plaice in the U.S. as compared to Canada, as well as the anticipated high operating costs associated with participating in the Northwest Atlantic trawl fishery in the NRA.

2.0 Purpose and Need for Action

2.1 Background

The National Marine Fisheries Service (NMFS) issues licenses for U.S. fishing vessels to authorize fishing on the high seas under the HSFCA. Such licenses are required for all vessels fishing on the high seas, whether or not they are licensed under another management authority such as a Fishery Management Plan (FMP). In addition, these vessels are required to submit logbook reports after each trip under the HSFCA.

Under a recent Federal court decision, issuance of permits under the HSFCA is an action that is subject to environmental review, and in some cases, consultation under the ESA. Pursuant to this court decision, NMFS is conducting the required environmental analyses for all fisheries for which HSFCA permits are necessary, but for which no such analyses have been previously conducted. Once an analysis is complete for a particular fishing activity, NMFS can then determine if fishing permits should be issued for that fishing activity under the HSFCA if it can be determined that environmental impacts are mitigated, if necessary, and that adverse impacts to ESA-listed species or marine mammals are avoided to the extent necessary.

The Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries, 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 Convention Area through consultation and cooperation among Contracting Parties. The U.S. became a member of NAFO following its accession to the Convention on November 29, 1995.

Prior to the U.S. 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 U.S. received small quotas for some species (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.

The U.S. has engaged in discussions with Canada over the last several years in an attempt to obtain a portion of its NAFO Divisions 3LNO (Grand Bank) yellowtail flounder quota, the only species for which the U.S. has a documented fishing history in the NRA. At the 30th Annual NAFO meeting held in Vigo, Spain, from September 22-26, 2008, the U.S. 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 (see Appendix A). This agreement includes a provision that the yellowtail flounder quota be adjusted proportionally if NAFO adjusts the current 17,000 mt quota, but should be renegotiated if that quota drops below 15,500 mt. No adjustments were made to the 17,000 mt quota for 2010 at the 31st Annual NAFO meeting held in Bergen, Norway.

Following the 30th Annual NAFO meeting, the U.S. published a notice in the *Federal Register* (73 FR 65296, November 3, 2008) soliciting interest in fishing endeavors to harvest available U.S. NAFO quota. Two industry participants submitted letters of interest in response to this notice, and were subsequently granted the ability by the Department of Commerce to share the 1,500 mt of 3LNO yellowtail flounder quota transferred from Canada in 2009.

2.2 Purpose and Need

This action is needed to issue HSFCA permits, on an annual basis, to authorize U.S. fishing vessels to participate in the Northwest Atlantic trawl fishery for yellowtail flounder for the 10 years of the U.S./Canada arrangement, beginning in January 2009 and extending through December 2018. The purpose of this action is to assess the environmental impacts of U.S. participation in the Northwest Atlantic trawl fishery governed under NAFO, including the potential impacts on species listed as threatened or endangered under ESA, so that HSFCA permits may be issued to U.S. vessels to participate in this fishery. Data used in this analysis were obtained from the NAFO Secretariat, the Northeast Regional Office and the Northeast Fisheries Science Center of NMFS, and the Department of Fisheries and Oceans Canada (DFO).

3.0 Summary of Alternatives

3.1 No Action (no HSFCA permits issued)

Under this alternative, U.S. vessels would not be issued HSFCA permits to participate in the Northwest Atlantic trawl fishery governed under NAFO. Permits issued under the HSFCA are required for any U.S. fishing vessel that intends to fish on the high seas; that area outside the exclusive economic zone of any nation. In order to fish for yellowtail flounder in 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.

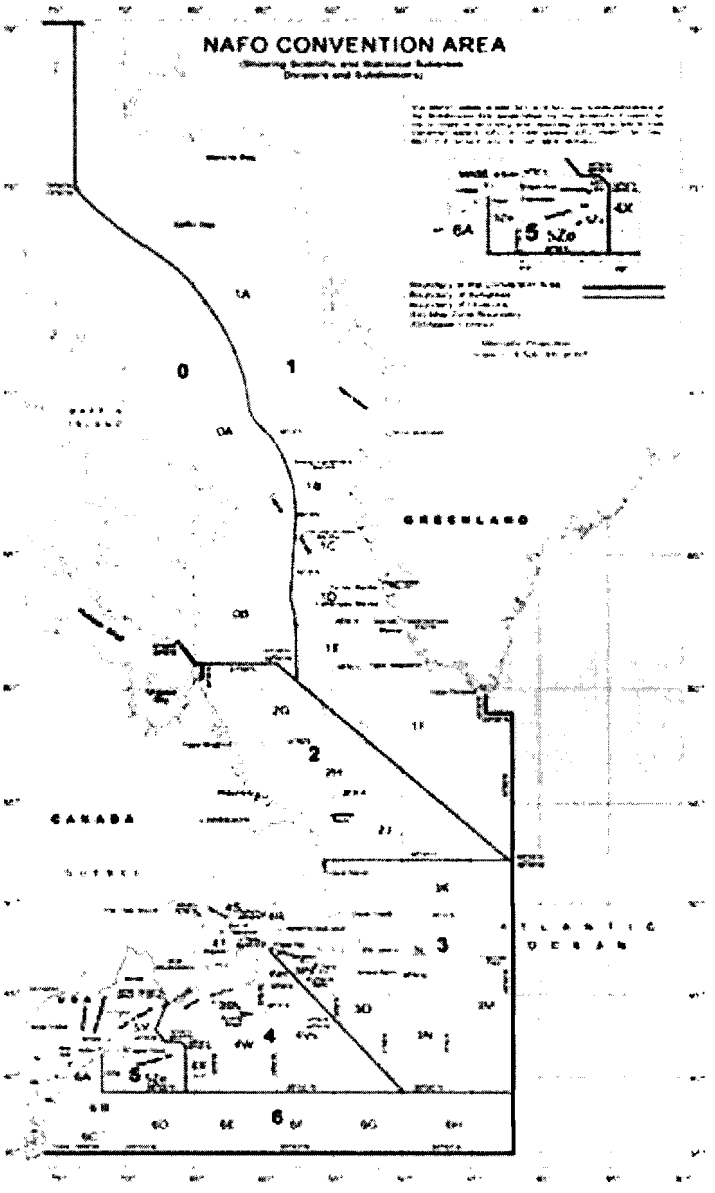
3.2 Issue HSFCA Permits

Under this alternative, U.S. vessels would be issued HSFCA permits, and would be authorized to participate in the Northwest Atlantic trawl fishery governed under NAFO (Figure 1). Specifically, U.S. vessels issued a HSFCA permit would be authorized to fish for yellowtail flounder in the NRA.

4.0 Affected Environment

The status of all stocks for which the U.S. has a quota allocation is provided below. The stock that will be the primary focus of the U.S. fishery will be 3LNO yellowtail flounder. Stock status is also provided for the anticipated bycatch species of American plaice, witch flounder, cod, and thorny skate. 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 Biological Environment

4.1.1 Status of Stocks

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

There was a moratorium on directed fishing 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 2002. 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.

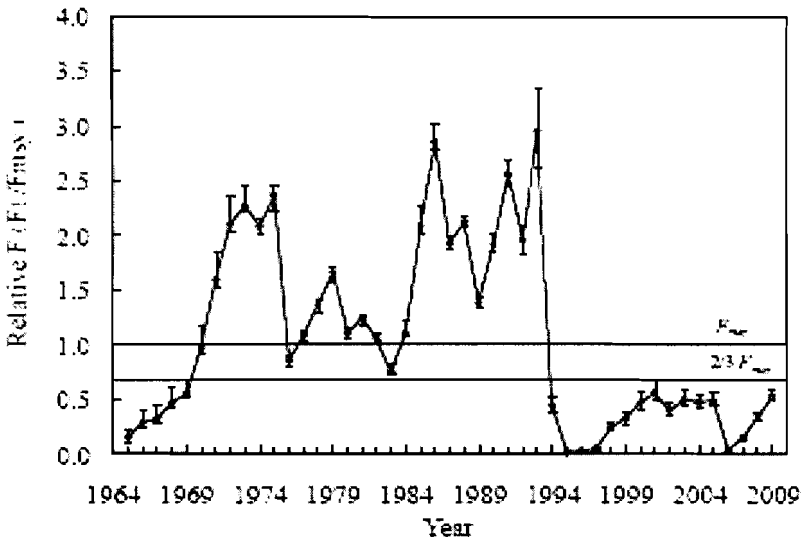
Table 1. 3LNO Yellowtail catch in relation to TAC (2005 - 2008)

Year	TAC (mt)	Catch (mt)[1]
2005	15,000	13,900
2006	15,000	900
2007	15,500	4,400
2008	15,500	11,300

[1] From June 2009 NAFO Scientific Council Report

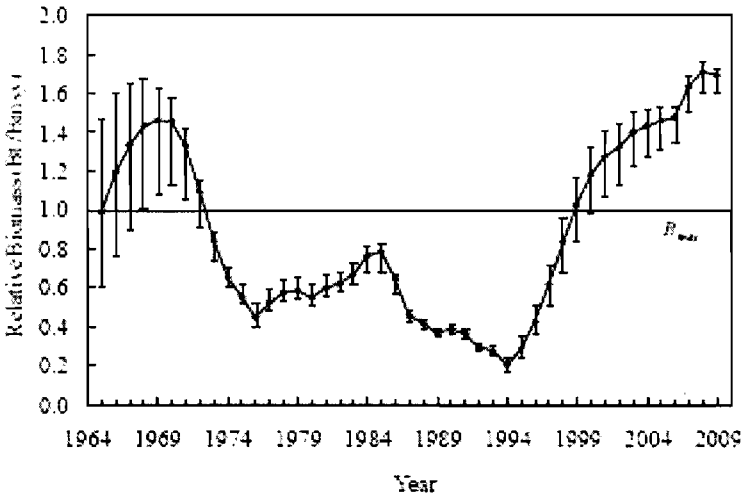
Fishing mortality (F) has been below F_{msy} since 1994. In 2008, F was about 34 percent of F_{msy}, and is projected to be about 53 percent of F_{msy} in 2009 with an assumed catch of 17 000 mt. F_{msy} is currently estimated to be 0.25.

Figure 2. Estimated *F* for 3LNO Yellowtail Flounder (from 2009 SC Report)



Stock size has steadily increased since 1994 and is currently estimated to be 1.6 times B_{msy}, well above the level of the mid-1980s. Based on a comparison of small fish (<22 cm) in research surveys, recent recruitment appears to be slightly below average. Furthermore, biomass estimates in all surveys have been relatively high since 2000. Relative biomass from the stock production model has been increasing since 1994, is estimated to be above the level of B_{msy} after 1999.

Figure 3. Estimated Biomass for 3LNO Yellowtail Flounder (from 2009 SC Report)



In its June 2009 report, 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 recommends that catch levels should not be set above 85 percent F_{msy}. Catch projections at various levels of F are provided in Table 2. The next Scientific Council assessment of this stock will be in 2011.

Table 2. Catch Projections for 3LNO Yellowtail Flounder for 2010 and 2011

Projected *F*	**Catch 2010 (mt)**	**Catch 2011 (mt)**
F2008 (catch=15,500mt)	16,400	16,000
2/3 Fmsy	20,500	19,500
75% Fmsy	22,700	21,300
85% Fmsy	25,500	23,500
Fmsy	29,600	26,500

[1] From June 2009 NAFO Scientific Council Report

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

This fishery has been under moratorium since 1995. Total catch in 2007 was 3,606 mt, and in 2008 was 2,515 mt, mainly taken in the NRA as by-catch in the Canadian yellowtail flounder fishery (Table 3). Since 1995, catch increased, but has decreased since 2003.

Table 3. 3LNO American plaice catch in relation to TAC

Year	TAC (mt)	Catch (mt)[1]
2005	Moratorium	4,100
2006	Moratorium	2,800
2007	Moratorium	3,600
2008	Moratorium	2,500

[1] From June 2009 NAFO Scientific Council Report

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 2003. However, considering the stock is under moratorium, average F remains high (Figure 4).

This stock was assessed by the Scientific Council in 2009. Assessment results (conducted via Virtual Population Analysis) showed that population abundance and biomass declined fairly steadily from the mid-1970s to 1995. Biomass and abundance have been relatively stable over the last number of years (Figure 3). However, biomass is very low compared to historic levels. Spawning stock biomass (SSB) has been increasing since 1995, and reached 41,000 mt in 2009. The stock is estimated to increase and will likely surpass B_{lim} (50,000 mt) by 2010. Levels of bycatch allowed for this stock in the Divisions 3LNO yellowtail flounder fishery have been increased for 2010 and 2011, and this is likely to result in an increase in fishing mortality on the American plaice stock.

Figure 4. Estimated Population Abundance and Biomass for 3LNO American Plaice from VPA (from 2009 SC Report)

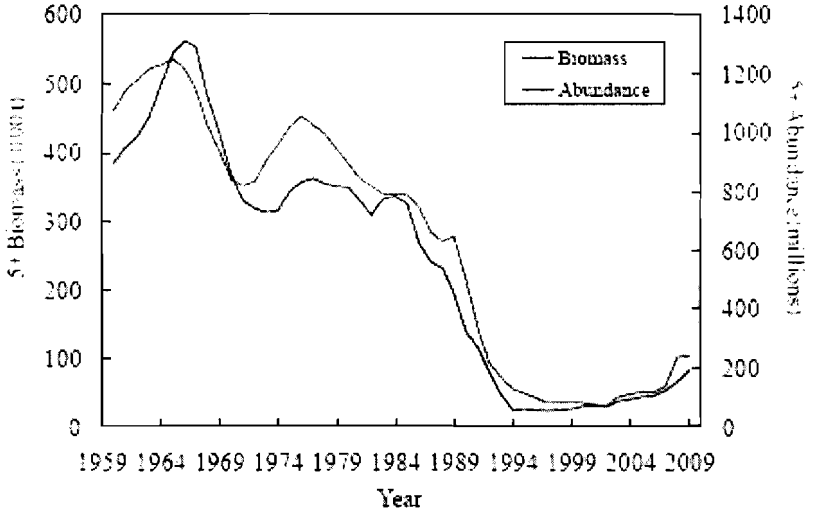
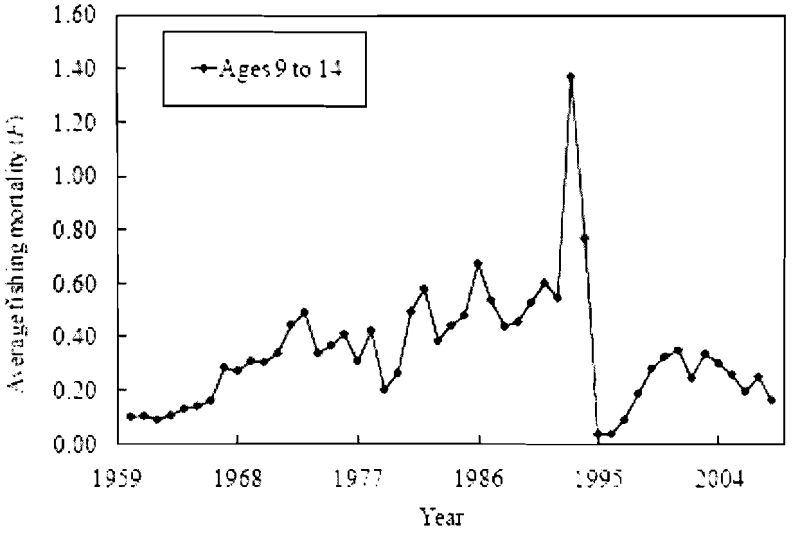


Figure 5. Estimated Average F for 3LNO American Plaice from VPA (from 2009 SC Report)



4.1.1.3 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 (in 2007).

Table 4. 3NO Witch flounder catch in relation to TAC

Year	TAC (mt)	Catch (mt)[1]
2005	Moratorium	300
2006	Moratorium	500
2007	Moratorium	200
2008	Moratorium	300

[1] From June 2009 NAFO Scientific Council Report

As noted in the NAFO Scientific Council's 2008 Report, an analytical assessment is not possible for this species with current data. However, according to their 2009 Report, 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 increased through 2003 (but still remained relatively low) but have since declined again and remained low through 2008.

Thus, the stock remains at a low level. Recruitment has been poor since 2002. The next full assessment of this stock is planned for 2011.

4.1.1.4 Cod (*Gadus morhua*) in 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, but have been fairly steady since. The estimated catch of cod in all fisheries during 2008 is 921 mt.

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. Specifically, Contracting Parties are encouraged to keep incidental bycatch at the lowest possible level. The catch for 2008 did not decrease from 2007 and is above the average for the 2004-2006 time period.

Table 5. 3NO Cod catch in relation to TAC

Year	TAC (mt)	Catch (mt)[1]
2005	Moratorium	700
2006	Moratorium	600
2007	Moratorium	900
2008	Moratorium	900

[1] From June 2009 NAFO Scientific Council Report

Both total stock biomass and spawning stock biomass in 2008 remained at extremely low levels. Recruitment during 1991-2004 was poor. However, the 2005 and 2006 year classes are the strongest since 1989 and 1990. Fishing mortality increased during 1995 to 2004, particularly on young fish (ages 4-6) on which F= 0.51 during 2002- 2004. Since 1990, fishing mortality has been generally higher on young fish (F_{2006}=0.22) than on older age groups (ages 6-9).

The stock remains close to its historical low, with SSB at the start of 2008 (7,500 mt) well below B_{lim} (60,000 t). In 2007, the total biomass and spawning biomass were estimated to be at extremely low levels. Despite evidence of improved recruitment, recent values of survey indices are not considered to indicate a significant change in the status of the stock relative to B_{lim}. The next full assessment of this stock is planned to be in 2010.

4.1.1.5 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). Catch levels after 2000 averaged about 9,000 mt. There is a TAC of 13,500 mt for thorny skate within Division 3LNO for 2005-09, with a separate TAC of 1,050 mt in Canadian waters in Subdivision 3Ps. Current catch estimates for Division 3LNO are 3,600 mt.

Table 6. 3LNO Thorny Skate catch in relation to TAC

Year	TAC (mt)	Catch (mt)
2005	13,500	4,200
2006	13,500	5,800
2007	13,500	3,600
2008	13,500	7,400

[1] From June 2009 NAFO Scientific Council Report

Canadian spring survey biomass indices fluctuated without trend prior to the mid-1980s, then rapidly declined until the early 1990s. During 1996-2008, biomass indices have been low and relatively stable. Canadian autumn surveys show similar patterns. The Spanish survey in the NRA (1997-2008) shows a similar pattern to that in the Canadian surveys. No information is available on recruitment. Relative F (catch [including discards] /spring survey biomass index) increased from 7 percent in the mid-1980s, averaged 15 percent in the late 1990s, and then declined from about 19 percent in 2002 to a low of about 4 percent in 2005-2007.

Although the state of the stock is unclear relative to the historic (pre-1980s) period, stock biomass has been relatively stable from 1996-2008, but at much lower levels than in the mid-1980s. Catches during 2005-2008 averaged 5,250 mt, during a period when the survey biomass indices have been stable. The life history characteristics of thorny skate result in low intrinsic rates of increase and are thought to lead to low resilience to fishing mortality. The next assessment of this stock is planned to be in 2010.

4.1.2 Marine Mammals and Protected Species

The following protected species are found in the NRA. A number of them are listed under the ESA of 1973 as endangered or threatened, while others are identified as protected under the Marine Mammal Protection Act of 1972 (MMPA).

Cetaceans	***Status***
Northern right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered

Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Pilot whale (*Globicephala* spp.)	Protected
Spotted dolphin (*Stenella frontalis*)	Protected
White-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Bottlenose dolphin: coastal stocks (*Tursiops truncatus*)	Protected
Harbor porpoise (*Phocoena phocoena*)	Protected
Seals	
Harbor seal (*Phoca vitulina*)	Protected
Gray seal (*Halichoerus grypus*)	Protected
Harp seal (*Phoca groenlandica*)	Protected
Hooded seal (*Crystophora cristata*)	Protected
Sea Turtles	
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered*
Loggerhead sea turtle (*Caretta caretta*)	Threatened

**Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered.*

It is expected that all of the species identified have the potential to be affected by the operation of trawl fisheries in 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, and sea turtles within the NRA as well as the known interactions of trawl gear with these protected species. Additional background information on the range-wide status of marine mammal and sea turtle species that occur in the area can be found in a number of published documents. These include sea turtle status reviews and biological reports (Hirth 1997; USFWS 1997; Marine Turtle Expert Working Group (TEWG) 1998 & 2000; NMFS and USFWS 2007a; NMFS and USFWS 2007b; NMFS and USFWS 2007c), recovery plans for ESA-listed sea turtles and marine mammals (NMFS 1991; NMFS and USFWS 1991a; NMFS and USFWS 1991b; NMFS and USFWS 1992; NMFS 1998; USFWS and NMFS 1992; NMFS 2005), the marine mammal stock assessment reports (e.g., Waring *et al.* 2006), and other publications (e.g., Clapham *et al.* 1999; Perry *et al.* 1999; Wynne and Schwartz 1999; Best *et al.* 2001; Perrin *et al.* 2002).

On July 17, 2007, the Center for Biological Diversity and the Turtle Island Restoration Network has recently filed a petition with NMFS and the U.S. Fish and Wildlife Service (USFWS) to reclassify loggerhead turtles in the North Pacific Ocean as a distinct population segment (DPS) with endangered status and designate critical habitat under the ESA. Then on November 16,

2007, NMFS and USFWS received a petition from the Center for Biological Diversity and Oceana requesting that loggerhead turtles in the Northwest Atlantic Ocean be reclassified as a DPS with endangered status and that critical habitat be designated. NMFS and the USFWS found that both petitions presented substantial information that the petitioned actions may be warranted. As a result of these petitions, NMFS and USFWS convened a biological review team (BRT) in February 2008 to review the best available scientific information, determine whether DPSs exist, and assess the extinction risk for each potential DPS. The BRT organized their evaluation by ocean basin: Pacific Ocean, Atlantic Ocean (including the Mediterranean Sea), and Indian Ocean. This status review was completed in August 2009. Overall, the BRT concluded that the Northeast Atlantic and Mediterranean DPSs are at immediate risk of extinction; the North Pacific, South Pacific, North Indian, Southeast Indo-Pacific, Northwest Atlantic DPSs are currently at risk of extinction; and the Southwest Indian and South Atlantic DPSs are likely not currently at immediate risk of extinction (NMFS and USFWS 2009).

It should be noted that the status review document prepared by the BRT is not a listing decision. NMFS and the USFWS must next evaluate the report and determine what, if any, action is appropriate under the ESA. Possible decisions by the agencies include: No change in listing status; a change in listing status for the species as currently defined (single species range wide); identification of DPS; and proposing to list some or all of them as either threatened or endangered. The agencies will prepare proposed determinations and publish those in the *Federal Register* and solicit public comment. The agencies will then review the comments and prepare a final determination. Typically a listing action becomes effective 30 days after publication of the final rule in the *Federal Register*. Only after that final listing decision is announced in the *Federal Register* would DPSs be applied, if deemed necessary and warranted, and a new listing be in effect.

Sea Turtles

Loggerhead and leatherback sea turtles are known to occur in the NRA based upon recent fishery interaction data submitted by Contracting Parties, which involved only longline vessels. However, species distribution information indicates that Kemp's ridley and green turtles may also 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).

Sea turtles are known to be captured in trawl gear, which is the gear type predominantly used in the NRA, and the gear which U.S. vessels will be using. On September 22, 2006, NAFO adopted a resolution entitled "Resolution to Reduce Sea Turtle Mortality in NAFO Fishing Operations" (FC Doc. 06/7). As part of this resolution, Contracting Parties are requested to provide the NAFO Secretariat with a detailing of any sea turtle interaction data, "including data collected by their respective national observer programs, in fisheries managed by NAFO in the

NAFO Convention Area and any sea turtle-specific training provided to these observers." In 2007 and 2008, information concerning sea turtle interactions and was submitted by the U.S., Canada, Portugal, the Faroe Islands and Greenland. All of these countries, except Canada, noted that there their vessels have had no interactions with sea turtles in the NRA, or have no fishing presence in the area (U.S.). Canada provided the NAFO Secretariat with information concerning sea turtle interactions. However, all of these interactions involved longline gear. Furthermore, a Working Paper presented by the NAFO Secretariat at the 2007 Annual Meeting (FC Working Paper 07/5) noted, "Observer reports received so far do not indicate any incident of sea turtle interaction in the NRA."

Large Cetaceans (Baleen Whales and Sperm Whale)

The western North Atlantic baleen whale species (Northern right, humpback, fin, sei, and minke) follow a general annual pattern of migration from high latitude summer foraging grounds, including the Gulf of Maine and Georges Bank, and 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. 2006). 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).

In comparison to the baleen whales, sperm whale distribution occurs more on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring *et al.* 2005). However, sperm whales distribution in U.S. EEZ waters also occurs in a distinct seasonal cycle (Waring *et al.* 2006). Typically, sperm whale distribution is concentrated east-northeast of Cape Hatteras in winter and shifts northward in spring when whales are found throughout the Mid-Atlantic Bight (Waring *et al.* 2005). Distribution extends further northward to areas north of Georges Bank and the Northeast Channel region in summer and then south of New England in fall, back to the Mid-Atlantic Bight (Waring *et al.* 1999).

Generally, trawl gear is not known to interact with large whales. However, according to NAFO observer information, one blue whale was reported to have been caught in trawl gear in 2006. Unfortunately, the observer did not provide further information concerning the incident such as whether the whale was dead or alive. However, the observer record indicates that the vessel was 167 ft (51 m) in length with a capacity of 755 gross tons. The U.S. vessels that will be participating in this fishery are much smaller in size, and use much smaller nets. As such, the likelihood of interaction between U.S. trawl vessels and large whales in the NRA is negligible. Therefore, these species should not be included in the listing of marine mammals that might be impacted by U.S. vessels fishing for NAFO managed species in the NRA.

Small Cetaceans (Dolphins, Harbor Porpoise and Pilot Whale)

Numerous small cetacean species (dolphins, pilot whales, and harbor porpoise) occur within the area from Cape Hatteras through the Gulf of Maine, and likely occur on the NRA, particularly on the Grand Banks where U.S. vessels will be primarily fishing. Small cetaceans are known be captured in trawl gear (Waring *et al.* 2006). Seasonal abundance and distribution of each species varies with respect to life history characteristics. The following distribution information on the western North Atlantic stocks of each species has been pulled from Waring *et al.* (2006).

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. Bottlenose dolphins occur seasonally over the outer continental shelf and inner slope waters as far north as Georges, with sightings along the continental shelf break from Georges Bank to Cape Hatteras during spring and summer. 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 expected to occur in the NRA. The following is a summary of the distribution of these four seal species, which has been pulled form 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. All four species of seals are known to be captured in trawl gear (Waring *et al.* 2006).

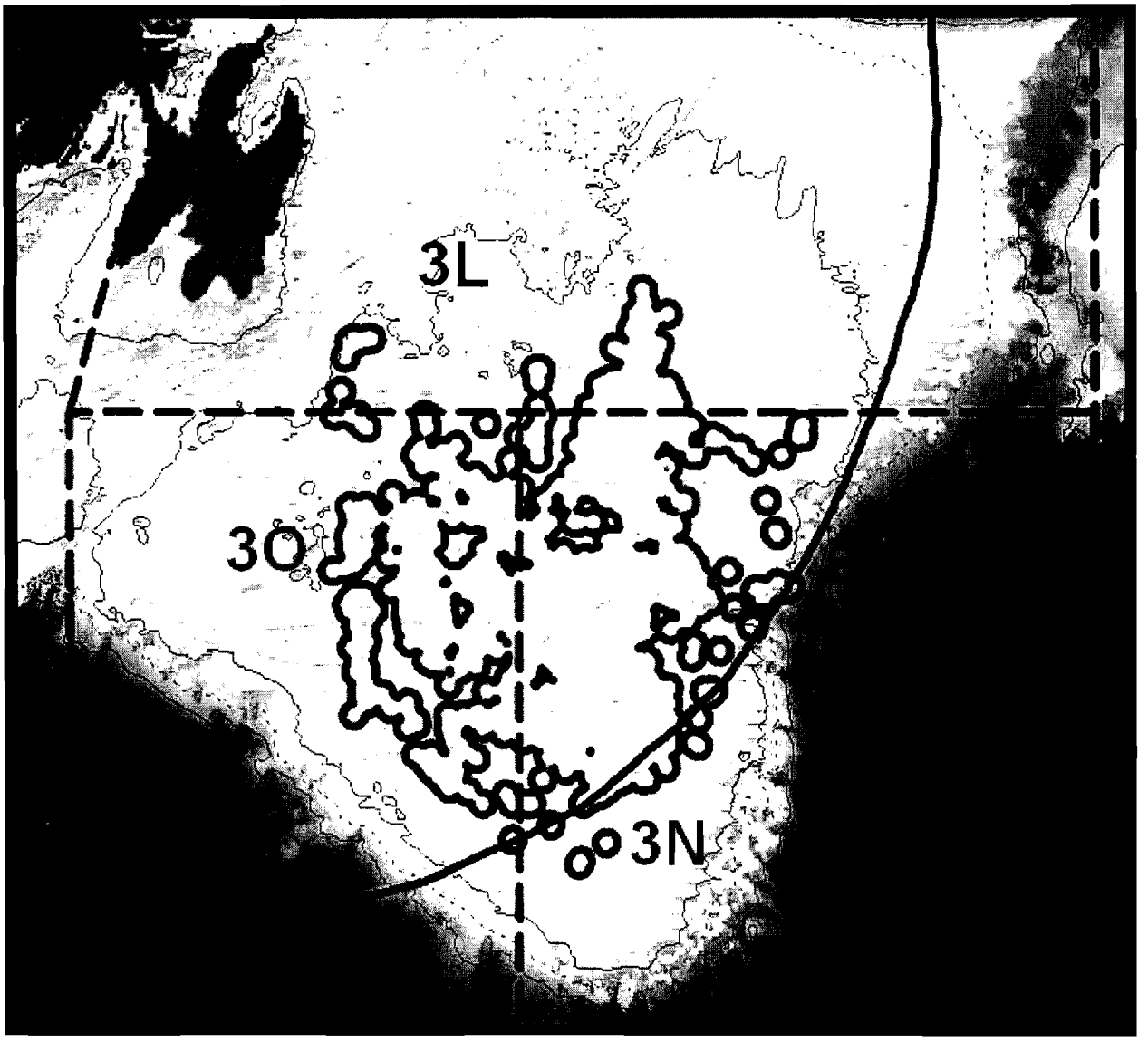
4.2 Physical Environment - Habitat Information

The Grand Bank is an extension of the continental shelf located southeast of Newfoundland and Labrador that comprises approximately 280,000 km^2 (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. Historically, the yellowtail fishery outside of the Canadian EEZ occurs in a very small region on the upper tail of the Grand Bank (Figure 5) (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, recognizing the immense importance and value of deep sea ecosystems and the biodiversity they contain;..." This resolution also called upon RFMOAs to adopt and implement measures for their respective regulatory areas as a matter of priority, but no later than December 31, 2008. 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. An intersessional meeting of the Fisheries Commission was held in Montreal, Canada during April 30- May 7, 2008, whereby part of the meeting was dedicated to the development of such measures. At this meeting, the Fisheries Commission adopted new VME measures (FC Doc. 08/3), but failed to come to an agreement on an interim encounter provisions, as called upon in the UNGA Resolution 61/105. However, interim encounter provisions were developed at the September 2008 Annual Meeting in Vigo, Spain (FC Doc. 08/16) and are expected to be further refined at a special meeting of the Working Group of Fisheries Sciences and Managers (WGFSM) on VMEs to be held just prior to the 2009 NAFO Annual Meeting in Bergen, Norway.

In addition to recently adopted measures to protect VMEs, NAFO implemented seamount closures in 2007 (FC Doc 06/5), with two additional sea mounts added at the 2008 Annual meeting (FC DOC 08/16), and a coral protection zone in 2008 (FC Doc. 07/18). Both of these closures were done under the precautionary and ecosystem approaches to management to address the impacts of fishing on benthic habitats, communities and species.

Figure 6. Cumulative yellowtail flounder fishing effort on the Grand Bank during 2000-2008 (The solid black arc is the Canadian 200 mile limit, while the dashed lines are the boundaries for NAFO Divisions 3LNO (from Kulka 2009))



In order to comply with paragraph 83(a) of the UNGA resolution which calls upon RFMOs, "to assess, on the basis of the best available scientific information, whether bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems....", NAFO undertook an effort to define the known bottom fishing areas based on fishing activity information provided by Flag states. An existing bottom fishing area is defined as "...areas where vessel monitoring system (VMS) data and/or other available geo-reference data indicating bottom fishing activities have been conducted at least in two years within a reference period of 1987 to 2007" (NCEM, 2009, Chapter 1bis paragraph 3). The data received by the Secretariat from Flag states were therefore combined based on year and filtered to include only coordinates that appeared in at least two different years. Data received from Flag states with speed included (Japan, Norway

and Portugal) were filtered to include actual fishing activity. A coordinate with a corresponding speed of between 1.0 and 4.0 knots was deemed to be fishing. Conversely, coordinates with associated speeds outside of this 1.0-4.0 knots range were excluded from the footprint map as they were deemed to be from vessels dodging bad weather or steaming. A plot comparison of the originally submitted (unfiltered) and filtered data-points is shown in Figures 6 and 7. Based on this information, the NAFO Secretariat is proposing footprint boundary coordinates to be discussed at the 2009 annual meeting in Bergen, Norway. A map of this proposed area is provided in Figure 8 (FC WP 09/1). As noted above the yellowtail fishery in the NRA has historically taken place in a small region on the upper tail of the Grand Bank.

In addition, in order to comply with paragraphs 83(a) and (b) of the UNGA resolution, NAFO must define and identify areas of possible VMEs. Using available information, the WGFSM undertook this task and identified eight candidate VME areas in the NRA during its September 8-12, 2008, meeting in Montreal, Canada. A map of these candidate VMEs, overlaying information on bottom fishing intensity for 2003-2007, is provided in Figure 9 (NAFO 2009a). This information was presented by the Scientific Council to the Fisheries Commission at the 2008 NAFO Annual Meeting. At this meeting, the Scientific Council noted that the VME boundaries that have been identified to date are preliminary, based on broad-scale distribution information, and that high resolution habitat mapping would be required to identify VME boundaries with greater certainty (NAFO 2008). The EU and Spain announced at the 2008 NAFO Annual Meeting a project to identify areas of possible VMEs. The main objectives of the project are: 1) To map the potential VMEs which may occur in the NRA at depths less than 2,000 m, 2) to study the distribution of the fishing effort in the NRA, and 3) to identify sensitive areas which may be closed to bottom fisheries. The first scientific cruise was planned for June 2009. Preliminary and final results are expected by 2010 and 2011, respectively. Participants of the project are scientists from Canada, US, and the EU. The EU has re-iterated the invitation to the scientists from other Contracting Parties to participate in this project (NAFO 2009b).

Figure 7. Composite plot of coordinates of bottom fishing activity data submitted by all flag States for 2003-2007 (unfiltered) (from FC Working Paper 09/1)

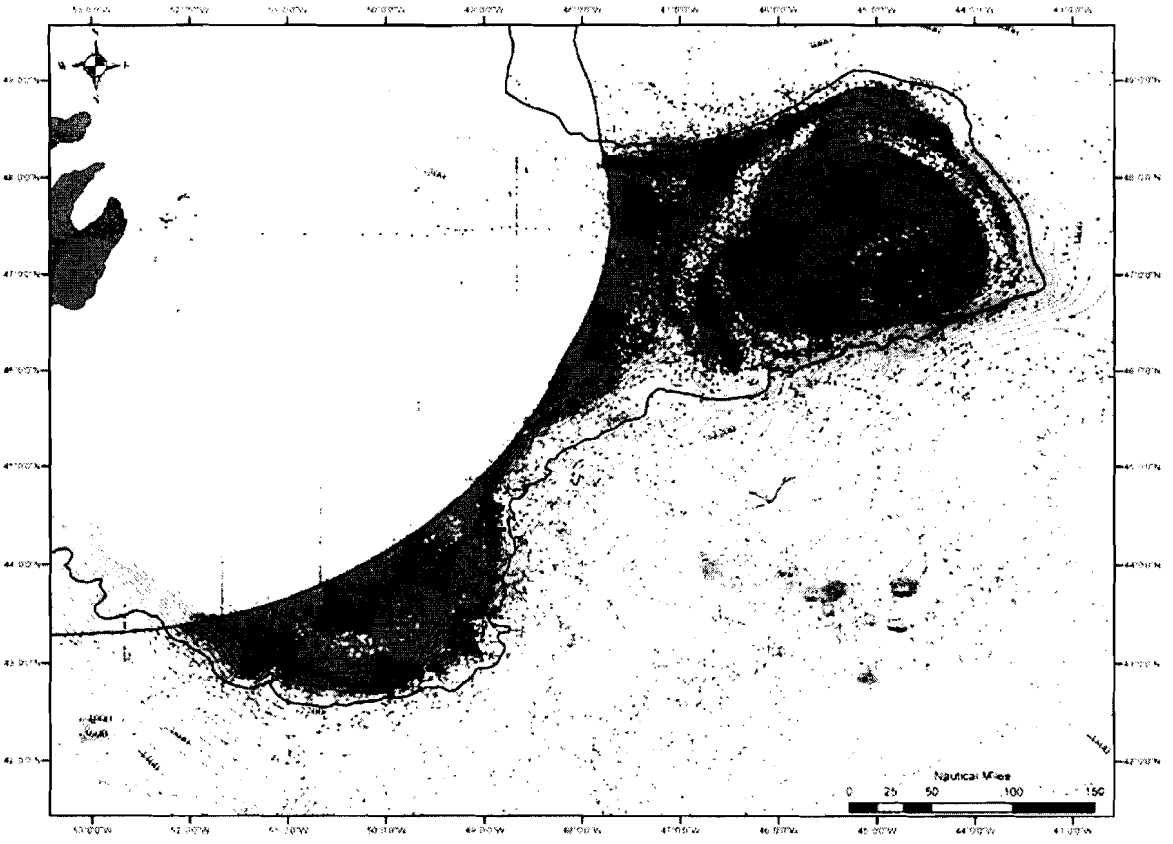


Figure 8. Composite plot of coordinates of bottom fishing activity data submitted by all flag States for 2003-2007 filtered by criteria of occurrence (at least in least two different years) and speed (1.0-4.0 knots) (from FC Working Paper 09/1)

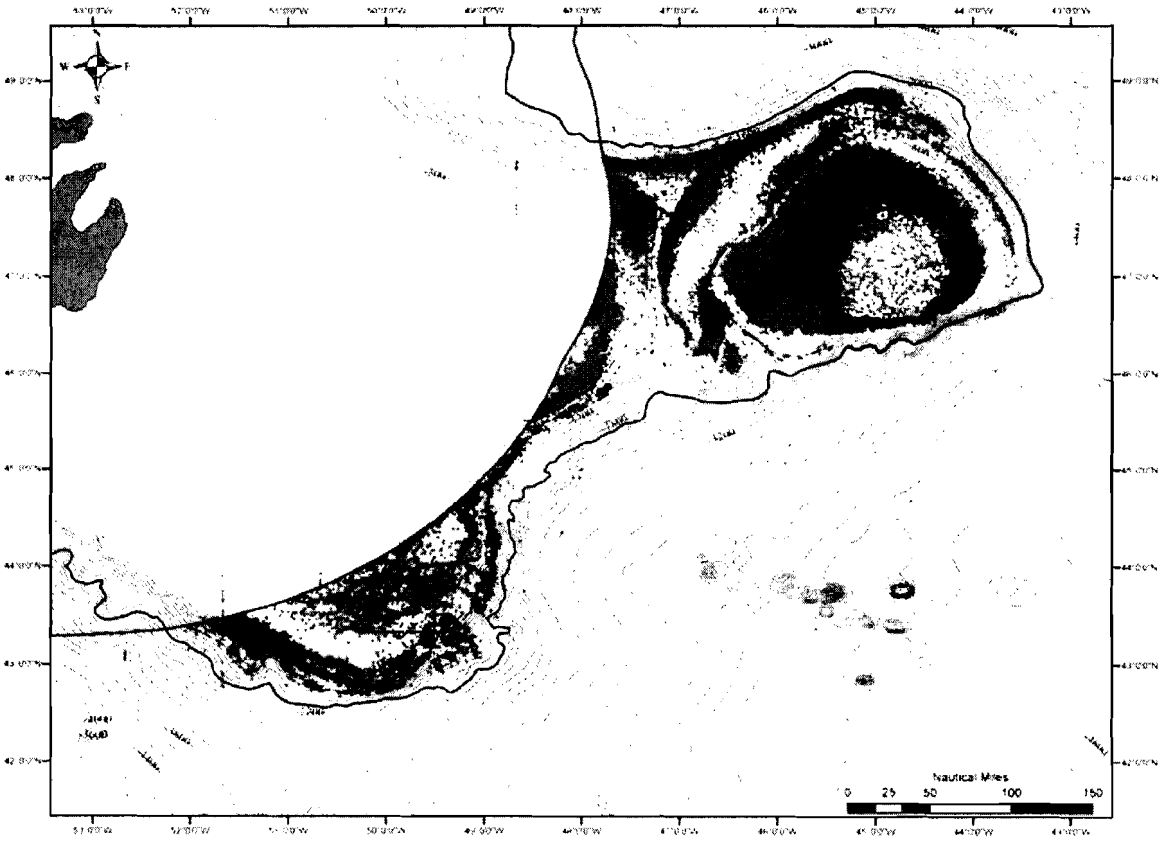


Figure 9. Proposed NAFO footprint boundary (from FC Working Paper 09/1)

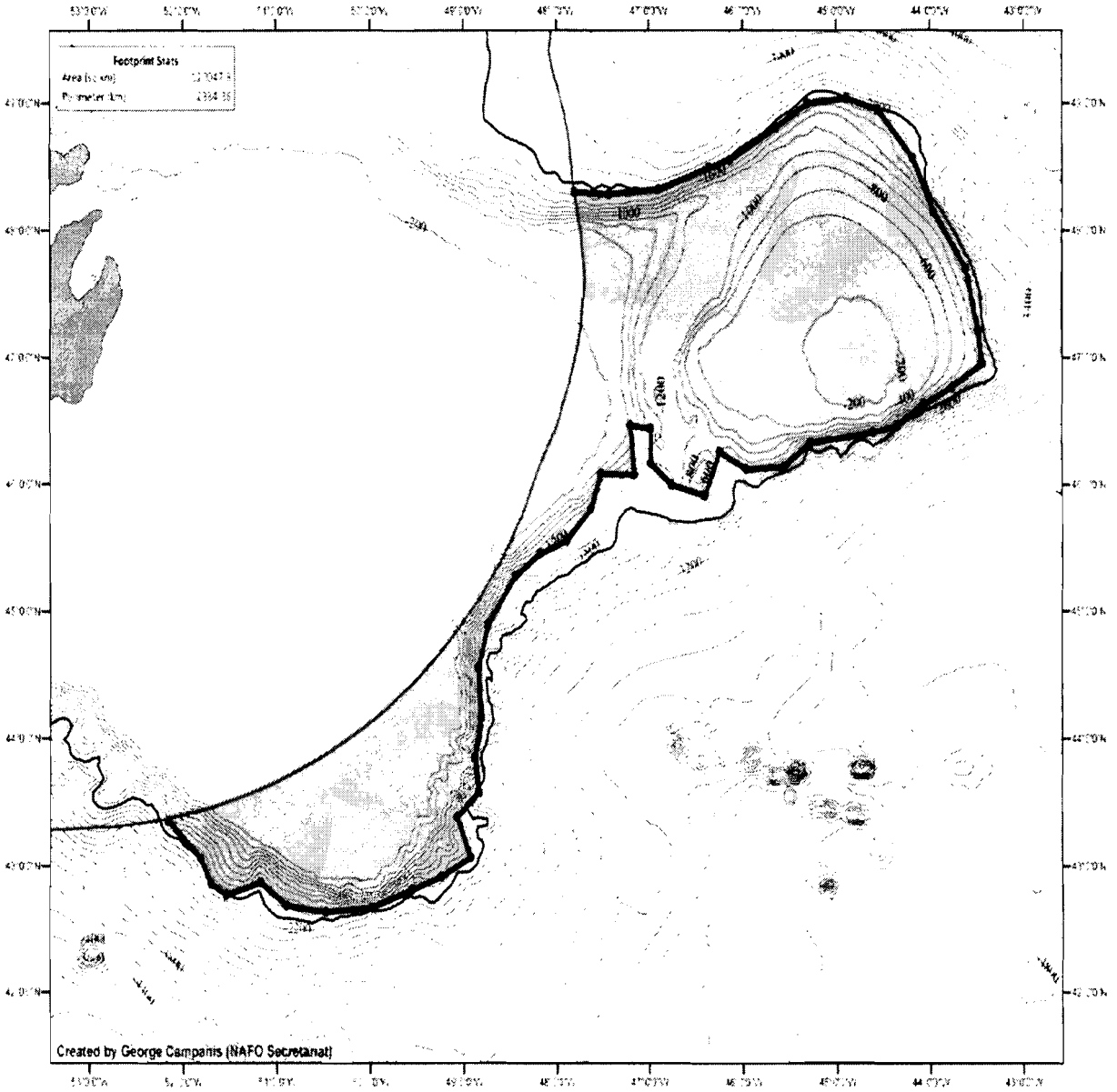
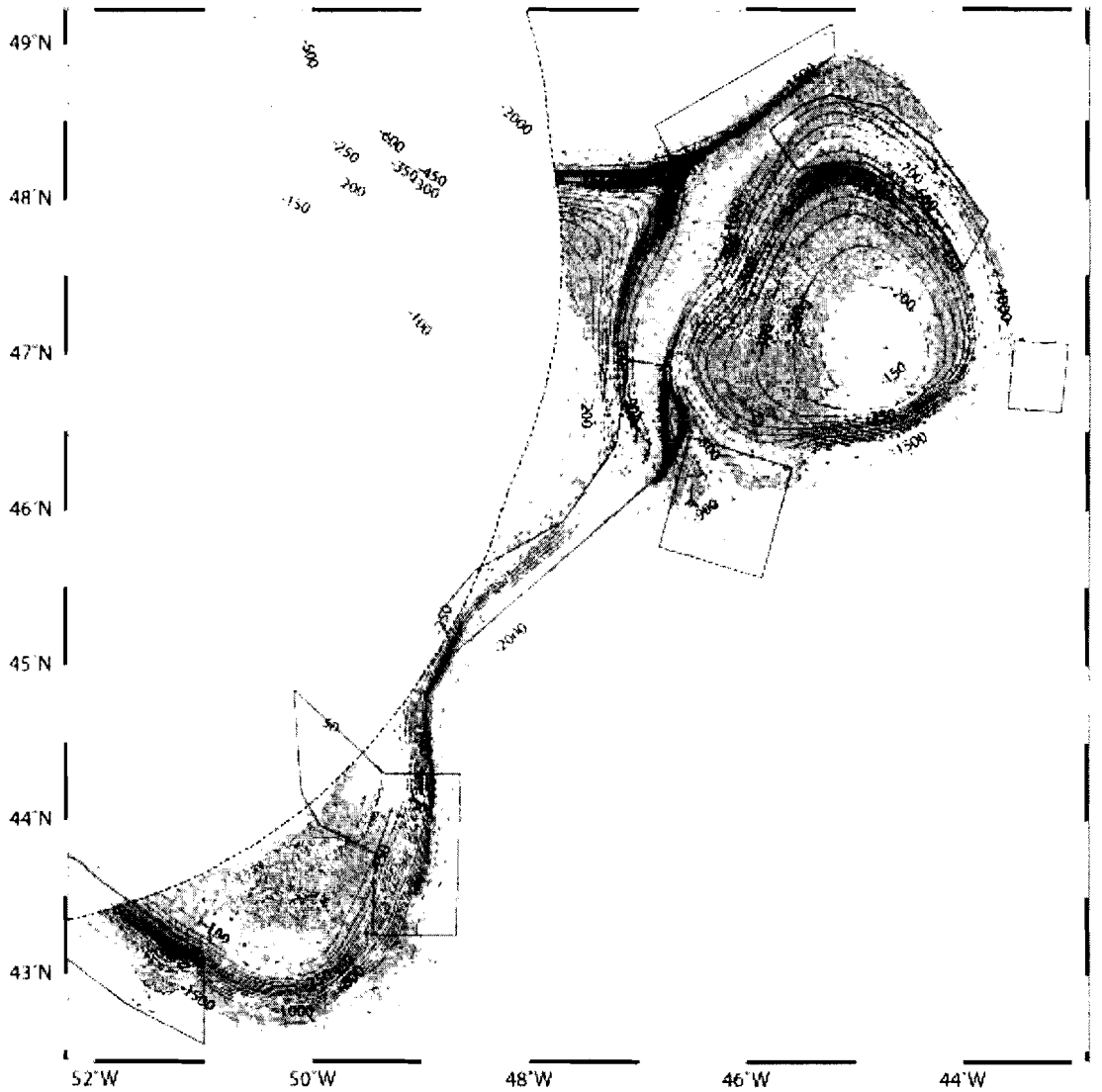


Figure 10. Map of eight candidate VMEs, overlaying information on bottom fishing intensity for 2003-2007 (from FC Doc. 09/2)



4.3 Human Environment

4.3.1 Vessels and Ports

The U.S. currently does not have a fishing presence in the NRA. However, after several years of negotiations, the U.S. signed an arrangement with Canada at the 30th Annual Meeting of NAFO

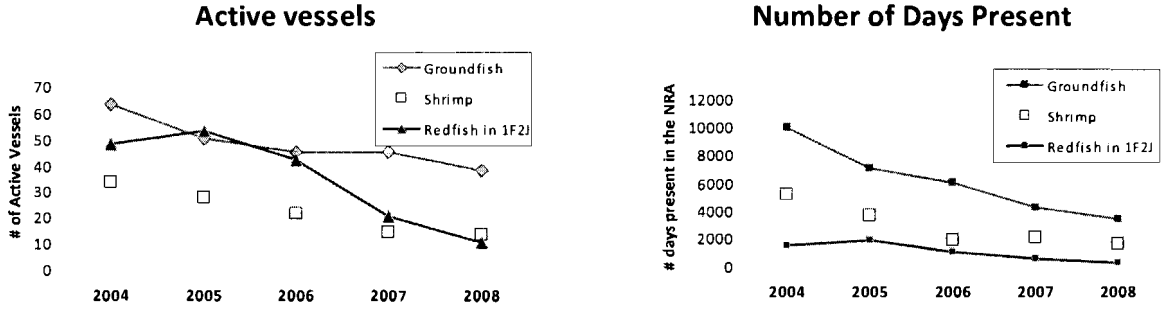
in Vigo, Spain (September 2008) that would transfer up to 1,500 mt of Div. 3LNO yellowtail flounder from Canada to the U.S. on an annual basis for a period of 10 years, beginning the year the agreement is activated. A copy of this arrangement is provided in Appendix A.

On November 3, 2008, NMFS published a notice in the *Federal Register* notifying the public of the 2008 U.S. quota and effort allocations (73 FR 65296), and soliciting interest in the harvest of these quotas or use of available effort allocation. In response to the this *Federal Register* notice, the U.S. received expressions of interest from two U.S. vessels owners desiring to harvest NAFO Divisions 3LNO yellowtail flounder from the NRA. As a result, NOAA has granted both U.S. applicants equal opportunity to harvest this quota in 2009. The human environment affected by this action is therefore these two vessel owners, and their respective vessel captains and crew. One of these individuals currently owns 5 vessels that are capable of this type of fishing activity. The other interested party owns approximately 40 vessels, but intends to use a combination of 4 vessels to harvest the yellowtail flounder quota.

In terms of ports impacted by this action, the two interested parties plan to land either in Portland, ME or New Bedford, MA if they decide to bring their yellowtail flounder catch back to the U.S. These are two of the largest fishing ports in New England. In fishing year 2007 (May 1, 2007 through April 30, 2008), 75 vessels landed 7,022,856 lbs. of groundfish species in Portland, ME. In comparison, during fishing year 2007, 156 vessels landed 15,150,104 pounds of groundfish species in New Bedford, MA (NEFMC, 2009). However, these individuals are also exploring the possibility of landing the yellowtail flounder in Canada (Newfoundland or Nova Scotia) or St. Pierre (French territory). Since the 2008 yellowtail flounder agreement between the U.S. and Canada is valid for 10 years, it is difficult to predict where future participants may land their catch. As a result, it is presumed that other major New England fishing ports, such as Boston and Gloucester, MA, may be affected by this action at some point in the future.

In terms of non-U.S. vessels participating in the NAFO's Northwest Atlantic trawl fishery, it should be noted that the number of active vessels targeting groundfish species such as yellowtail flounder, has steadily declined since 2004. In 2004, there were 63 vessels fishing for groundfish species in the NRA. However, this number dropped to 38 vessels in 2008. In addition, the number of days present by groundfish vessels has also declined steadily since 2004; from 9,966 days present in 2004 to 3,302 days present in 2008 (Figure 10).

Figure 11. Number of vessels and vessel days in the NAFO Regulatory Area by fishery type



4.3.2 Landings

Recent landings of target and bycatch species are provided in Section 4.1.1 of this document. In summary, landings of the target species, yellowtail flounder, were far below the established quota in 2006 and 2007, mainly due to industry labor strikes in Canada. Although the strikes were resolved in late 2007, the landings of yellowtail flounder in 2008 were still about 4,000 mt below the quota. According to some sources, one reason the yellowtail flounder quota has not been fully harvested is due to poor markets for this species. Another reason is the high bycatch rate of American place, particularly in the summer months, which prevents vessels from effectively targeting the yellowtail flounder.

5.0 Environmental Consequences of Proposed Action

5.1 Biological Impacts

5.1.1 Impact on yellowtail flounder

Taking no action would cause the 1,500 mt of yellowtail flounder transferred to the U.S. by Canada to remain unharvested. Since recent yellowtail flounder landings have been below the established quota, taking no action would maintain yellowtail fishing effort and catch at, or slightly below, existing levels. As a result, the no action alternative is not expected to have any negative biological impacts on target species, and could even result in slightly positive impacts.

The proposed action is not expected to result in any additional negative impacts to the target species of yellowtail flounder in comparison to taking no action. NAFO establishes quotas for the yellowtail fishery on an annual basis based on the best available scientific advice. As noted in Section 4.1.1.1, yellowtail stock size is currently 1.6 times B_{msy}. The 1,500 mt of yellowtail flounder quota transferred to the U.S. from Canada represents approximately 9 percent of the total quota allocated for this fishery in 2009. According to the agreement signed by the U.S. and Canada, this quota transfer will be adjusted proportionally if the NAFO adjusts the quota for yellowtail flounder, but shall be re-negotiated if the quota drops below 15,500 mt. As such, U.S. fishing vessels will be fishing within the yellowtail flounder quota established by NAFO, which is set annually based on the best scientific information. In addition, given the relatively small amount of quota available, NMFS expects that no more than 10 vessels will participate in this fishery on an annual basis. In order to avoid exceeding the U.S. quota, NMFS will closely monitor landings and close the fishery once it is projected that the U.S. portion of the Divisions 3LNO yellowtail quota has been harvested.

5.1.2 Impact on non-target species

The two species most frequently caught as bycatch in the NAFO yellowtail flounder fishery are cod and American plaice. This is due to the considerable spatial overlap of these two species with yellowtail flounder on the Grand Bank (Kulka 2009). Despite moratoriums on both of these species, the biomass of both species in NAFO Divisions 3LNO remain at low levels. In fact, cod biomass in NAFO Divisions 3NO is currently near historic low levels. Thus, bycatch of cod and

American plaice in the yellowtail flounder fishery may be having an impact on the recovery of these two species on the Grand Bank.

Taking no action would mitigate any additional bycatch of cod and American plaice in the yellowtail fishery associated with a directed U.S. yellowtail fishery since this action would maintain fishing effort at below existing levels. Conversely, the proposed action would likely increase the total number of vessels targeting yellowtail flounder in the NRA, potentially increasing the incidental harvest of cod and American plaice. However, given that the amount of yellowtail flounder quota transferred to the U.S. by Canada represents less than 10 percent of the entire 2009 quota for this species, it is unlikely that a U.S. fishery would have a substantial effect on total fishing effort in the NRA, and thus on the bycatch levels of cod and American plaice.

The majority of the NAFO yellowtail flounder fishery occurs within the Canadian EEZ (Figure 5) (Kulka 2009). However, based on recent yellowtail flounder distribution information, it appears there is a substantial concentration of the stock straddling the Canadian EEZ (Kulka, pers. comm.). Therefore, there is potential for expansion of the yellowtail flounder fishery into the NRA by Canadian vessels.

A recent World Wildlife Fund study of cod and American plaice bycatch in the Grand Bank yellowtail flounder fishery indicates that bycatch rates of cod peak during the months of July through October, while American plaice bycatch rates peak in May through July (Kulka 2009). U.S. fishermen have commented that they were prefer to conduct fishing activities during the fall and winter due the poor quality of Grand Bank yellowtail flounder and increased bycatch during the summer months. If this is indeed the case, the potential impact of the U.S. yellowtail flounder fishery on the Grand Bank stocks of cod and American place could be mitigated by the timing preferences of U.S. fishery participants.

Finally, 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 American place) in any one haul exceeds 5 percent, or requirement that total annual bycatch of American plaice in the yellowtail flounder fishery can not exceed 13 percent of a Contracting Parties yellowtail flounder quota allocation (NAFO 2009c). Thus, existing NAFO bycatch provisions will serve to mitigate the potential impact of the U.S. yellowtail flounder fishery on non-target species.

5.2 Impact on protected species

Taking no action would maintain fishing effort in the NRA at, or possibly even slightly below, existing levels. As a result, there would be no additional opportunity for interactions to occur between the fishing gear used in the yellowtail flounder fishery and marine mammals or ESA-listed species. Therefore, taking no action would have no effect on protected species.

The proposed action is not expected to result in any additional impacts to marine mammals or ESA-listed species in comparison to taking no action (i.e., levels already occurring in the fishery) since it involves a limited number of vessels that are fishing under a limited quota allocation. Specifically, the proposed action will not have an impact on ESA-listed large whales because

these species have are generally known to not interact with trawl gear, the gear that will be used in this fishery. Although there was one interaction between a blue whale and a NAFO trawl vessel in 2006, the vessel was a 167 ft (51 m) trawl vessel with a capacity of 755 gross tons, and the incident appears to be an extremely rare occurrence based on available NAFO observer data. The U.S. vessels participating in this fishery will be of a much smaller size (70 to 100 ft in length and less than 100 gross tons) and using much smaller trawl nets, which are not known to interact with large whales. Therefore, this action is not expected to impact other marine mammals in the NRA. Finally, although ESA listed sea turtles have been taken in the Canadian longline fishery, there is no evidence that sea turtles are taken in trawl gear fisheries within the NRA. Thus, this action is not expected to have a negative impact on the sea turtle population in the Western North Atlantic.

5.3 Habitat Impacts

Taking no action would maintain trawl fishing effort in the NRA at or below existing levels. As a result, the no action alternative would have no impact on benthic habitat in the NRA.

The proposed action is not expected to result in any additional impact 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, participating vessels will be required to comply with NAFO measures to protect VMEs contained in Chapter Ibis in the 2009 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.

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 the 1,500 mt of yellowtail flounder quota transferred from Canada, 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 participate in the NAFO yellowtail flounder fishery. This economic opportunity is particularly important in light of recent and forthcoming 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.

Although negligible in comparison to the total NAFO Division 3LNO yellowtail flounder quota (~9 percent), the U.S. allocation of 1,500 mt equates to 3,306,934 lbs of yellowtail flounder. In 2008, U.S. vessels landed 3.7 million lbs of yellowtail flounder worth $5.5 million (avg. = $1.49 per lb). Thus, the amount of NAFO yellowtail flounder quota available to U.S. vessels is nearly equivalent to current U.S. landings.

In comparison, the amount of American plaice that U.S. vessels would be allowed to land under the 13 percent bycatch allowance authorized in 2009 would equate to 195 mt, which converts to 429,901 lbs. In 2008, U.S. vessels landed 2.4 million lbs worth $4.1 million (avg. = $1.71 per

lb). Thus the amount of American place that U.S. vessels could harvest from the NRA is about 18 percent of the current U.S. fishery.

It is difficult to predict the economic value of the yellowtail flounder and American place to U.S. vessels since it is largely dependent on the ability of vessel owners to market the catch in either the U.S. or Canada. According to information obtained from DFO, the average landed price for yellowtail flounder during 2007-2008 ranged from $0.62 to $0.67 CAN per kg, which equates to approximately $0.26 to $0.28 USD per lb. However, prices reported during the first half of 2009 are well below average at $0.38 CAN per kg or $0.16 USD per lb. Conversely, the average 2008 landed price for yellowtail flounder in the U.S. was $1.49 per lb, while the average price for 2009 (January - August) is $1.28 per lb. The average price for American plaice in Canada was similar to yellowtail flounder in 2007-2008 at $0.62 to $0.69 CAN per kg ($0.26 to $0.29 USD per lb), but has recently dropped to $0.48 CAN per kg ($0.20 USD per lb). In the U.S, the 2008 average price for American plaice was $1.71, while the average 2009 price (January - August) has dropped to $1.24 per lb. A range of values for the U.S. yellowtail flounder quota and authorized bycatch of American plaice, based on U.S. and Canadian price estimates, is provided in Table 7.

It should also be noted that the yellowtail flounder harvested from U.S. waters is of a higher quality than that landed from NAFO waters. Thus, although the vessel owners may be able to get a better price for the yellowtail flounder (and possibly American plaice) that they harvest from the NRA if they land in the U.S., it will likely not be as high as price paid for flounders caught domestically. Furthermore, the value of yellowtail flounder is highly dependant on available markets for this species, particularly in Canada.

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 Bank to fish for yellowtail flounder. Vessels that participate in the U.S. NAFO fishery for yellowtail flounder must steam approximately 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. Since some U.S. VMS units currently do not have satellite coverage in the NRA, vessels owners may be required to purchase new VMS units as well as incur additional data transmission fees due to the daily catch reporting requirements of NAFO. Finally, if vessel owners decide to land their catch in Canada, they will be required to obtain the necessary licenses and comply with prior notice (of entry into EEZ, landing, etc.) requirements, all of which must be done through a shore agent (as required by Canadian fisheries law), which carries an associated cost.

Table 7. Estimated range of values (in USD) for yellowtail flounder quota and authorized bycatch of American plaice

	Yellowtail Flounder		***American Plaice***	
Landing Location	**Lowest Price**	**Highest Price**	**Lowest Price**	**Highest Price**
United States	4,232,876	4,927,332	533,077	735,131
Canada	529,109	925,942	85,980	124,671

Although the economic value of a U.S. NAFO yellowtail fishery is uncertain, the proposed action is expected to have a positive impact on U.S. vessels since it would provide additional fishing opportunities beyond those available to the domestic fishery. The type of vessels that are expected to participate in this fishery are groundfish trawl vessels of 70 feet in length or larger. As of August 28, 2009, there were 210 permitted vessels that meet this criterion. However it is expected that no more than 10 vessels will participate in the NAFO yellowtail fishery on an annual basis due to the high operating costs associated with participating in this fishery. In fact, only two vessel owners expressed an interest in participating in the 2009 fishery, the first year the quota transfer between Canada and the U.S. became effective.

5.5 Social Impacts

Not issuing HSFCA permits to U.S. vessels so that they may participate in the NAFO yellowtail flounder fishery (no action) would prevent these vessels from taking advantage of the additional fishing opportunities presented by 1,500 mt of yellowtail flounder quota transferred by Canada. 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 yellowtail flounder fishery is expected to provide additional fishing opportunities to larger groundfish trawl vessels in comparison to taking no action. Many of these vessels are located in some of the larger groundfish ports of New Bedford, MA, Portland, ME, and Gloucester, MA. These ports have experienced substantial economic impacts since 2004, when Amendment 13 to the Northeast Multispecies FMP was implemented that resulted in considerable reductions in fishing effort. Thus, the additional fishing opportunities provided by the proposed action represents potential additional income to large trawl vessels from these ports. As noted in Section 5.3, 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 and the markets available.

In addition to the potential for increased income, in comparison to taking no action, the proposed action would enable vessel owners and their crew 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 yellowtail fishery and the communities in which they live. Furthermore, the anticipation over fishing in an area that no U.S. trawl vessel has fished in over 25 years, developing a new fishery, and potentially developing new markets for the fish to be harvested all have positive social impacts on vessel owners and their crew.

5.6 Cumulative Effects

5.6.1 Introduction to Cumulative Effects

The purpose of this section is to summarize the incremental impact of the proposed action on the environment when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes them. The National Environmental Policy Act (NEPA) requires that cumulative effects of "past, present, and reasonably foreseeable future actions" (40 CFR § 1508.7) be evaluated along with the direct effects and indirect effects of each

proposed alternative. Cumulative impacts result from the combined effect of the proposed action's impacts and the impacts of other past, present, and reasonably foreseeable future actions. These impacts can result from individually minor but collectively significant actions taking place over a period of time. The Council on Environmental Quality (CEQ) directs Federal agencies to determine the significance of cumulative effects by comparing likely changes to the environmental baseline. On a more practical note, the CEQ (1997) states that the range of alternatives considered must include the "no-action alternative as a baseline against which to evaluate cumulative effects." Therefore, the analyses referenced in the following cumulative impacts discussion, compare the likely effects of the proposed action to the effects of the no-action alternative.

CEQ Guidelines state that cumulative effects include the effects of all actions taken, no matter who has taken the actions, but that the analysis should focus on those effects that are truly meaningful in terms of the specific resource, ecosystem and human community being affected. This section analyzes the potential direct and indirect effects of the proposed action (summarized in Section 3.2) together with past, present, and reasonably foreseeable future actions that affect the baseline described in Section 4.0. Although predictions of synergistic effects from multiple sources are inherently less certain than predicted effects of individual actions, cumulative effects analyses are intended to alert decision makers to potential "hidden" consequences of the proposed action. Thus, this section contains a summary of relevant past, present and reasonably foreseeable future actions to which the proposed action may have a cumulative effect. This analysis has taken into account, to the extent possible, the relationship between the historical and present condition of the yellowtail flounder population and fishery in NAFO Divisions 3LNO, and the relationship of this fishery to the historical and present status of non-target species such as cod and American plaice. This analysis also takes into account the relationship between this action and past, present and future actions involving the Northeast multispecies fishery.

In terms of past actions for fisheries, habitat and community impacts, the temporal scope for this analysis is primarily focused on the time period from 1994 forward since this was the year Amendment 5 to the NE Multispecies FMP was implemented establishing effort controls in for 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. This action examines the 10-year time period during which the yellowtail flounder arrangement between the U.S. and Canada is effective, from 2009 through 2018.

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, which is expected to be in the southeastern tail of the Grand Bank outside the Canadian EEZ where yellowtail flounder distribution overlaps with areas of existing bottom fishing activity (see Figures 5 and 7). The geographic range for community impacts is defined as those fishing communities located in New England (Maine, New Hampshire,

Massachusetts, Rhode Island, and Connecticut) that contain vessels capable of participating in a yellowtail flounder fishery on the Grand Bank. The communities most likely impacted by this action are Portland, ME and New Bedford, MA.

The cumulative effects analysis focuses on five Valued Environmental Components (VEC's):

1. target species (yellowtail flounder)
2. non-target species (incidental catch and bycatch)
3. protected species
4. habitat, and
5. communities (includes social and economic impacts).

The cumulative effects determination on these VEC's is based on the following analyses: (1) the discussion in this section of non-fishing actions occurring outside the scope of this action; (2) the analysis of direct and indirect impacts contained in the Environmental Consequences section; and (3) the summary of past, present and future actions affecting the Northwest Atlantic trawl fishery.

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 Magnuson-Stevens Act, Endangered Species Act, 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.

The vessels participating in the Northwest Atlantic trawl fishery also participate in the domestic multispecies fishery managed under the Northeast Multispecies FMP. As a result, 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

5.1.6.2 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 oil platforms. The majority 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 Northwest Atlantic trawl fishery and the species targeted in this fishery, such as yellowtail flounder, 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 build 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 concrete GBS structure is scheduled to get begin in 2012. The Hebron platform will be situated approximately 220 miles southeast of St. John's, Newfoundland.

5.2.6.2 NAFO Actions

NAFO implemented a moratorium on fishing for cod in the NRA in 1994 due to the poor status of the resource. One year later, NAFO implemented moratoriums on American plaice and witch flounder. These moratoriums remain in effect since the Grand Bank stocks of all 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. According to this new footnote, Contracting Parties are subject to an overall American plaice bycatch of 13 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. This percentage is scheduled to increase to 15 percent in 2010 unless scientific evidence indicates that this bycatch rate is likely to undermine stock recovery for American plaice, or cause an unreasonable delay in reaching B_{lim}.

In response to UNGA Resolution 61/105, NAFO implemented measures to protect VMEs in NAFO adopted new VME measures (FC Doc. 08/3), but failed to come to an agreement on an

interim encounter provisions, as called upon in the UNGA Resolution. However, interim encounter provisions were developed at the September 2008 Annual Meeting in Vigo, Spain (FC Doc. 08/16).

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 NRA by establishing a program that requires the port state to verify that a vessel is authorized to fish in the NRA, 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 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 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.

5.3.6.2 Northeast Multispecies FMP Actions

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 make up for lost revenues. As a result, actions in the Northeast multispecies fishery are indirectly encouraging vessel owners to pursue targeting yellowtail flounder in the NAFO managed Northwest Atlantic trawl fishery. A summary of the past, present, and foreseeable future management actions in the Northeast multispecies fishery that has resulted in a substantial decline in fishing effort, and commensurate fishing opportunities, is provided in the following paragraphs.

Amendment 5 to the Northeast Multispecies FMP was implemented in 1994 to reduce fishing effort and rebuild overfished stocks. This amendment enacted a moratorium on new participants in the fishery, reduced days-at-sea (DAS) for most vessels by 50 percent over a 5-7 year period, and implemented mandatory reporting and observer requirements, among other measures. Despite these new regulations, several stocks in the Northeast multispecies complex continued to decline rapidly. In response, NMFS implemented emergency closures, which were made permanent by Framework 9 in 1995. Then in 1996, NMFS implemented Amendment 7 which accelerated the Amendment 5 DAS reduction schedule, implemented seasonal Gulf of Maine closures, implemented 1,000 lb haddock trip limit, and expanded the 5 percent bycatch rule, among other measures. The combination of Amendments 5 and 7 to the FMP and Framework 9 reduced fishing effort significantly and provided large areas of year-round protection, especially

on Georges Bank, for several species of Northeast multispecies. In response, the status of several multispecies stocks improved over several years and landings increased as a result.

Following Amendment 7, several framework adjustments were implemented, adding further restrictions to the Northeast multispecies fishery. These frameworks reduced the Gulf of Maine cod possession limit and added new closure areas. While the combination of all of these measures improved multispecies stock status (increasing biomass and reducing fishing mortality) for many stocks, the improvement was not being achieved for all stocks. In response to a Federal Court decision in the case of *Conservation Law Foundation, et al. v. Evans, et al.*, NMFS implemented two interim final rules in 2002 that included a considerable reduction of DAS and increased gear restrictions for certain gear types, including gillnets, hook-gear, and trawl nets. Also included were modifications and additions to the closure areas, limits on yellowtail flounder catch, and more restrictive recreational fishing measures (67 FR 21139, April 29, 2002; 67 FR 50291, August 1, 2002). Amendment 13, implemented on May 1, 2004 (69 FR 22906, April 27, 2004), superseded the settlement agreement and adopted major changes to the Northeast Multispecies FMP such as the adoption of new rebuilding periods and a new rebuilding program that included periodic adjustments and default DAS reductions to reduce effort over time, allowed DAS to be leased or transferred, created a sector allocation program, and created special access programs to allow access to stocks that can support an increase in catch.

Multispecies Framework 40A, implemented November 19, 2004 (69 FR 67780, November 19, 2004), created three opportunities for multispecies vessels to target healthy stocks such as haddock while implementing programs to preserve the Amendment 13 mortality targets, including the establishment of incidental TACs for stocks of concern and requiring that the various programs end when these TACs are caught. This was quickly followed by Multispecies Framework 40B, implemented on June 1, 2005, and Framework 41, effective September 14, 2005, to improve the effectiveness of the Amendment 13 effort control program while creating additional opportunities to target healthy stocks and increasing information available to assess Northeast multispecies bycatch in the herring fishery.

Despite the management measures contained in Amendment 13 and subsequent framework actions, fishing mortality in 2004 exceeded Amendment 13 targets for eight stocks. Framework 42, effective in November 2006 (71 FR 62156, October 23, 2006), implemented further effort reduction measures, including differential DAS requirements, and catch limits. Additionally, simplified DAS leasing and transfer programs were implemented. The analysis of effects conducted for Framework 42 concluded that reductions in effort would end overfishing for those stocks that were slow to rebuild while creating new opportunities for Northeast multispecies vessels to target healthy stocks.

Amendment 16 to the Northeast Multispecies FMP was approved by the New England Fishery Management Council (Council) in June 2009, and is awaiting review and approval by NMFS. A final rule is expected to be in place for the start of the 2010 fishing year on May 1, 2010. Amendment 16 contains a broad range of measures designed to achieve mortality targets, provide opportunities to target healthy stocks, mitigate (to the extent possible) the economic impacts of the measures, and improve administration of the fishery. The measures contained in

Amendment 16 include: Annual Catch Limits (ACLs) and Accountability Measures (AMs); implementation of 17 new sectors; measures to control fishing mortality (DAS reductions and new closure and/or gear restriction areas); changes to the DAS leasing and transfer program; and additional reporting requirements to facilitate the monitoring of ACLs and AMs.

In terms of reasonably foreseeable future actions under the Northeast Multispecies FMP, the Council and NMFS are also working on a specifications package to implement the ACL provisions contained in Amendment 16. Finally, the Council has initiated development of Amendment 17 to the Northeast Multispecies FMP, but no action, such as publication of a Notice of Intent to Prepare an Environmental Impact Statement, has yet been taken.

Past, present, and reasonably foreseeable future actions under the Northeast Multispecies FMP reduced effort in the Northeast multispecies fishery and resulted in negative economic impacts to fishermen and their communities. As a result, fishermen are seeking out new opportunities to help offset some of the financial losses associated with actions in this fishery.

5.6.3 Cumulative impacts on target species

The purpose of this action is to authorize the issuance of permits under the HSFCA in order to allow U.S. vessels to participate in the Northwest Atlantic trawl fishery governed by NAFO. This action is not expected to have any cumulative impact on target species since U.S. fishing vessels will be fishing under an existing quota authorized by NAFO, which is updated on an annual basis based on the best scientific advice. Additionally, all U.S. vessels will be subject to NAFO's daily catch reporting requirements, allowing NMFS to closely monitor the yellowtail flounder quota as well as the American plaice bycatch limit. Further, if these vessels choose to land in a non-U.S. port (such as St. John's, Newfoundland), they will be required to comply with NAFO's port state control measures and any additional reporting and/or licensing requirements of the port state (e.g., Canada).

The cumulative impact of non-fishing activities is not likely to be substantial 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 yellowtail flounder resulting from any no-fishing zones are expected to be localized and minimal in nature.

5.6.4 Cumulative impacts on non-target species

Overall fishing effort (number of vessels) in the NRA may increase as a result of this action since up to 10 new vessels could participate in NAFO's Northwest Atlantic trawl fishery to target yellowtail flounder. This increase in fishing effort could increase the incidence of bycatch. However, the number of vessels and the number of days present in the NRA has been steadily declining since 2004 (Figure 10). Therefore, the addition of a small number of U.S. vessels that

are fishing under a limited quota will likely result in little to no increase in total fishing effort compared to that seen in recent years. As a result, this action is not expected to a cumulative impact on non-target species.

All U.S. vessels issued HSFCA permits under this action would be required to abide by all applicable NAFO bycatch provisions. These bycatch restrictions were relaxed to some degree in 2009 based on changes made at the 2008 Annual Meeting to the bycatch allowance for American plaice in the yellowtail flounder fishery, which established a 13 percent bycatch cap for each Contracting Party based on its annual yellowtail flounder quota. This percentage is scheduled to be increased to 15 percent in 2010, unless best available scientific advice indicates that the increased bycatch rate will have a negative impact on the rebuilding of American plaice. Therefore, any impact of additional fishing effort by U.S. vessels will be mitigated by NAFO's existing bycatch provisions. Although these bycatch provisions have been recently relaxed for American plaice, and may be relaxed further in the near future, these changes have been made in accordance with the best scientific advice in a manner intended not to impact the rebuilding of American plaice.

5.6.5 Cumulative impacts on protected species

Given the information available from NAFO on known interactions between bottom trawl gear and protected species (listed marine mammals and sea turtles), this action is not expected to have a cumulative impact on protected species due to the high unlikelihood of such interactions occurring in this region. Thus, even though this action may result in a slight increase in fishing activity in the NRA, this increased activity is not expected to increase the likelihood of interactions taking place between listed marine mammals and/or sea turtles and bottom trawl gear.

5.6.6 Cumulative impacts on habitat

This action is not expected to have a cumulative impact on habitat since vessels will be fishing in areas already subject to bottom fishing activities, and will be subject to current and future provisions to protect vulnerable habitats established by NAFO.

5.6.7 Cumulative impacts on communities

This action will have a positive cumulative effect 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 yellowtail flounder 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 actions that have reduced the ability of vessels to participate in the Northeast multispecies fishery by reducing DAS allocations and establishing closed areas, and future actions that will further reduce the ability of these vessels to target participate in the Northeast multispecies fishery.

5.6.8 Summary of cumulative effects

This action, to issue HSFCA permits to U.S. vessels authorizing them to participate in NAFO's Northwest Atlantic trawl fishery, would not result in any significant cumulative impacts on yellowtail flounder (the target species), non-target species, habitat, protected species, or communities. This action may result in a slight increase in fishing effort within the NRA, but in light of the fact that fishing effort has been steadily declining in this region, the cumulative impact of this additional effort in the context of past, present, and future actions by NAFO 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)

NMFS has provided guidance for the determination of significance under NEPA in Section 6.01(b) of NOAA Administrative Order (NAO) 216-6, May 20, 1999, as well as in NMFS Instruction 3-124-1, July 22, 2005. NAO 216-6 contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." The analysis of significance of this action is, therefore, based on both the NAO 216-6 criteria and CEQ's context and intensity criteria. Each criterion listed in the sixteen questions below is relevant in making a finding of no significant impact, and have been considered individually, as well as in combination with the others. The sixteen criteria to be considered are addressed below:

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

The target species for the Northwest Atlantic trawl fishery is yellowtail flounder. Based on the most recent scientific advice, the yellowtail flounder stock in NAFO Divisions 3LNO is well above B_{msy}, and is estimated to continue growing as discussed in Section 4.1.1.1. 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 the yellowtail flounder fishery if the U.S. share of NAFO yellowtail flounder quota is projected to be harvested. As noted in Section 2.0, the U.S. is being transferred 1,500 mt of yellowtail flounder quota from Canada for the next 10 years, beginning in 2009. Although, U.S. vessels are being transferred quota that is currently not being used by Canada, this action is only expected to result in minimal additional effort beyond that already occurring in the fishery due to the limited amount of quota being transferred, and the limited number of vessels (no more than 10) expected to harvest this quota. Thus, because the yellowtail flounder stock in NAFO Divisions 3LNO is in a healthy condition, and because U.S. vessels will be fishing under a limited quota allocation transferred by Canada, this action is not expected to jeopardize the sustainability of any target species.

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

Vessels issued HSFCA permits to participate in the Northwest Atlantic trawl fishery will not only be subject to a U.S. quota allocation of yellowtail flounder, but also to a bycatch limit of American plaice of 195 mt (13 percent of the U.S. yellowtail flounder quota). Thus, if the American plaice bycatch limit is projected to be reached before the yellowtail flounder quota, the U.S. yellowtail flounder fishery in NAFO Divisions 3LNO will be closed. Furthermore, all U.S. vessels that participate in the Northwest Atlantic trawl fishery will be subject to NAFO's restrictive bycatch provisions. Given the American plaice bycatch limit on the yellowtail flounder fishery, and NAFO's existing bycatch provisions, the proposed action not expected to jeopardize the sustainability of any 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 and identified in FMPs?*

The vessels that would be issued HSFCA permits under the proposed action to participate in the Northwest Atlantic trawl fishery would be operating in areas of the Grand Bank where trawl fishing activity already occurs (see Figures 7 and 8). As a result, the proposed action is not expected to increase impacts to ocean and coastal habitats and/or EFH beyond those already occurring in the fishery. Furthermore, NAFO has implemented measures to protect VMEs to comply with UNGA Resolution 61/105, such as 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 and/or EFH as defined under the Magnuson-Stevens Act.

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 participate in the Northwest Atlantic trawl fishery governed under NAFO.

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 trawl gear in the NRA based on NAFO observer data and information submitted by Contracting Parties is minimal. In fact, other than one known interaction between a blue whale and a large factory trawl vessel in 2006, there are no known interactions between this gear type and protected species or marine mammals in the NRA.

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 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), it is expected that no more than 10 vessels will participate in this fishery. In addition, vessels will be subject to closure of the yellowtail flounder fishery once the yellowtail flounder quota or the bycatch limit for American plaice 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 5.0,

Environmental Consequences). This action will positively affect those vessels, and their corresponding communities, that are able to participate in the NAFO yellowtail flounder fishery since this fishery presents a new fishing opportunity. Given the high operating costs associated with participating in this fishery, the overall economic impact is expected to be minimal. In fact, at least under the current 1,500 mt quota being transferred by Canada, 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 enables 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.

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 the eight candidate VME areas currently being considered by NAFO. However, further research is being conducted on these areas 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 yellowtail flounder and American plaice between the U.S. and Canada, and the price for these two species seems to be largely driven by the market, causing it to vary widely either upward or downward. Additionally, the overhead costs associated with harvesting and landing the catch will likely vary greatly depending on whether the vessels land in Canada or the U.S.

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

The proposed action is not related to any other management action.

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 yellowtail flounder quota available, 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 trawl fishery on the High Seas that is regulated by an international body (NAFO). There are currently no implementing regulations for U.S. participation in this fishery under the Magnuson-Stevens Act. 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, the proposed action will not have a significant effect on the human environment, with specific reference to the criteria contained in Section 6.02 of NOAA Administrative Order (NAO) 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act, May 20, 1999. 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.

Nov 20, 2009

NMFS, Northeast Regional Administrator **Date**

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Appendix A
Arrangement between the U.S. and Canada
Regarding Yellowtail Flounder in NAFO Divisions 3LNO

ARRANGEMENT BETWEEN THE GOVERNMENT OF CANADA AND
THE GOVERNMENT OF THE UNITED STATES OF AMERICA
REGARDING THE 3LNO YELLOWTAIL

The Government of Canada (Canada) and the Government of the United States of America (the USA), hereinafter referred to as the "Participants",

CONSIDERING that at the 30th Annual Meeting of NAFO held in Vigo, Spain, the Participants met to discuss the conservation and management of fish stocks,

The Participants have come to the following understanding:

1(a) Canada intends to transfer 1000 tonnes of its total allowable catch (TAC) (5.88%), as determined annually by the Northwest Atlantic Fisheries Organization (NAFO) of 3LNO yellowtail to the USA.
(b) Canada intends to request that this transfer be reflected in a footnote to the NAFO quota table as set out in Annex I.A.of the NAFO Conservation and Enforcement Measures as follows:

> **"Following the NAFO annual meeting and prior to January 1 of the succeeding year, at the request of the USA, Canada will transfer 1000 tonnes of its 3LNO yellowtail quota to the USA."**

(c) The implementation of this Arrangement should proceed as follows,

> (i) The TAC for 3LNO yellowtail fishery should be managed in a sustainable manner. Taking into account the advice of the Scientific Council, the Participants intend to cooperate to protect the stock through supporting the maintenance of the TAC at a stable level for 2009 and onwards.
>
> (ii) Under this arrangement, the harvest of the 3LNO yellowtail should be restricted to vessels flying the USA flag or vessels flying the Canadian flag, unless otherwise decided by the Participants.
>
> (iii) The USA 3LNO yellowtail fishery should take place in the NAFO Regulatory Area.
>
> (iv) In the event that NAFO adjusts the 3LNO yellowtail TAC, the transfer arrangement as set out in the proposed footnote should be proportionately adjusted accordingly. At a TAC of 15,500t or lower, it should be renegotiated
>
> (vii) Following the reopening of the 3LNO American plaice fishery, the Participants intend to meet to review potential USA by-catch requirements for their yellowtail fishery.

2. Following the initial request by the USA for yellowtail pursuant to paragraph 1(b) of this arrangement, Canada should transfer an additional 500 tons of Canadian 3LNO yellowtail to the USA, for the period commencing January 1 to December 31 of the following year. In return. the

USA should transfer 334 tons of USA's TAC of 3L shrimp. In the event that the USA 3L shrimp quota decreases below its 2009 level, this amount will be re-negotiated.

3 (a)This arrangement should begin to be operated on the date of its signature by the Participants and should continue to be in operation until December 31, 2018.

(b) The Participants may amend this Arrangement at any time by mutual consent in writing.

(c) The Participants may discontinue this Arrangement by mutual consent at any time in writing.

Signed in duplicate at Vigo, Spain on this 26th day of September, 2008, in the English and French languages.

For the Government of Canada

For the Government of United States of America