UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

To All Interested Government Agencies and Public Groups:

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

TITLE: Framework Adjustment 2 to the Northeast Skate Complex Fishery Management Plan (RIN 0648-BD99)

LOCATION: Exclusive Economic Zone off the east coast.

SUMMARY: Framework 2 to the Northeast Skate Complex Fishery Management Plan was developed by the New England Fishery Management Council. The action includes skate fishery specifications for the 2014-2015 fishing years, and adjustments to skate vessel and dealer reporting requirements. The updated specifications reflect the best available scientific information on the status of skate stocks, and are expected to maintain fishing opportunities despite reductions to catch limits. The updated reporting requirements are expected to help improve species-specific catch information from the skate complex.

RESPONSIBLE OFFICIAL: John K. Bullard
Regional Administrator, Greater Atlantic Region
National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NOAA)
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The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact (FONSI), including the environmental assessment, is enclosed for your information.

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

Sincerely,

for Patricia A. Montanio
NOAA NEPA Coordinator

Enclosure

Framework Adjustment 2
To the
Northeast Skate Complex FMP

July 23, 2014

Prepared by the
New England Fishery Management Council
in cooperation with the
National Marine Fisheries Service

New England Fishery Management Council
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1.0 Executive Summary

In New England, the New England Fishery Management Council (NEFMC) is charged with developing management plans that meet the requirements of the Magnuson-Stevens Act (M-S Act). The Northeast Skate Complex Fishery Management Plan (FMP) specifies the management measures for seven skate species (barndoor, clearnose, little, rosette, smooth, thorny and winter skates) off the New England and Mid-Atlantic coasts. The FMP has been updated through a series of amendments, framework adjustments and specification packages. Amendment 3 to the FMP established a control rule for setting the Skate Allowable Biological Catch (ABC) based on survey biomass indices and median exploitation ratios; the ABC was set to equal the Annual Catch Limit (ACL).

This framework action would implement changes to specifications based on updated data and research and would revise the Vessel Trip Report (VTR) and seafood dealer reporting requirements.

The *need* for this action is to set the annual catch limit specifications for FY 2014 and FY 2015 to maintain the skate fisheries while adequately minimizing the risk of overfishing the seven skate stocks. A revised ACL is needed to address overfishing of winter skate. This action also proposes to change the skate wing VTR and dealer reporting requirements by removing the unclassified code and the codes for species not landed in the fishery – little, little/winter, rosette and smooth skate. It also proposes to remove the unclassified code for the bait fishery. This is expected to improve fishery-dependent data on skate landings by species, which is a requirement of the FMP. There are several *purposes*: to adopt specifications, to adopt possession limits and to modify the VTR and dealer reporting requirements.

Proposed Action

Under the provision of the M-S Act, the Council submits proposed management actions to the Secretary of Commerce for review. The Secretary of Commerce can approve, disapprove, or partially approve the action proposed by the Council. In the following alternative descriptions, measures identified as Preferred Alternatives constitute the Council's proposed management action.

If the Preferred Alternatives identified in this document are adopted, this action would implement a range of measures designed to achieve mortality targets and net benefits from the fishery. Details of the measures summarized below can be found in Section 4.0.

The Preferred Alternatives include:

- *Updates to Annual Catch Limit*
    - *Revised Annual Catch Limit Specifications.* The preferred alternative would adopt a new Annual Catch Limit (ACL), Annual Catch Target (ACT) and Total Allowable Landings (TALs) for the wing and bait fisheries. The aggregate skate ABC/ACL would decrease from 50,435 mt to 35,479 mt. The ACT would likewise decrease from 37,826 mt to 26,609 mt. The TAL would decrease from 23,365 mt to 16,385 mt.

- *Skate Wing Possession Limit Alternatives*
    - *Skate Wing Possession Limit.* The preferred alternative would retain the status quo trip limits for the skate wing fishery. The possession limit is expected to allow the fishery to remain open year round.

- *Skate Bait Possession Limit Alternatives*
    - *Skate Bait Possession Limit.* The preferred alternative would retain the status quo trip limits for the skate bait fishery. This alternative is included to meet regulatory requirements.

- *Skate VTR and Dealer Reporting Requirements*
    - *Revised Skate VTR and Dealer Reporting Codes.* The preferred alternative would modify the reporting requirements for both the bait and wing fisheries to more accurately reflect what is landed in each fishery. This was undertaken to improve species specific reporting to be in compliance with the original FMP.

Summary of Environmental Consequences

The environmental impacts of all of the alternatives under consideration are described in Section 7.0. Biological impacts are described in Section 7.1, impacts on essential fish habitat are described in Section 7.3, impacts on endangered and other protected species are described in Section 7.4, the economic impacts are described in Section 7.5, and social impacts are described in Section 7.6. Summaries of the impacts of the Preferred Alternatives are provided in the following paragraphs. As required by NEPA, the Preferred Alternatives are compared to the No Action alternative.

Biological Impacts
The reduction in the ACL under the preferred alternative would be expected to positively impact overall skate biomass based on the relationship between catch and biomass. The preferred alternative would have a neutral impact on the skate resource, and minor positive impacts when compared to the No Action. Compared to the No Action alternative, the revised ACL would help prevent overfishing of the complex and would address the overfishing status of winter skate. The status quo skate wing possession limit would have neutral biological impacts and were designed to allow the fishery to maximize harvest of the TAL when compared to the No Action alternative. The status quo skate bait possession limit would have neutral biological impacts when compared to the No Action alternative. Revised skate VTR and dealer reporting codes are an administrative measure and are expected to have negligible impacts.

Essential Fish Habitat (EFH) Impacts
The preferred alternatives are expected to have neutral impacts on EFH similar to No Action alternatives. Fishing behavior is not expected to change in response to the reduced ACL (landings in FY 2012 are similar to the revised ACL) as the preferred alternatives include status quo trip limits in both fisheries. Revised skate VTR and dealer reporting codes are an administrative measure and are expected to have negligible impacts.

Impacts on Endangered and Other Protected Species
The preferred alternatives are expected to have neutral impacts on protected species. The reduced ACL may result in less directed fishing effort and potentially reduced interactions with protected species when compared to the No Action alternative. The preferred possession limit alternatives represent the status quo and are not expected to result in changes in fishing behavior and would have a negligible impact. Revised skate VTR and dealer reporting codes are an administrative measure and are expected to have negligible impacts.

Economic Impacts
The reduced ACL combined with status quo possession limits would have neutral economic impacts compared to the No Action alternative. The economic impacts of the preferred ACL alternative rest on the probability of triggering Accountability Measures (AMs); if no AM is triggered then adverse economic impacts are not expected. The preferred possession limit alternatives have the potential to allow a

maximum amount of the TAL; however, for the wing fishery a lower possession limit would be less likely to trigger an AM. The preferred bait possession limit would have negligible economic impacts compared to the Action alternative. Revised skate VTR and dealer reporting requirements are administrative measures and are expected to have negligible impacts.

Social Impacts
The preferred alternatives allow for a higher TAL by reducing dead discards when compared to the No Action alternative. The No Action possession limits would have neutral social impacts unless an AM is triggered, under which the incidental wing possession limit would be implemented. Revised skate VTR and dealer reporting codes are an administrative measure and are expected to have negligible social impacts.

Alternatives to the Proposed Action

If the Proposed Action is based on the Preferred Alternatives there are a number of alternatives that would not be adopted. These alternatives are briefly described below.

- *Updates to Annual Catch Limit*
    - *Annual Catch Limit Specifications*. The No Action alternative would not adopt new specifications for the NE skate complex. Specifications from 2012-2013 would continue into FY 2014.
- *Skate Wing Possession Limit Alternatives*
    - *Skate Wing Possession Limit.* Option 2 would reduce wing possession limits to a lower level that would reduce the likelihood of triggering an AM and of achieving the TAL. Option 3 is projected to trigger an AM and to exceed the TAL before the end of the fishing year.
- *Skate Bait Possession Limit Alternatives*
    - *Bait Possession Limit.* The action alternative would reduce the possession limit, which would reduce the likelihood the fishery would achieve its TAL and is included in the document to meet requirements in regulations.
- *Skate VTR and Dealer Reporting Codes*
    - *Skate VTR and Dealer Reporting Codes.* The No Action alternative would not modify reporting codes and would not encourage species specific reporting.

Impacts of Alternatives to the Proposed Action

Biological Impacts
The No Action alternative would not incorporate the best available science and would allow for higher fishing mortality winter skate, which is currently experiencing overfishing. This would allow a higher than recommended catch at a time when survey indices have decreased for five of the seven skate species, which may negatively impact the complex. The No Action alternative would have a moderate, negative impact on the skate resource. The skate wing possession limits would either reduce targeted fishing effort with the potential to increase discarding or result in exceeding the TAL before the end of the fishing year. The No Action skate VTR and dealer reporting codes are an administrative measure and are expected to have negligible impacts.

Essential Fish Habitat (EFH) Impacts
The No Action alternative for specifications would allow for increase fishing effort which would increase impacts to EFH relative to the action alternative. Reduced possession limits would decrease impacts on

EFH relative to the No Action alternative. The No Action skate VTR and dealer reporting codes are an administrative measure and are expected to have negligible impacts.

Impacts on Endangered and Other Protected Species
The No Action alternative for specifications would allow for increased fishing effort which would have potentially higher interactions with protected resources as a higher TAL would be expected to result in more fishing, resulting in low negative impacts. Reduced possession limits would decrease impacts on protected species relative to the No Action alternative, unless it resulted in a change in fishing behavior. The No Action skate VTR and dealer reporting codes are an administrative measure and are expected to have negligible impacts.

Economic Impacts
In the long run, the No Action alternative for specifications may lead to future declines in biomass and catch, more restrictive regulation, and the failure to reach optimum yield, which would result in a negative and potentially significant economic impact to the fishery. Option 2 for the skate wing possession limit would reduce the likelihood of an AM being triggered but also reduces the ability of the fishery to achieve its TAL; Option 3 is more likely to trigger an AM and exceed the TAL compared to No Action. The reduced bait possession limit, compared to the No Action alternative, was likely to exceed the TAL; the reduced possession limit would constitute an unnecessary economic loss. The No Action skate VTR and dealer reporting codes are an administrative measure and are expected to have negligible impacts.

Social Impacts
The No Action alternative catch limits would be those proposed by the 2012-2013 specifications; under the status quo possession limits this alternative would have neutral social impacts. Option 2 for the skate wing possession limit would reduce the likelihood of an AM being triggered but also reduces the ability of the fishery to achieve its TAL; Option 3 is more likely to trigger an AM and exceed the TAL compared to No Action. The reduced bait possession limit was less likely to exceed the TAL compared to the No Action alternative; the reduced possession limit would constitute an unnecessary economic loss. The No Action skate VTR and dealer reporting codes are an administrative measure and are expected to have negligible impacts.

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2.1 List of Tables

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2.4 List of Acronyms

ABC	Allowable biological catch
ACL	Annual Catch Limit
ALWTRP	Atlantic Large Whale Take Reduction Plan
AM	Accountability Measure
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
CAI	Closed Area I
CAII	Closed Area II
CPUE	catch per unit of effort
DAM	Dynamic Area Management
DAS	days-at-sea
DFO	Department of Fisheries and Oceans (Canada)
DMF	Division of Marine Fisheries (Massachusetts)
DMR	Department of Marine Resources (Maine)
DPWG	Data Poor Working Group
DSEIS	Draft Supplemental Environmental Impact Statement
EA	Environmental Assessment
EEZ	exclusive economic zone
EFH	essential fish habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
F	Fishing mortality rate
FEIS	Final Environmental Impact Statement
FMP	fishery management plan
FW	framework
FY	fishing year
GARFO	Greater Atlantic Regional Fisheries Office
GARM	Groundfish Assessment Review Meeting
GB	Georges Bank
GIS	Geographic Information System
GOM	Gulf of Maine
GRT	gross registered tons/tonnage
HAPC	habitat area of particular concern
HPTRP	Harbor Porpoise Take Reduction Plan
IFQ	individual fishing quota
ITQ	individual transferable quota
IVR	interactive voice response reporting system
IWC	International Whaling Commission
LOA	letter of authorization

LPUE	landings per unit of effort
MA	Mid-Atlantic
MAFAC	Marine Fisheries Advisory Committee
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MPA	marine protected area
MRFSS	Marine Recreational Fishery Statistics Survey
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSMC	Multispecies Monitoring Committee
MSY	maximum sustainable yield
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NERO	Northeast Regional Office
NLSA	Nantucket Lightship closed area
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NT	net tonnage
OBDBS	Observer database system
OLE	Office for Law Enforcement (NMFS)
OY	optimum yield
PBR	Potential Biological Removal
PDT	Plan Development Team
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RMA	Regulated Mesh Area
RPA	Reasonable and Prudent Alternatives
SA	Statistical Area
SAFE	Stock Assessment and Fishery Evaluation
SAP	Special Access Program
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SBNMS	Stellwagen Bank National Marine Sanctuary
SEIS	Supplemental Environmental Impact Statement
SFA	Sustainable Fisheries Act
SIA	Social Impact Assessment
SNE	Southern New England
SNE/MA	Southern New England-Mid-Atlantic
SSB	spawning stock biomass
SSC	Social Science Committee
TAC	Total allowable catch
TAL	Total allowable landings
TED	Turtle excluder device

TEWG	Turtle Expert Working Group
TMS	ten minute square
TRAC	Trans-boundary Resources Assessment Committee
TSB	total stock biomass
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
VMS	vessel monitoring system
VPA	virtual population analysis
VTR	Vessel trip report
WGOM	Western Gulf of Maine
YPR	Yield per recruit

3.0 INTRODUCTION AND BACKGROUND

3.1 Management Background

The primary statute governing the management of fishery resources in the Exclusive Economic Zone (EEZ) of the United States is the Magnuson-Stevens Fishery Conservation and Management Act (M-S Act). In brief, the purposes of the M-S Act are:

(1) to take immediate action to conserve and manage the fishery resources found off the coasts of the United States;

(2) to support and encourage the implementation and enforcement of international fishery agreements for the conservation and management of highly migratory species;

(3) to promote domestic and recreational fishing under sound conservation and management principles;

(4) to provide for the preparation and implementation, in accordance with national standards, of fishery management plans which will achieve and maintain, on a continuing basis, the optimum yield from each fishery;

(5) to establish Regional Fishery Management Councils to exercise sound judgment in the stewardship of fishery resources through the preparation, monitoring, and revisions of such plans under circumstances which enable public participation and which take into account the social and economic needs of the States.

In New England, the New England Fishery Management Council (NEFMC) is charged with developing management plans that meet the requirements of the M-S Act.

The Northeast Skate Complex Fishery Management Plan (FMP) specifies the management measures for seven skate species (barndoor, clearnose, little, rosette, smooth, thorny and winter skate) off the New England and Mid-Atlantic coasts. The seven species are managed as a stock complex. The FMP has been updated through a series of amendments and framework adjustments.

Amendment 3 to the FMP implemented a new ACL management framework that capped catches at levels determined from survey biomass indices and median exploitation ratios, and addressed the rebuilding of smooth and thorny skates. Framework Adjustment 1 set a seasonal skate wing possession limits to keep the fishery open year round. Specifications for FY 2012 and FY 2013 were set in the 2012 Specifications package that resulted in an increase in ACL for the complex.

This framework is primarily intended to set specifications for FY 2014 and FY 2015 and to revise the VTR and dealer reporting requirements for the skate bait and wing fisheries.

3.2 Purpose and Need for the Action (EA, RFA)

The purpose of this action is to analyze changes in stock condition, update scientific information on skates, and make necessary adjustments to management measures (including catch limits) to 1) set an Annual Catch Limit (ACL) for FY 2014 and FY 2015 that is consistent with conditions and scientific uncertainty and 2) achieve optimum yield. Following procedures using the median exploitation ratio (catch/survey biomass) as a conservative reference point (biomass tends to increase more frequently when catches are at or below this level) to set the ABC and ACL, the catch limits are expected to prevent overfishing. Overfishing of skates, unlike other stocks, is measured as an outcome, a rate of change in biomass which cannot be predicted with existing skate population models. Overfishing of winter skate is currently occurring; setting an appropriate ACL to address this status is also a purpose of this action.

The need for this action is to set the annual catch limit specifications (ABC, ACL, ACT, and TALs) for FY 2014 and FY 2015 to maintain the skate fisheries while adequately minimizing the risk of overfishing the seven skate stocks. Without these catch limits and management measures, unregulated fishing for skates would increase to the point that could ultimately cause stocks to become overfished and depleted. In addition, two stocks (thorny and winter skates) are currently experiencing overfishing; thorny skate is overfished. A revised ACL is needed to address overfishing of winter skate. Since it had been overfished, barndoor skate is in a rebuilding program but has not yet met the target. Smooth skate is also in a rebuilding plan. Annual catch limits (and associated in-season and post-season accountability measures) prevent fishing from increasing to unsustainable levels. Revised discard mortality rate estimates for trawl gear are available for little, smooth, thorny and winter skates and are incorporated into the specifications.

This action also proposes to change the skate wing VTR and dealer reporting requirements by removing the unclassified code and the codes for species not landed in the fishery – little, little/winter, rosette and smooth skate. It also proposes to remove the unclassified code for the bait fishery. This is expected to improve fishery-dependent data on skate landings by species, which is a requirement of the FMP.

3.3 Brief History of the Northeast Skate Complex Management Plan

Table 1 describes the seven species in the Northeast Region's skate complex, including each species common name(s), scientific name, size at maturity, and general distribution.

Table 1 - Species description for skates in the management unit.

SPECIES COMMON NAME	SPECIES SCIENTIFIC NAME	GENERAL DISTRIBUTION	SIZE AT MATURITY cm (TL)	OTHER COMMON NAMES
Winter Skate	*Leucoraja ocellata*	Inshore and offshore Georges Bank (GB) and Southern New England (SNE) with lesser amounts in Gulf of Maine (GOM) or Mid Atlantic (MA)	Females: 76 cm Males: 73 cm 85 cm	Big Skate Spotted Skate Eyed Skate
Barndoor Skate	*Dipturus laevis*	Offshore GOM (Canadian waters), offshore GB and SNE (very few inshore or in MA region)	Males (GB): 108cm Females (GB): 116 cm	
Thorny Skate	*Amblyraja radiata*	Inshore and offshore GOM, along the 100 fm edge of GB (very few in SNE or MA)	Males (GOM): 87 cm Females (GOM): 88 cm 84 cm	Starry Skate
Smooth Skate	*Malacoraja senta*	Inshore and offshore GOM, along the 100 fm edge of GB (very few in SNE or MA)	56 cm	Smooth-tailed Skate Prickly Skate
Little Skate	*Leucoraja erinacea*	Inshore and offshore GB, SNE and MA (very few in GOM)	40-50 cm	Common Skate Summer Skate Hedgehog Skate Tobacco Box Skate
Clearnose Skate	*Raja eglanteria*	Inshore and offshore MA	61 cm	Brier Skate
Rosette Skate	*Leucoraja garmani*	Offshore MA	34 – 44 cm; 46 cm	Leopard Skate

Abbreviations are for Gulf of Maine (GOM), Georges Bank (GB), Southern New England (SNE), and the Mid-Atlantic (MA) regions.

Skates are harvested in two very different fisheries, one for lobster bait and one for wings for food. The fishery for lobster bait is a more historical and directed skate fishery, involving vessels primarily from Southern New England ports that target a combination of little skates (>90%) and, to a much lesser extent, juvenile winter skates (<10%). The catch of juvenile winter skates mixed with little skates is difficult to differentiate due to their nearly identical appearance.

The fishery for skate wings evolved in the 1990s as skates were promoted as "underutilized species," and fishermen shifted effort from groundfish and other troubled fisheries to skates and dogfish. The wing fishery is more of an incidental fishery that includes a larger number of vessels located throughout the region. Vessels tend to catch skates when targeting other species like groundfish, monkfish, and scallops and land them if the price is high enough. A description of available information about these fisheries can be found in Section 6.5.1.

The Northeast skate complex was assessed in November 1999 at the 30th Stock Assessment Workshop (SAW 30) in Woods Hole, Massachusetts. The work completed at SAW 30 indicated that four of the seven species of skates were in an overfished condition: winter, barndoor, thorny and smooth. In addition, overfishing was thought to be occurring on winter skate (NEFSC, 2000). The FMP initially set limits on fishing related to the amount of groundfish, scallop, and monkfish DAS and measures in these and other FMPs to control the catch of skates. Initially, it was thought that barndoor, smooth, rosette, and thorny skates were overfished and that overfishing of winter skate was occurring.

Amendment 3 became effective on July 16, 2010, implementing a new ACL management framework that capped catches at specific levels determined from survey biomass indices and median exploitation ratios. In addition to the ACL framework and accountability measures, the amendment also included technical measures that reduced the skate wing possession limit from 20,000 (45,400 whole weight) to 5,000 (11,350 whole weight) lbs. of skate wings, established a 20,000 lbs. whole skate bait limit for vessels with skate bait letters of authorization, and allocated the skate bait quotas into three seasons proportionally to historic landings.

Framework Adjustment 1 evaluated alternatives for setting a lower skate wing possession limit to keep landings below the 9,209 mt TAL and keep the fishery open year around. As a result of the Framework Adjustment 1 analysis, the Council set a 2,600 lbs. skate wing possession limit from May 1 to Aug 31, 2011 and a 4,100 lbs. skate wing possession limit from Sep 1, 2011 to Apr 30, 2011.

During the end of the 2010 fishing year (Jan – Apr), the Skate PDT developed the analyses needed to update the ACL with new data, including calibrations of the survey tow data collected by the new FSV Bigelow in 2009-2011 and recent discard mortality research for little and winter skates captured by vessels using trawls.

In June 2011, the Council requested that the Regional Administrator (RA) initiate an Emergency Action to adjust the 2011 ACL specifications, based on the new analysis and calibrated survey data through spring 2011. A proposed rule was published on August 30, 2011 (FR 76(168) p53872; http://www.nero.noaa.gov/nero/regs/frdoc/11/11SkatePR.pdf) to raise the ACL specifications accordingly.

Specifications for FY 2012 and FY 2013 were set following the Amendment 3 ACL methodology; the assumed discard rate was updated using the 2008-2010 dead discards. The re-estimated discard rate also incorporates new discard mortality estimates for little (20%) and winter (12%) skates captured by trawls.

3.4 Maximum Sustainable Yield (MSY) and Optimum Yield (OY)

Principally, due to problems with species identification in commercial catches, the Skate FMP did not derive or propose an MSY estimate for skate species or for the skate complex. Catch histories for individual species were unreliable and probably underreported. Furthermore, the population dynamics of skates was largely unknown so measures of carrying capacity or productivity were not available on which to base estimates of MSY.

One of the major purposes of Amendment 3 was to set catch limits to prevent overfishing. If overfishing is defined as an unsustainable level of exploitation, then a suitable candidate for MSY is the catch that when exceeded generally leads to declines in biomass MSY. This value, estimated by the Skate PDT and approved as an ABC by the SSC, is the median exploitation ratio (catch/relative biomass). If and when the biomass of skates is at the target, the maximum catch that would not exceed the median exploitation ratio can serve as a proxy for MSY (Hilborn and Walters 1992).

Table 2 **-** Exploitation ratios and survey values for managed skates, with estimates of annual catch limits, and maximum sustainable yield that take into account the 2010-2012 discard rate using DPWS catch data using the selectivity ogive method to assign species to catch[1].

Species	Catch/biomass index (thousand mt catch/kg per tow) Median	Stratified mean survey weight (kg/tow) 2010-2012	MSY Target
Barndoor	2.64	1.22	1.57
Clearnose	3.98	0.97	0.66
Little	2.14	7.11	6.15
Rosette	2.57	0.033	0.048
Smooth	2.80	0.23	0.27
Thorny	1.27	0.18	4.13
Winter	1.83	6.68	5.66
Annual Catch Limit (ACL/ABC)		35,479	
MSY			36,414

Because the numeric estimates of MSY were unavailable in the Skate FMP, a quantitative estimate of optimum yield was also not previously specified. The Skate FMP defined optimum yield as equating "to the yield of skates that results from effective implementation of the Skate FMP."

Although the Skate FMP had no quantitative estimate of MSY, it defined optimum yield as equating "to the yield of skates that results from effective implementation of the Skate FMP." Amendment 3 redefined the estimate of optimum yield as 75% of MSY. Thus using the updated catch/biomass exploitation ratios and adjusted survey biomass values, the revised estimate of optimum yield is 27,310.5 mt.

At current skate biomass, the ACT will be set at 26,609 mt, allowing for a 25% buffer from the ACL to account for scientific and management uncertainty. Deducting the 2010-2012 discards to account for bycatch results in an aggregate TAL of 16,385 mt.

[1] The survey biomass value for little skate is the arithmetic average of the 2011-2013 spring surveys.

3.5 ABC and ACL Specifications

ABC and ACL specifications are derived from the median catch/biomass exploitation ratio for time series up to 2012 and the three year average stratified mean biomass for skates, using the 2011-2013 spring survey data for little skate and the 2010-2012 fall survey data for other managed skate stocks. For skates, the Council set the ACL equal to the ABC because the skate ABC is inherently conservative and the associated exploitation ratio is less than that which is risk neutral (and theoretically equivalent to F_{MSY}). TALs are set according to Amendment 3 procedures that assume that future discards will be equivalent to the average rate from the most recent three years (2010-2012), and that state landings will approximate 7% of the total landings.

The updated specifications are presented in Section 4.1.1 and the analysis of the data is presented in Section 7.0. The new data include survey biomass tow data collected by the FSV Bigelow, which have been calibrated to the FSV Albatross IV units using peer reviewed methods. The catch data include new estimates of discard mortality for little, smooth, thorny and winter skates captured by trawl gear.

3.6 Stock Status

Stock status is described in more detail in Section 6.1.2. Based on survey data through spring 2013 and catch data through calendar year 2012, winter, little, and clearnose skate biomass are above the target, rosette and smooth skate biomass are between the threshold and target, and barndoor skate is rebuilding with biomass between the threshold and target. Thorny skate biomass is well below the threshold and is therefore overfished, a status that has existed since 1987 (if overfishing had been defined at that time). Overfishing is occurring on thorny and winter skates; overfishing was determined to be occurring on winter skate in 2013.

3.7 Essential Fish Habitat (EFH)

Section 4.6 of the Skate FMP (available at http://www.nefmc.org/skates/fmp/skate_final_fmp_sec3.PDF) described and identified EFH for all seven managed skate species, based on the observed distribution of eggs, juvenile, and adult skates. The section includes maps based on the distribution of juveniles and adults. In general, no information was available on the distribution of eggs and skates do not have a larval life stage, instead hatching (i.e. emerging from egg cases) as juvenile skates.

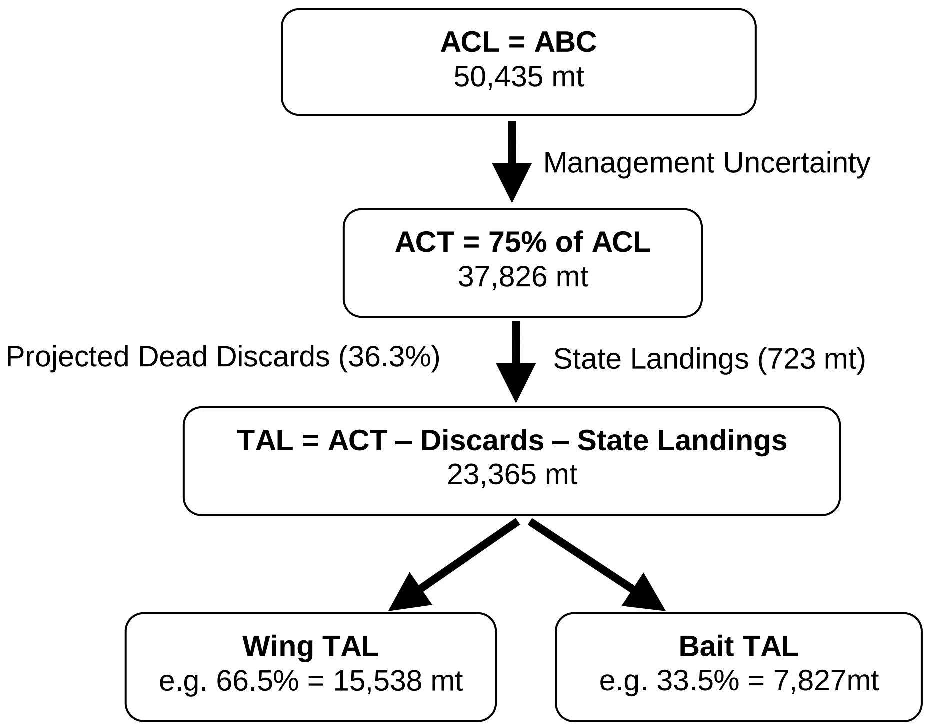
This specification document proposes no changes to skate EFH descriptions or designations, but Amendment 2 to the Skate FMP will be approved as a part of a developing Omnibus EFH Amendment that will re-evaluate skate EFH.

4.0 Alternatives Under Consideration

4.1 Updates to Annual Catch Limits

4.1.1 Option 1: No Action

The ACL parameters and limits would remain unchanged from the final ACL specifications for the 2012-2013 fishing years (see diagram below) in the final regulations for the specifications package and would incorporate no new scientific data and information.



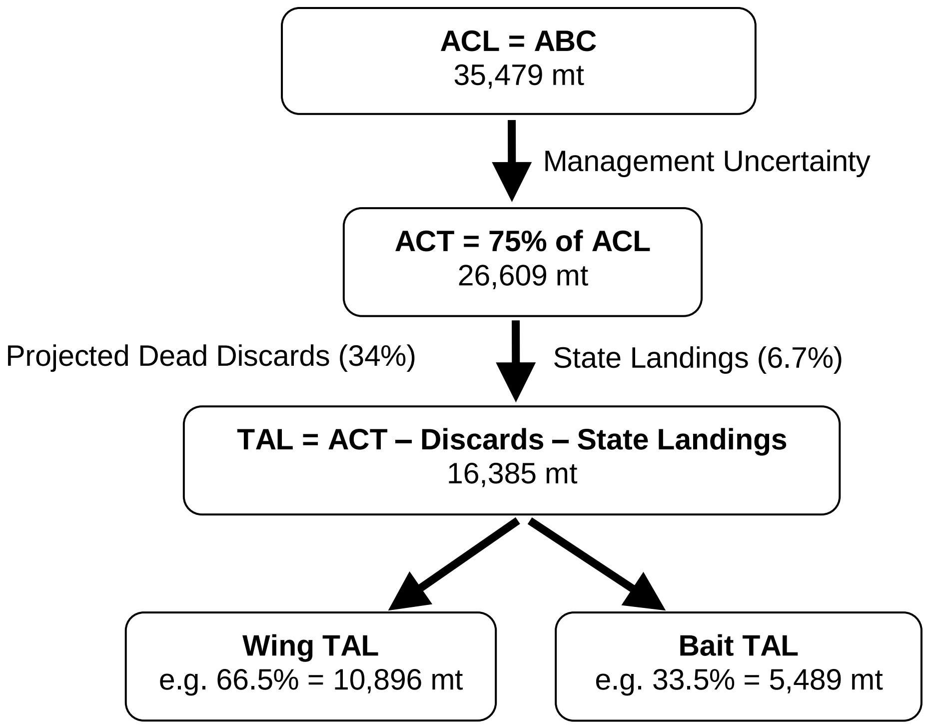
Rationale: The No Action alternative would not incorporate the best available science in terms of updated survey biomass indices and discard mortality rate estimates. The ACL would be maintained at a higher level than the revised data would allow. The No Action would be inconsistent with the Act, with the FMP's optimum yield (Section 3.4), and with the Information Quality Act (Section 8.7).

4.1.2 Option 2: Revised Annual Catch Limit Specifications (*Preferred Alternative*)

ABC and ACL specifications are derived from the median catch/biomass exploitation ratio for time series up to 2012 and the three year average stratified mean biomass for skates, using the 2011-2013 spring survey data for little skate and the 2010-2012 fall survey data for the other managed skate species. For skates, the Council set the ACL to be equal to the ABC. TALs are set according to Amendment 3 procedures that assume that future discards would be equivalent to the average rate from the most recent three years (2010-2012); state landings would approximate to 7% of the total landings.

The ABC/ACL specifications would be adjusted to be consistent with new scientific information and the approved ACL framework procedures in Amendment 3. The aggregate skate ABC/ACL would decrease to **35,479** mt. The ACL is a limit that would trigger AMs if catches exceed this amount. The ACT would likewise decrease to **26,609** mt. After deducting amounts for projected dead discards (based on the average 2010-2012 discard rate), the TAL would decrease to **16,385** mt. The TAL is proportionally a smaller change than the ACL and ACT, compared to the 2012-2013 specifications, because the proportion of dead discards in the catch declined to **34%**, primarily due to the application of new science that indicates that discard mortality for little, thorny and winter skates captured by trawls is lower than had been assumed in Amendment 3; the revised smooth skate discard mortality rate estimate used in this FW was higher than that assumed in Amendment 3.

A3 estimated state landings to be 3%; however, state landings have been shown to be higher in recent years – reaching a high of 12.6% in FY 2010. This alternative increases the assumed state landings to 7% from 3% of total skate landings as state landings have been approximately at this level for a number of fishing years.



Rationale: This alternative would make the specifications (catch and landings limits) consistent with the procedures approved in Amendment 3 and with new science that has been analyzed by the Skate PDT and peer reviewed by the SSC. Framework 2 is not intended to develop alternative ACL calculation methodologies; instead it enacts the existing methodology in the FMP. The SSC reviewed the revised catch/biomass medians and those used in the previous specifications package and approved the use of the revised medians as they were consistent with previous decisions by the SSC to incorporate the best available science for discard mortality rate estimates. According to the Amendment 3 procedures, it would allow the fishery to achieve optimum yield, nearly all derived from catches of little and winter skates. This alternative meets the requirements to prevent overfishing; the reduction in ACL would address overfishing of winter skate. Biomass of little and winter skates have decreased from the 2008-

2010 period and contribute the majority of landings in the skate bait and skate wing fisheries, respectively.

4.2 Skate Wing Possession Limit Alternatives

4.2.1 Option 1: No Action (*Preferred Alternative*)

The No Action alternative would maintain the Framework Adjustment 1 skate wing possession limits. These limits begin with a **2,600** lbs. possession limit from May 1 to Aug 31 and then increase to **4,100** lbs. possession limit from Sep 1 to Apr 30, or until the 85% TAL trigger has been met and it appears that without adjustment the fishery would exceed the annual TAL. This alternative would not alter the 85% trigger for the incidental trip limit.

Rationale for alternative: In FY2012 the wing fishery achieved 70.5% of its TAL, maintaining the current trip limits would allow the fishery to achieve more of its TAL and reduce potential impacts on other fisheries. Weekly landings were lower in FY2012 compared to FY2011, which is consistent with the decrease in survey biomass.

4.2.2 Option 2: Revised Skate Wing Possession Limit

The seasonal skate wing possession limit for May 1 to Aug 31 would decrease to **1,500** lbs. The seasonal skate wing possession limit for Sep 1 to Apr 30 would likewise decrease to **2,400** lbs. This alternative would not alter the 85% trigger for the incidental trip limit.

Rationale for alternative: This is a more conservative choice with a greater chance that the skate wing fishery will remain open for the entire fishing year, even if the landings rate and fishing effort increases beyond those estimated here based on historical (2011 and 2012) data (Section **Error! Reference source ot found.**). Fishermen and processors have indicated that keeping the fishery open for the entire fishing year creates economic stability, retains important foreign markets, and reduces discards. FW1 possession limit analysis associates these lower limits with a smaller TAL; lower trip limits may unnecessarily restrict the fishery. The change in discard mortality rate estimates allows for a higher wing TAL (per level of skate biomass) than in previous fishing years as it is assuming fewer dead discards.

4.2.3 Option 3: Revised Skate Wing Possession Limit

This alternative would raise the trip limit to 5,000 lbs, which would be constant throughout the fishing year. This alternative is likely to shut the fishery down before the end of the fishing year as there is no seasonality to the trip limits, which was designed to reduce the likelihood that the incidental trip limit would be triggered. This alternative would not alter the 85% trigger for the incidental trip limit.

Rationale: This alternative was selected in order to provide a reasonable range of alternatives for analysis as required by NEPA. The possession limit included in this alternative was originally implemented under Amendment 3 to the Northeast Skate FMP. This possession limit was derived by a possession limit analysis conducted for Amendment 3 and was considered to be an appropriate possession limit to include for this analysis.

4.3 Bait Possession Limit Alternatives

4.3.1 Option 1: No Action (*Preferred Alternative*)

This alternative would maintain the skate bait possession limit at 25,000 lbs. Vessels that obtain a Skate Bait Letter of Authorization from the NMFS Regional Office would be able to retain up to 25,000 lbs. of whole skates provided that they comply with related rules and size limits.

Rationale: This alternative is included to meet MSA requirements. Skate bait possession limits must be specified in addition to the skate wing possession limits.

4.3.2 Option 2: Revised Skate Bait Possession Limit

This alternative would reduce the skate bait possession limit to **20,000** lbs. Vessels that obtain a Skate Bait Letter of Authorization from the NMFS Regional Office would be able to retain up to 20,000 lbs. of whole skates provided that they comply with related rules and size limits.

Rationale: This alternative was selected in order to provide a reasonable range of alternatives for analysis as required by NEPA. The possession limit included in this alternative was originally implemented under Amendment 3 to the Northeast Skate FMP and was modified in FW1. It was considered to be an appropriate possession limit to include for this analysis as the bait fishery had previously operated under this possession limit.

4.4 Skate VTR and Dealer Reporting Requirements

4.4.1 Option 1: No Action

The No Action alternative would maintain the skate VTR and dealer reporting requirements as established in the original FMP. The original FMP included the following:

1. Winter Skate
2. Little Skate
3. Little/Winter Skate
4. Barndoor Skate
5. Smooth Skate
6. Thorny Skate
7. Clearnose Skate
8. Rosette Skate
9. Unclassifiable Skate

Rationale for alternative: The No Action alternative is not expected to impact skate catch or fishing behavior. It would not improve the quality of skate landings reporting, which is inconsistent with the FMP.

4.4.2 Option 2: Revised Skate VTR and Dealer Reporting Requirements (*Preferred Alternative*)

This alternative would remove the unclassified skate bait VTR reporting code. This is an administrative alternative and is not expected to impact skate catch or fishing behavior. The following VTR and dealer codes would be available for vessels reporting skate bait landings:

1. Winter Skate

2. Little Skate
3. Little/Winter Skate
4. Barndoor Skate
5. Smooth Skate
6. Thorny Skate
7. Clearnose Skate
8. Rosette Skate

This alternative would also remove the unclassified and species that are not landed in the wing fishery due to market size preferences, i.e. little skate, little/winter skate, smooth skate, and rosette skate. The following VTR and dealer codes would be available for vessels reporting skate wing landings:

1. Winter Skate
2. Barndoor Skate
3. Thorny Skate
4. Clearnose Skate

Rationale for alternative: The FMP requires landings to be reported by species. This has largely been unheeded with the majority of skate wing landings reported as unclassified. This alternative would remove the unclassified code (and non-relevant codes for the wing fishery) and allow fishermen to report landings by species, in compliance with the FMP.

Intentionally Blank

5.0 Considered and Rejected Alternatives

The following management issues arose during the development of this specifications package, but were not adopted as alternatives by the Council.

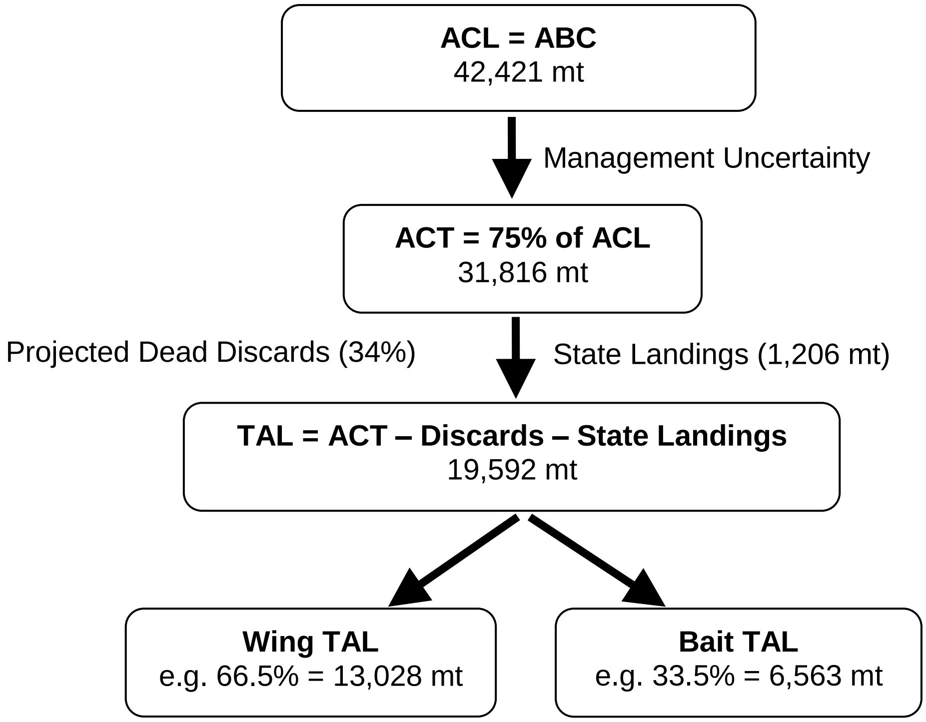
5.1.1 Option 3 – Revised Annual Catch Limit based on old catch/biomass medians

ABC and ACL specifications are derived from the median catch/biomass exploitation ratio for time series up to 2007 and the three year average stratified mean biomass for skates, using the 2011-2013 spring survey data for little skate and the 2010-2012 fall survey data for other managed skate species. For skates, the Council set the ACL to be equal to the ABC because the skate ABC is inherently conservative and the associated exploitation ratio is less than that which is risk neutral (and theoretically equivalent to F_{MSY}). TALs are set according to Amendment 3 procedures that assume that future discards will be equivalent to the average rate from the most recent three years (2010-2012), and that state landings will approximate 7% to the total landings.

The ABC and ACL specifications would be adjusted only with the new survey data and would not incorporate the revised discard mortality rate estimates, which affect the catch/biomass medians. This alternative would utilize discard mortality rate estimates that are inaccurate based on recent research in the median catch/biomass exploitation ratio; the discard mortality rate estimates affect the catch history. The aggregate skate ABC and ACL would decrease from 50,435 to **42,421** mt. The ACL is a limit that would trigger AMs if catches exceed this amount. The ACT would likewise decrease from 37,826 to **31,816** mt. After deducting amounts for projected dead discards (based on the average 2010-2012 discard rate), the TAL would decrease from 23,365 to **19,592** mt. The TAL is proportionally a smaller change than the ACL and ACT, compared to the 2012-2013 specifications, because the proportion of dead discards in the catch declines from 36.3% to **34%**, primarily due to the application of new science that indicates that discard mortality for little, thorny and winter skates captured by trawls is lower than had been assumed in Amendment 3; the revised smooth skate discard mortality rate estimate used in this FW was higher than that assumed in Amendment 3.

A3 estimated state landings to be 3%; however, state landings have been shown to be higher in recent years – reaching a high of 12.6% in FY 2010. This alternative increases the assumed state landings to 7% from 3% of total skate landings as state landings have been approximately at this level for a number of fishing years.

This option was not pursued because it did not incorporate the best available science and was not needed in order to provide a reasonable range of alternatives.


ACL = ABC
42,421 mt
Management Uncertainty
ACT = 75% of ACL
31,816 mt
Projected Dead Discards (34%)
State Landings (1,206 mt)
TAL = ACT – Discards – State Landings
19,592 mt
Wing TAL
e.g. 66.5% = 13,028 mt
Bait TAL
e.g. 33.5% = 6,563 mt

6.0 AFFECTED ENVIRONMENT (SAFE report /EA)

This document serves two purposes: an update of the Stock Assessment and Fishery Evaluation Report (SAFE) and a Description of the Affected Environment (Section 7) for the Environmental Assessment (EA) for the 2012-2013. Since the document serves as Section 7 of the EA in Amendment 3, it is numbered beginning with Section 7 in this stand-alone SAFE Report to reduce confusion. There are therefore no Sections 1-6 in the stand-alone SAFE Report.

This section is intended to provide background information for assessing the impacts, to the extent possible, of the proposed management measures on related physical, biological, and human environments. It includes a description of the stocks and the physical environment of the fishery as well as life history information, habitat requirements, and stock assessments for relevant stocks and a discussion of additional biological elements such as endangered species and marine mammals. This descriptive section also describes the human component of the ecosystem, including socioeconomic and cultural aspects of the commercial and recreational fisheries and the impacts of other human activities on the fisheries in question. Much of the information contained in this section is a compilation of information used to make choices from a range of alternatives during the development of the proposed management action.

This Stock Assessment and Fishery Evaluation (SAFE) Report was prepared by the New England Fishery Management Council's Skate Plan Development Team (PDT). It presents available biological, physical, and socioeconomic information for the Northeast's region skate complex and its associated fisheries. It also serves as the Affected Environment description for the Environmental Assessment associated with FW 2.

Table 1 presents the seven species in the northeast region's skate complex, including each species common name(s), scientific name, size at maturity (total length, TL), and general distribution.

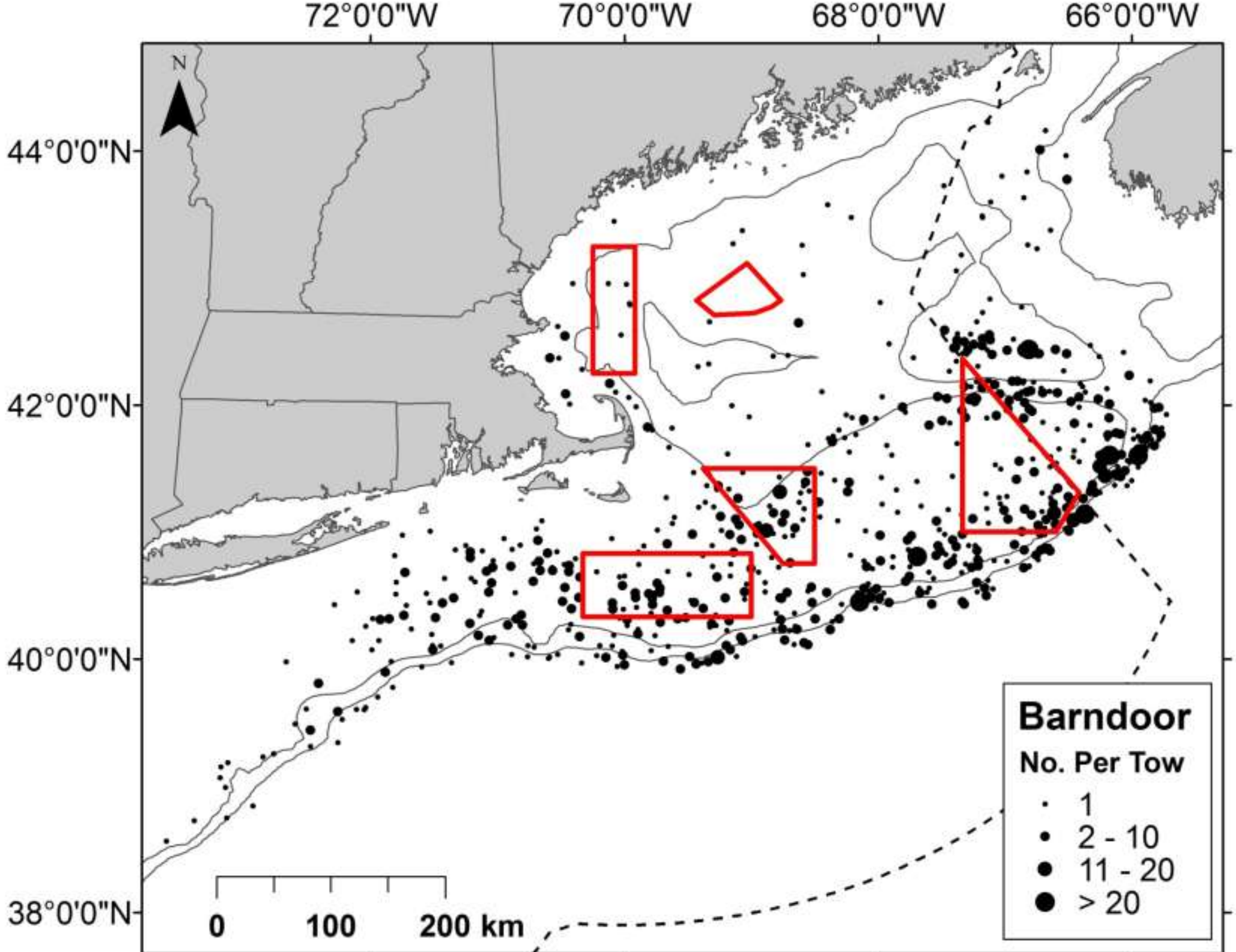
6.1 Biological Environment

6.1.1 Species Distribution

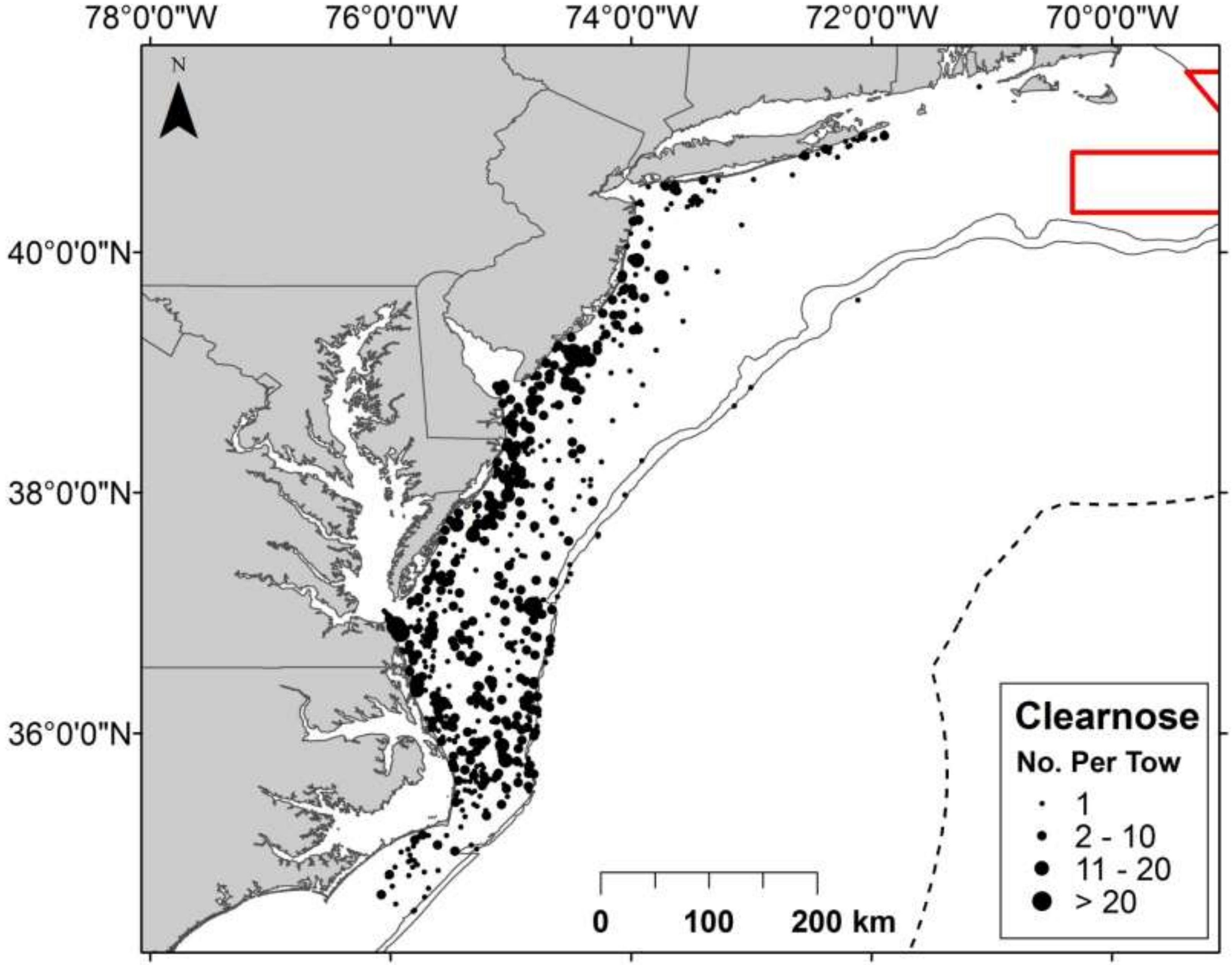
In general, barndoor skate are found along the deeper portions of the Southern New England continental shelf and the southern portion of Georges Bank (Map 1), extending into Canadian waters. They are also caught by the survey as far south as NJ during the spring. Clearnose skates are caught by the NMFS surveys in shallower water along the Mid-Atlantic coastline (Map 2), but are known to extend into unsurveyed shallower areas and into the estuaries, particularly in Chesapeake and Delaware Bays. These inshore areas are surveyed by state surveys and the Mid-Atlantic NEAMap Survey (http://www.vims.edu/research/departments/fisheries/programs/multispecies_fisheries_research/neamap/index.php).

Little skate are found along the Mid-Atlantic, Southern New England, and Gulf of Maine coastline (Map 3), in shallower waters than barndoor, rosette, smooth, thorny, and winter skates. Rosette, smooth, and thorny are typically deep-water species. The survey catches rosette skate along the shelf edge in the Mid-Atlantic region (Map 4), while smooth and thorny are found in the Gulf of Maine and along the northern edge of Georges Bank (Map 5 and Map 6). Winter skate are found on the continental shelf of the Mid-Atlantic and Southern New England regions, as well as Georges Bank (Map 7) and into Canadian waters. Winter skate are typically caught in deeper waters than little skate, but partially overlap the distributions of little and barndoor skates.

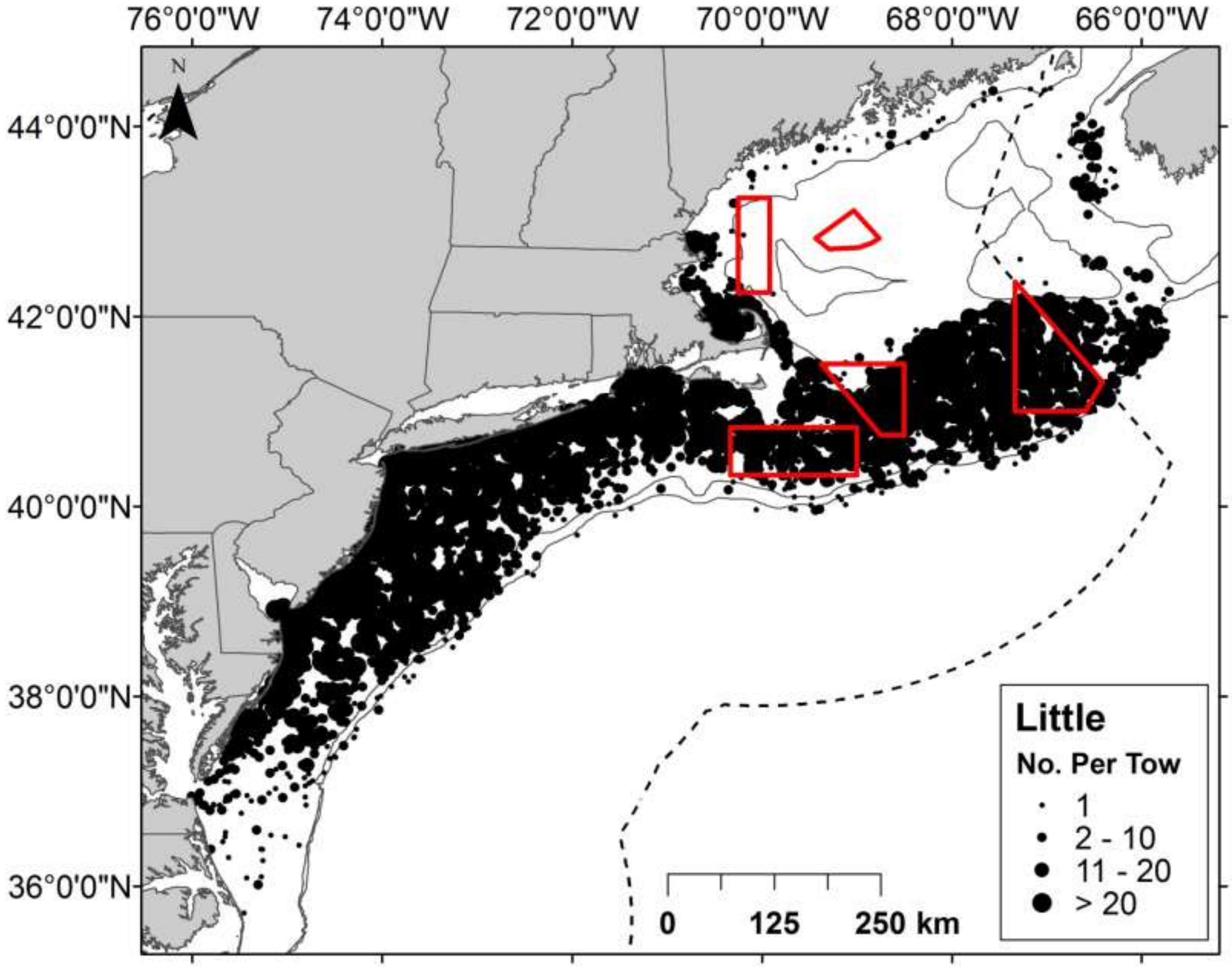
Map 1 - Barndoor skate biomass distribution in the fall and spring trawl survey (2001-2011).



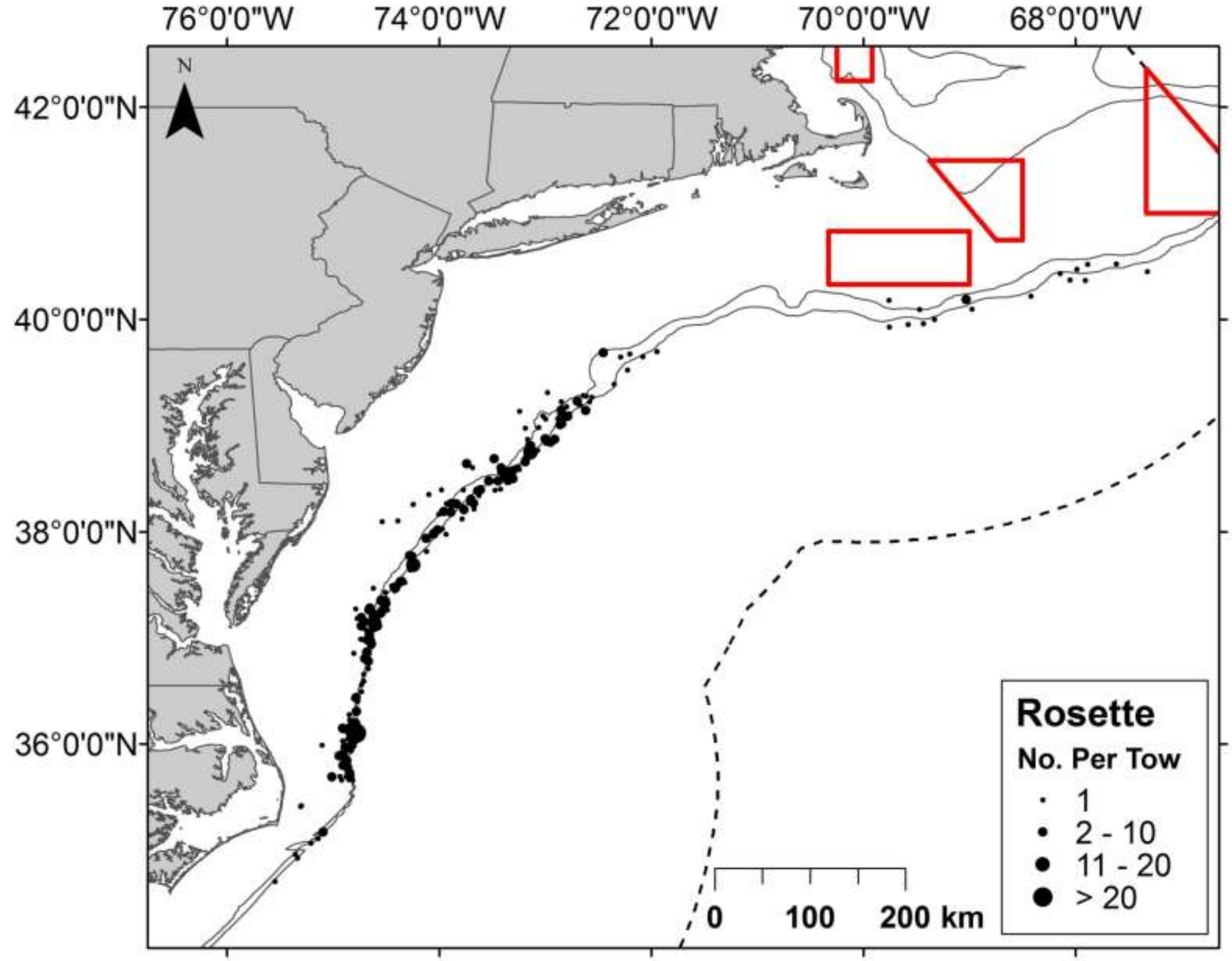
Map 2 - Clearnose skate biomass distribution in the fall and spring trawl survey (2001-2011).



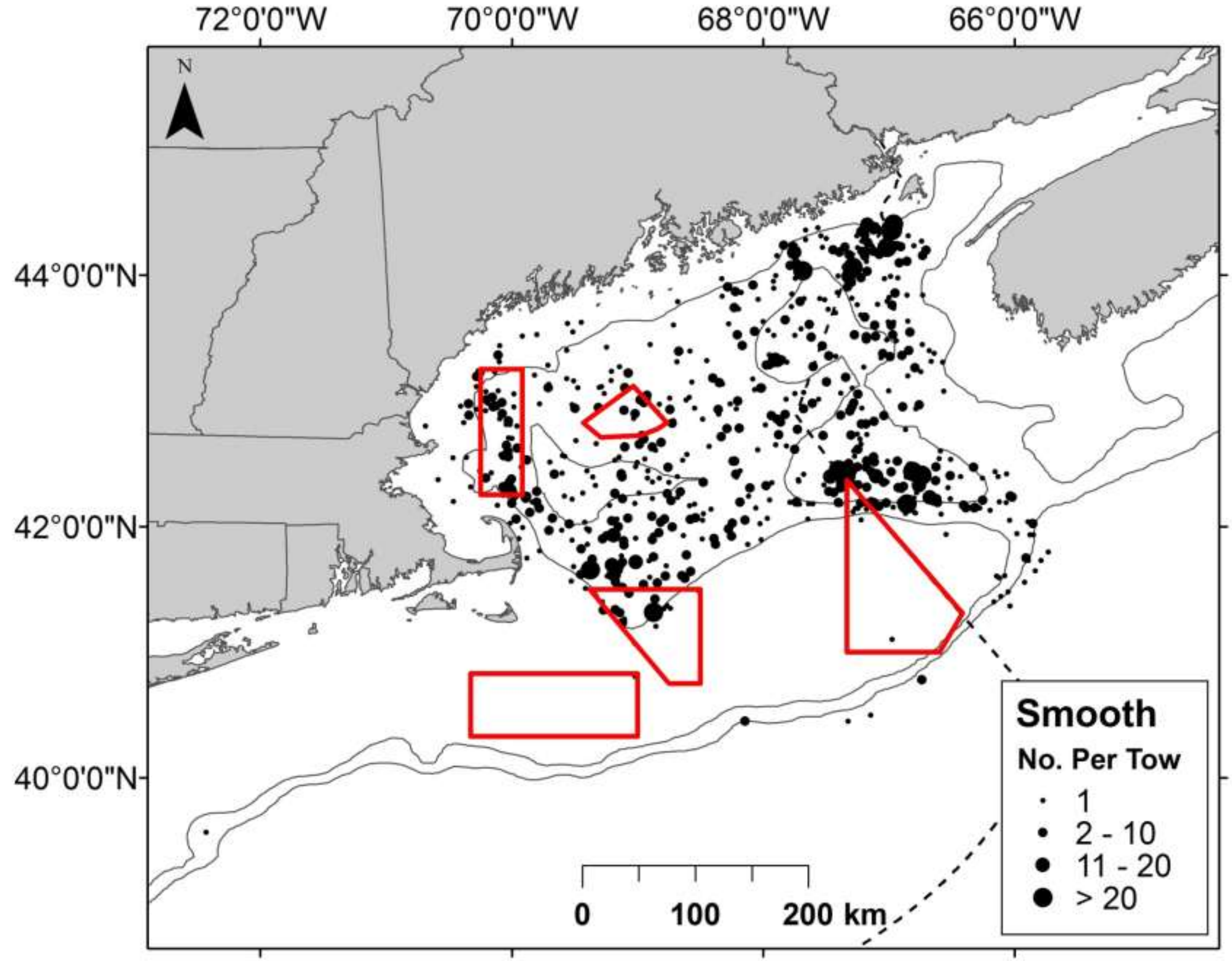
Map 3 - Little skate biomass distribution in the fall and spring trawl (2001-2011) surveys.



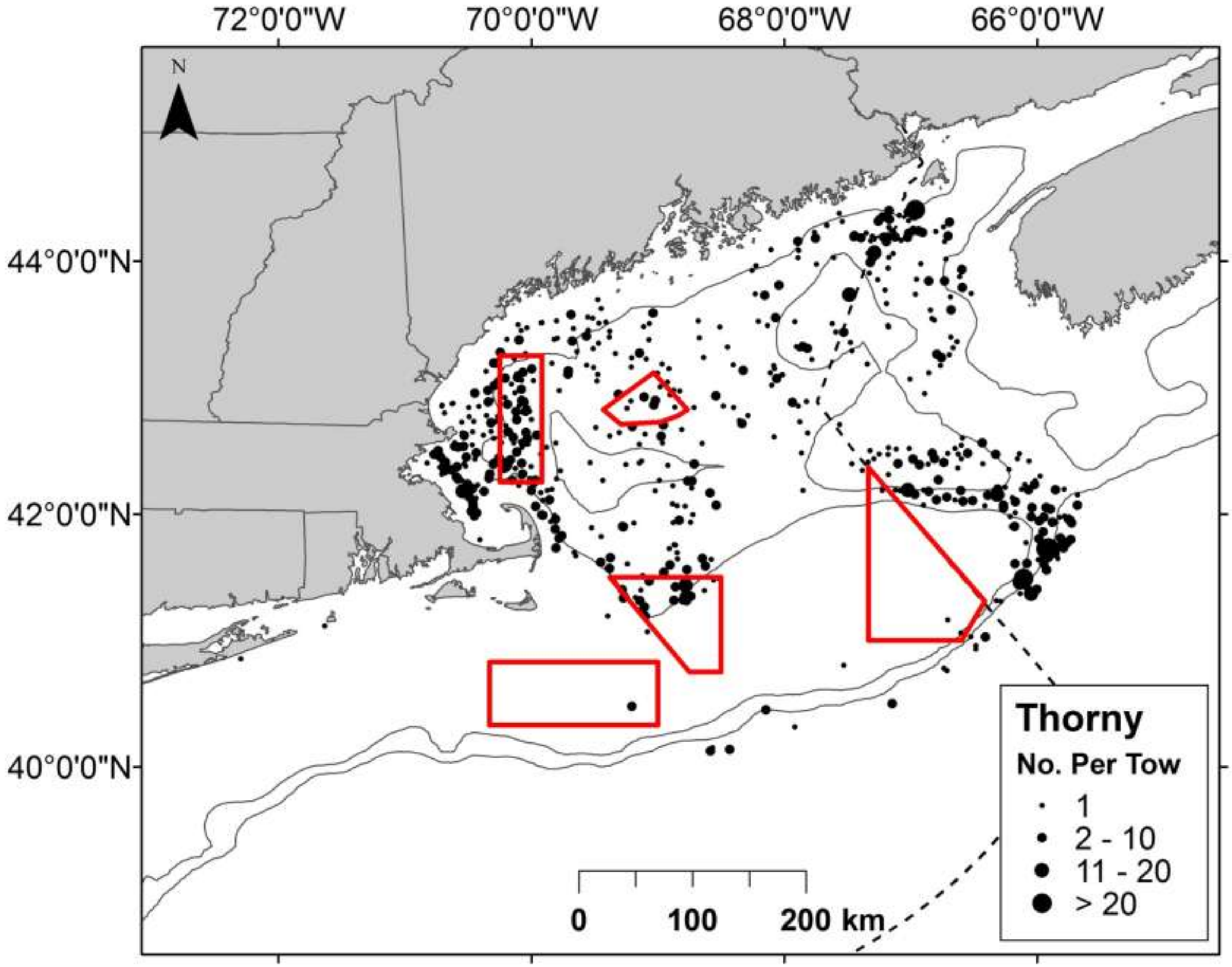
Map 4 - Rosette skate biomass distribution in the fall and spring trawl (2001-2011) surveys.



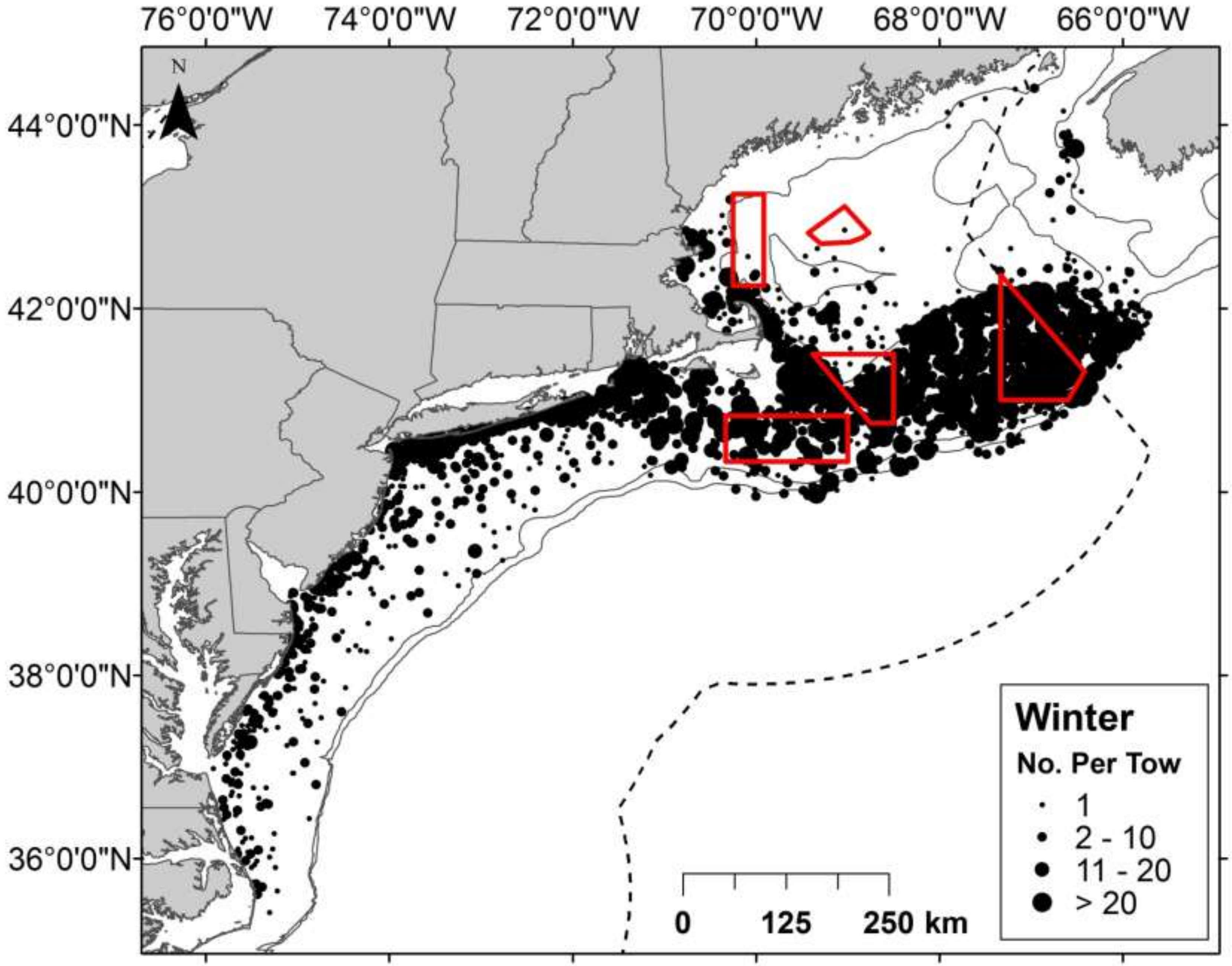
Map 5 - Smooth skate biomass distribution in the fall and spring trawl survey (2001-2011).



Map 6 - Thorny skate biomass distribution in the fall and spring trawl survey (2001-2011).



Map 7 - Winter skate biomass distribution in the fall and spring trawl survey (2002-2012)



6.1.2 Stock status

The stock status relies entirely on the annual NMFS trawl survey. The fishing mortality reference points are based on changes in survey biomass indices. If the three-year moving average of the survey biomass index for a skate species declines by more than the average CV of the survey time series, then fishing mortality is assumed to be greater than F_{MSY} and it is concluded that overfishing is occurring for that species (NEFSC 2007a). The average CVs of the indices are given by species in Table 3. Except for little skates, the abundance and biomass trends are best represented by the fall survey, which has been updated through 2012 (Table 3). Little skate abundance and biomass trends are best represented by the spring survey, which has been updated through 2013 (Table 3). Details about long term trends in abundance and biomass are given in the SAW 44 Report (NEFSC 2007a) and in the Amendment 3 FEIS (Section 7.1.2).

Based on survey data updated through fall 2012/spring 2013, only thorny skate remained in an overfished condition, while overfishing was occurring on thorny and winter skate (Table 3).

For barndoor skate, the 2010-2012 NEFSC average of the fall survey biomass index of 1.22 kg/tow was above the biomass threshold reference point; the species is not overfished but is not yet rebuilt (Table 3). The most recent 3 year moving average is above the 2009-2011 index by 13%; overfishing is not occurring.

For clearnose skate, the 2010-2012 NEFSC average of the fall survey biomass index of 0.97 kg/tow was above the biomass threshold reference point and the biomass target; the species is not overfished (Table 3). The most recent 3 year moving average is above the 2009-2011 index by 1.3%; overfishing is not occurring.

For little skate, the 2011-2013 NEFSC average of the spring survey biomass index of 7.11 kg/tow was above the biomass threshold reference point and the biomass target; the species is not overfished (Table 3). The most recent 3 year moving average is below the 2010-2012 index by 15%; overfishing is not occurring as the decline is less than 20%.

For rosette skate, the 2010-2012 NEFSC average of the fall survey biomass index of 0.033 kg/tow was above the biomass threshold reference point; the species is not overfished (Table 3). The most recent 3 year moving average is below the 2009-2011 index by 22%; overfishing is not occurring as the decline is less than 60%.

For smooth skate, the 2010-2012 NEFSC average of the fall survey biomass index of 0.23 kg/tow was above the biomass threshold reference point; the species is not overfished but not yet rebuilt (Table 3). The most recent 3 year moving average is above the 2009-2011 index by 1%; overfishing is not occurring.

For thorny skate, the 2010-2012 NEFSC average of the fall survey biomass index of 0.18 kg/tow was well below the biomass threshold reference point; the species is overfished (Table 3). The most recent 3 year moving average is below the 2009-2011 index by 24%; overfishing is occurring.

For winter skate, the 2010-2012 NEFSC average of the fall survey biomass index of 6.68 kg/tow was above the biomass threshold reference point and the biomass target; the species is not overfished (Table 3). The most recent 3 year moving average is below the 2009-2011 index by 15%; overfishing is occurring.

Table 3 - Summary by species of recent survey indices, survey strata used and biomass reference points.

	Barndoor	Clearnose	Little	Rosette	Smooth	Thorny	Winter
Survey (kg/tow) Time Series Basis Strata Set	Autumn 1963-1966 Offshore 1-3-, 34-40	Autumn 1975-2007 Offshore 61-76, Inshore 17, 20, 23, 26, 29, 32, 35, 38, 41, 44	Spring 1982-2008 Offshore 1-30, 34-40, 61-76, Inshore 2,5,8,11,14,17,20, 23,26,29,32,35,38, 41,44-46,56,59-61,64-66	Autumn 1967-2007 Offshore 61-76	Autumn 1963-2007 Offshore 1-30, 34-40	Autumn 1963-2007 Offshore 1-30, 34-40	Autumn 1967-2007 Offshore 1-30, 34-40, 61-76
2004	1.33	0.80	5.95	0.048	0.22	0.72	4.08
2005	1.05	0.49	3.13	0.064	0.13	0.20	2.65
2006	1.17	0.48	3.33	0.059	0.21	0.74	2.52
2007	0.76	0.90	4.01	0.068	0.09	0.32	3.74
2008	1.11	1.23	6.29	0.029	0.10	0.20	9.62
2009	1.13	0.89	6.62	0.064	0.21	0.25	11.33
2010	1.10	0.68	10.63	0.028	0.18	0.28	8.09
2011	1.02	1.32	6.88	0.034	0.30	0.18	6.65
2012	1.54	0.93	7.54	0.040	0.21	0.08	5.29
2013			6.90				
2006-2008 3-yr average	1.01	0.87	4.54	0.052	0.14	0.42	5.29
2007-2009 3-yr average	1.00	1.01	5.64	0.053	0.13	0.26	8.23
2008-2010 3-yr average	1.11	0.93	7.85	0.040	0.16	0.24	9.68
2009-2011 3-yr average	1.08	0.96	8.04	0.042	0.23	0.24	8.69
2010-2012 3-yr average	1.22	0.97	8.35	0.033	0.23	0.18	6.68
2011-2013 3-yr average			7.11				
Percent change 2009-11 compared to 2008-10	-2.8	+3.0	+2.5	+4.6	+42.4	-2.4	-10.2
Percent change 2010-12 compared to 2009-11	+12.6	+1.3	+3.8	-21.7	+0.8	-24.1	-23.2
Percent change 2011-13 compared to 2010-12			-14.9				
Percent change for overfishing status determination in FMP	-30	-40	-20	-60	-30	-20	-20
Biomass Target	1.57	0.66	6.15	0.048	0.27	4.13	5.66
Biomass Threshold	0.78	0.33	3.07	0.024	0.13	2.06	2.83
Current Status	Not Overfished Overfishing is Not Occurring	Not Overfished Overfishing is Not Occurring	Not Overfished Overfishing is Not Occurring	Not Overfished Overfishing is Not Occurring	Not Overfished Overfishing is Not Occurring	Overfished Overfishing is Occurring	Not Overfished Overfishing is Occurring

6.1.3 Biological and Life History Characteristics

The Essential Fish Habitat Source Documents prepared by the Northeast Fisheries Science Center (NEFSC) of the National Marine Fisheries Service for each of the seven skate species provide most available biological and habitat information on skates. Any updated information will be provided below. These technical documents are available at http://www.nefsc.noaa.gov/nefsc/habitat/efh/ and contain the following information for each skate species in the northeast complex:

- Life history, including a description of the eggs and reproductive habits
- Average size, maximum size and size at maturity
- Feeding habits
- Predators and species associations
- Geographical distribution for each life history stage
- Habitat characteristics for each life history stage
- Status of the stock (in general terms, based on the Massachusetts inshore and NEFSC trawl surveys)
- A description of research needs for the stock
- Graphical representations of stock abundance from NEFSC trawl survey and Massachusetts inshore trawl survey data
- Graphical representations of percent occurrence of prey from NEFSC trawl survey data

Please refer to the source documents (http://www.nefsc.noaa.gov/nefsc/habitat/efh/) for more detailed information on the above topics. All additional biological information is presented below.

The seven species of the northeast skate complex follow a similar life history strategy but differ in their biological characteristics. This section describes any information made available after the publication of the EFH documents. And a detailed summary of the biological and life history characteristics was included in the FEIS for Amendment 3 (NEFMC 2009).

Barndoor Skate

Barndoor skates have been reported to reach a maximum size of 152 cm and 20 kg weight (Bigelow & Schroeder, 1953). The maximum observed length in the NEFSC trawl survey was 140 cm total length in the 2007 survey. In a study conducted in Georges Bank Closed Area II the largest individual observed was 133.5 cm, with total lengths ranging from 20.0 to 133.5 cm.

Gedamke et al. (2005) examined barndoor skates in the southern section of Georges Bank Closed Area II. Length at 50% maturity was 116.3 cm TL and 107.9 cm TL for females and males, respectively. The oldest age observed was 11 years. Age at maturity was estimated to be 6.5 years and 5.8 years for females and males, respectively. The von Bertalanffy parameters were also determined: L_∞ = 166.3 cm TL; k = 0.1414 yr^{-1}; t_o = -1.2912 yr. Coutré et al. (2013) re-examined life history parameters of barndoor skate in the Closed Areas I and II on Georges Bank; changes occurred in von Bertalanffy parameters (L_∞ = 155 cm TL; k = 0.10 yr^{-1}) and an increase in age at 50% maturity compared to Gedamke et al. (2005). Coutré et al. (2013) suggest barndoor skate are subject to density dependence effects based on the plasticity in life history parameters observed in the 10 year gap between studies. Based on the predictive equations from Frisk *et al*. (2001) and the Northeast Fisheries Science Center (NEFSC) survey maximum observed length of 136 cm TL, L_{mat} is estimated at 102 cm TL and A_{mat} is estimated at 8 years (Northeast Fisheries Science Center 2000). In another study, clasper length measurements on males from Georges Bank show that male sexual maturity occurs at approximately 100 cm TL.

Sosebee (2005) used body morphometry to determine the size of maturity (females: 96 to 105 cm TL; males: 100 cm TL) on samples obtained from the NEFSC trawl survey ranging from Gulf of Maine to Cape Hatteras. Egg production is estimated to range between 69 – 85 eggs/female/year (Parent et al. 2008). As part of a captive breeding program, the egg incubation was determined to range from 342 – 494 days. As part of the same study, successful hatch rate was 73% (Parent et al. 2008). Previous fecundity estimates were 47 eggs per year (Packer et al. 2003a). Hatchlings range in size from 193 mm TL, 128 mm disk width and 32 g body mass.

Barndoor skates are benthivorous and piscivorous, a large portion of the diet formed by forage fishes. Overall, the diet of barndoor skates was dominated by herrings Pandalid shrimps and *Cancer* crabs. Up to 8,000 mt of a particular prey item can be removed by this skate in any given year. The amount of food consumed was related to the size of the skate. Small skates (<=80 cm TL) consumed approximately 5 kg per year of prey items, while large skates (>80 cm TL) consumed approximately 10 to 20 kg per year (Link and Sosebee, 2008). The total consumptive demand for this species is estimated to range between 4,000 and 16,000 mt per year, with total consumption dominated by mature skates.

Clearnose Skate

Gelsleichter (1998) examined the vertebral centra of clearnose skates that were collected from Chesapeake Bay and the northwest Atlantic Ocean. The oldest male was aged at 5+ years, with the oldest female being 7+ years. This study suggests that clearnose skate experience rapid growth over during a relatively short life span.

Sosebee (2005) used body morphometry to determine size at maturity (females: 59 to 65 cm TL; males: 56 cm TL) on samples obtained from the NEFSC trawl survey ranging from Gulf of Maine to Cape Hatteras. Fecundity was estimated to be 35 eggs/year (Packer et al. 2003b).

Clearnose skates are benthivorous, a large portion of the diet comprised of benthic megafauna (crabs and miscellaneous crustaceans). Overall, the diet of clearnose skates was dominated by other crabs, *Cancer* crabs and squids. Up to 8,000 – 10,000 mt of a particular prey item can be removed by this skate in any given year, but values are typically on the order of 2,000 to 4,000 mt. Small skates (<= 60 cm TL consumed approximately 1 - 2 kg per year of prey items, while large skates (>60cm TL) consumed approximately 5 kg per year (Link and Sosebee, 2008). The total consumptive demand for this species is estimated to range between 2,000 and 18,000 mt per year, with total consumption dominated by mature skates.

Little Skate

Frisk and Miller (2006) examined vertebral samples of little skate to identify any latitudinal patterns in the northwestern Atlantic. Maximum observed age was 12.5 years. The oldest aged little skate from the mid-Atlantic was 11 years. The oldest individuals from the Gulf of Maine and Southern New England – Georges Bank were 11 years or older. Von Bertalanffy curves were fit for the northwestern Atlantic ($k = 0.19$, $L_\infty = 56.1$ cm TL, $t_o = -1.77$, $p < 0.0001$, $n = 236$) and for individual regions (GOM: $k = 0.18$, $L_\infty = 59.31$ cm TL, $t_o = -1.15$, $p < 0.0001$; SNE-GB: $k = 0.20$, $L_\infty = 54.34$ cm TL, $t_o = -1.22$, $p < 0.0001$; mid-Atlantic: $k = 0.22$, $L_\infty = 53.26$ cm, $t_o = -1.04$, $p < 0.0001$).

Sosebee (2005) used body morphometry to determine size at maturity (male – 39 cm TL; females – 40 – 48 cm TL) on samples obtained from the NEFSC trawl survey ranging from Gulf of Maine to Cape Hatteras. Fecundity was estimated to be 30 eggs per year (Packer et al. 2003 c). Palm et al. (2011) estimated an average fecundity of 46 eggs per captive female over the course of one year; the highest number of eggs was laid in June; the minimum occurred in March. Egg viability was 74.1%. Size at hatching varied with month; spring hatchlings were larger than other times of the year. Little skate are capable of reproducing year round but no reproductive peaks were observed (Williams et al. 2013).

Cicia et al. (2012) showed temperature influences survivability in little skate when exposed to air; little skates in summer exhibited higher mortality rates for air exposure times compared to winter.

Little skates are benthivorous which was reflected by the large portion of the diet that benthic macrofauna (polychaetes and amphipods) and benthic megafauna (crabs and bivalves) comprised. Overall, the diet of little skates was dominated by benthic invertebrates. Up to 8,000 mt of a particular prey item can be removed by this skate in any given year. This diet may overlap but not necessarily compete directly with flounders.

The amount of food consumed was related to the size of the skate. Small skates (<= 30 cm TL) consumed approximately 500 g per year of prey items, while large skates (>30 cm TL) consumed approximately 2.5 kg per year (Link and Sosebee, 2008). The total consumptive demand for this species is estimated to range between 100,000 and 350,000 mt per year, with total consumption dominated by mature skates.

Smooth Skate

Natanson et al. (2007) aged smooth skate from New Hampshire and Massachusetts waters. Maximum ages were estimated to be 14 and 15 years for females and males respectively. Longevity was estimated to be 23 years for females and 24 years for males. Male and females exhibited significantly different growth rates. Accordingly different growth models were required to fit the male and female growth data. Parameters for the von Bertalanffy equation for the males were determined to be k = 0.12, L_∞ = 75.4 cm TL, with L_o required to be set at 11 cm TL (Natanson et al. 2007). Growth models applied to females overestimated the size at birth thus requiring the use of back-calculated data resulting in von Bertalanffy parameters of: k = 0.12, L_∞ = 69.6 cm TL, L_o = 10 TL (Natanson et al. 2007). Sulikowski et al. (2007) determined, in a study conducted in the Gulf of Maine that in their sample mature females ranged in size from 508 to 630 mm TL and for males 550 to 660 mm TL. Based on morphological characteristics in females (ovary weight, shell gland weight, diameter of largest follicles, and pattern of ovarian follicle development) and histological analysis of males (mature spermatocysts in testes) Sulikowski et al. (2007) determined that in the Gulf of Maine smooth skate are capable of reproducing year round.

The reproductive cycles of the two sexes are thought to be synchronous (Sulikowski et al. 2007). Kneebone et al. (2007) examined hormonal concentrations of male and female smooth skate in the Gulf of Maine further confirming the ability of this species to reproduce throughout the year. Information is needed on the fecundity and egg survival of this species.

Sosebee (2005) used body morphometry to determine size at maturity to be approximately 33 – 49 cm TL for females and 49 cm TL for males on samples obtained from the NEFSC trawl survey ranging from Gulf of Maine to Cape Hatteras.

Swain et al. (2013) modeled the mortality rate of small and large smooth skate and showed decreased mortality for small skate and an increase for larger skates (larger juveniles only) between the 1970s and 2000s in 4T and 4VW areas. The changes in mortality rates differed with area examined; an increase in natural mortality was hypothesized in the 4T and 4VW areas for large skates.

Smooth skates are benthivorous, a large portion of the diet comprised of benthic megafauna (pandalids and euphausiids). Overall, the diet of smooth skates was dominated by pandalid shrimp and euphausiids. Up to 2,000 mt of a particular prey item can be removed by this skate in any given year, but values are typically on the order of 500 to 1,000 mt. The amount of food consumed was related to the size of the skate. Small skates (<= 30 cm TL) consumed approximately 0.5 - 1 kg per year of prey items, while large skates (>30 cm TL) consumed approximately 2 - 3 kg per year (Link and Sosebee, 2008). The total consumptive demand for this species is estimated to range between 1,000 and 5,000 mt per year, with total consumption dominated by mature skates.

Rosette Skate

Sosebee (2005) used body morphometry to determine size at maturity (males = 33 cm TL; females = 33 – 35 cm TL) on samples obtained from the NEFSC trawl survey ranging from Gulf of Maine to Cape Hatteras. Age and growth data are currently unavailable for rosette skate, as is information on the fecundity and egg survival.

Rosette skates are benthivorous, a large portion of the diet comprised of benthic macrofauna (amphipods and polychaetes) and benthic megafauna (crabs and shrimps). Overall, the diet of rosette skates was dominated by benthic macrofauna and to a lesser extent pandalid shrimps, squids and *Cancer* crabs. Up to 70 mt of a particular prey item can be removed by this skate in any given year, but more typically 10 – 30 mt. Small skates (<=30 cm TL) consumed approximately 200 g per year of prey items, while large skates (>30 cm TL) consumed approximately 800 g per year (Link and Sosebee, 2008). The total consumptive demand for this species is estimated to range between 50 and 500 mt per year, with total consumption dominated by mature skates.

Thorny Skate

Sulikowski et al (2005a) aged thorny skate in western Gulf of Maine and found oldest age estimated to be 16 years for both females and males (corresponding length – 105 cm and 103 cm). Von Bertalanffy Growth parameters for male thorny skates were calculated to be k = 0.11, L_∞ = 127 cm TL, t_o = -0.37; calculated estimates for female thorny skates were: k = 0.13, L_∞ = 120 cm TL, t_o = -0.4 (Sulikowski et al. 2005a). The maximum observed length from the NEFSC trawl survey is 111cm TL. Maximum sizes examined in the Gulf of Maine were 103 cm TL and 105 cm TL for males and females, respectively (Sulikowski et al. 2005a).

Sulikowski et al. (2006) used morphological and hormonal criteria to determine the age and size at sexual maturity in the western Gulf of Maine. For females, 50% maturity occurred at approximately 11 years and 875 mm TL; while for males approximately 10.90 years and 865 mm TL. This species is capable of reproducing year round (Sulikowski et al. 2005a) based on morphological characteristics.

Sosebee (2005) used body morphometry to determine size at maturity to be approximately 36 - 38 cm TL for females and 49 cm TL for males on samples obtained from the NEFSC trawl survey ranging from Gulf of Maine to Cape Hatteras.

Parent et al. (2008) estimated mean annual fecundity to be 40.5 eggs per year based on 2 captive females producing 81 eggs in 1 year. The observed hatching success is 37.5% (Parent et al. 2008).

Swain et al. (2013) modeled the mortality rate of small and large thorny skate and showed decreased mortality for small skate and an increase for larger skates (adults and larger juveniles) between the 1970s and 2000s in 4T and 4VW areas. The changes in mortality rates differed with area examined; an increase in natural mortality was hypothesized in the 4T and 4VW areas for large skates.

Thorny skates are benthivorous and their piscivorous, a large portion of the diet formed by forage fishes. Overall, the diet of thorny skates was dominated by herrings, squid, polychaetes, silver hake and other fish. Up to 80,000 mt of a particular prey item can be removed by this skate in any given year. The amount of food consumed was related to the size of the skate. Small skates (<=30 cm TL) consumed approximately 500 g per year of prey items, while medium (30-60 cm TL) and large skates (>60 cm TL) consumed approximately 1.5 kg and 12 kg per year, respectively (Link and Sosebee, 2008). The total consumptive demand for this species is estimated to range between 10,000 and 40,000 mt per year.

Winter Skate

Sulikowski et al. (2003) aged winter skate in western Gulf of Maine and determined the oldest age estimated to be 18 and 19 years for females and males, respectively (corresponding length – 94.0 cm and 93.2 cm). Verification of the periodicity of the vertebral bands was determined to be annual with the opaque band being formed in June - July using marginal increment analysis. Von Bertalanffy Growth parameters for male winter skates were calculated to be k = 0.074, L_∞ = 121.8 cm TL, t_o = -1.418; calculated estimates for female winter skates were: k = 0.059, L_∞ = 137.4 cm, t_o = -1.609 (Sulikowski et al. 2003). Growth curves fit to data from this study were found to overestimate maximum total length compared to observed lengths. This may result from a low representation of maximum sized individuals. The maximum reported length is 150 cm TL. Maximum sizes examined in the Gulf of Maine were 93.2 cm total length and 94.0 cm total length for males and females, respectively (Sulikowski et al. 2003).

Frisk and Miller (2006) examined vertebral samples of winter skate from the northwestern Atlantic. Maximum observed age was 20.5 years (a male winter skate of 74 cm TL); the oldest female was estimated to be 19.5 years (76 cm TL). Von Bertalanffy curves were fit for the northwestern Atlantic (k = 0.07, L_∞ = 122.1 cm TL, t_o = -2.07, $p < 0.0001$, n = 229) and for the GOM region (k = 0.064, L_∞ = 131.40 cm TL, t_o = -1.53).

In the southern Gulf of St Lawrence, winter skate reached a maximum size of 68 cm total length; males and females were mature between 40 and 41 cm TL or around 5 years (Kelly and Hanson, 2013).

Winter skates are capable of reproducing year-round but exhibit one peak in the annual cycle (Sulikowski et al. 2004). Peak reproductive activity occurs during June – August. Size at maturity has been shown to vary with latitude. Size at maturity is 76cm for females and 73 cm for males (Sulikowski et al. 2005b). Sosebee (2005) used body morphometry to determine size at maturity to be approximately 65 - 73 cm TL for females and 49 - 60 cm TL for males on samples obtained from the NEFSC trawl survey ranging from Gulf of Maine to Cape Hatteras. Fecundity in the southern Gulf of St Lawrence was estimated to be low (Kelly and Hanson, 2013).

Swain et al. (2013) modeled the mortality rate of small and large winter skate and showed decreased mortality for small skate and an increase for larger skates (adults only) between the 1970s and 2000s in 4T and 4VW areas. The changes in mortality rates differed with area examined; an increase in natural mortality was hypothesized in the 4T and 4VW areas for large skates. Benoit et al. (2011) attribute the increase in natural mortality on winter skate to be due to grey seal predation.

Frisk et al (2010) investigated the increase in winter skate abundance in the 1980s and concluded that it was likely due to an increase in recruitment combined with adult migration. A stock assessment model was developed for the stock, however, the five parameter base model did not fit the observed data well.

Winter skate tend to inhabit warmer waters, when possible (Kelly & Hanson, 2013) and may migrate to deeper waters in winter to avoid colder temperatures in the southern Gulf of St. Laurence.

Winter skates are benthivorous and piscivorous, a large portion of the diet formed by forage fishes. Overall, the diet of winter skates was dominated by forage fish, squid and benthic macrofauna. Up to 80,000 mt of a particular prey item can be removed by this skate in any given year. The amount of food consumed was related to the size of the skate. Medium sized (31-60 cm TL) skates consumed approximately 2 kg per year of prey items, while large skates (>60 cm TL) consumed approximately 9 kg per year (Link and Sosebee, 2008). The total consumptive demand for this species is estimated to range between 20,000 and 180,000 mt per year. In the southern Gulf of St Lawrence, winter skate less than 40 cm TL ate mainly shrimp and gammarid amphipods; larger skates ate more fishes and Atlantic rock crab (Kelly and Hanson, 2013).

6.1.4 Discards and discard mortality

Since skate discards are high across many fisheries, the estimates of total skate catch are sensitive to the discard mortality rate assumption, and have direct implications for allowable landings in the skate fisheries. Data on immediate- and delayed (i.e. post-release) mortality rates of discarded skates and rays is extremely limited. Only six published studies have estimated discard mortality rates in these species; for an outline of these studies see the literature review in the 2012-2013 specifications package (NEFMC 2012). . Benoit (2006) estimated acute discard mortality rates of winter skates caught in Canadian bottom trawl surveys, the SSC in 2009 decided to use a 50% discard mortality rate assumption for all skates and gears for the purposes of setting the Skate ACL, based on this paper.

Since the Council adopted a 50% discard mortality assumption for setting the ACL in Amendment 3, based on a literature review by the Skate PDT and advice from the Council's SSC, more relevant research data and analysis has been collected on skate mortality by trawl vessels in the Gulf of Maine. When Amendment 3 was developed, this discard mortality assumption was largely derived from published studies, most of which were for species and locations different from those covered in the FMP because no other data existed.

The 2012 specifications package revised the assumed discard mortality rate for little and winter skate based on an experiment in progress examining discard mortality for these species in trawl gear. While the data were preliminary, the Council's SSC reviewed the methodology and the preliminary results of the new discard mortality research and determined the new discard mortality values for little skate (0.20) and winter skate (0.12) to be the best scientific information available compared to the literature review; the new values were applied to little and winter skates captured by trawls and discarded under normal commercial practices. These new data were applied to estimate total discard mortality by gear and species and the last three years of data were used to project a 36.3% dead discard mortality rate (dead discards divided by total catch) for the 2012-2013 specification cycle.

Mandelman et al. (2013) examined the immediate and short-term discard mortality rate of little, smooth, thorny and winter skates in the Gulf of Maine. Tow durations lasted 15-20 min (control), 2 h (moderate) and 4 h (extended). The PDT recommended using the pooled moderate and extended tow times as they most closely reflected commercial practices. Full details of the study can be found in the paper by Mandelman et al. (2013) and were presented to the SSC. The SSC approved revising the discard mortality rate estimates for little (22%), smooth (60%), thorny (23%) and winter (9%) skates for otter trawl, consistent with their previous recommendation to use the preliminary estimates from this study. The SSC did not support using this study to revise the assumed 50% discard mortality rate for gillnet gear.

6.1.5 Estimated discards by gear

Another way to evaluate the potential interactions between skate fishing and barndoor, smooth, and thorny skate distributions is to examine estimated discards. Discards were estimated for calendar year 2012 by gear and half-year (Table 4). Discards are estimated for a calendar year, rather than the fishing year, because they rely on the NMFS area allocation landings tables to expand observed discard/kept-all ratios to total based on landings by gear, area and quarter. The observed D/K-all ratios were derived from the Sea Sampling Observer and the At Sea Monitoring programs and included both sector and non-sector vessels, but were not stratified on that basis. The projected discard rate is calculated using a three-year average of the discards of skates/landings of all species.

Total estimated discards for 2012 were 36,275 mt (Table 4). Discards decreased by 8.5% over the 2011 estimates. The assumed discard rate for 2014 is 34%. Projected dead discards are estimated to be 11,507 mt. Total live and dead discards for the Northeast Skate Complex for all gear types are contrasted in Table 5. Based upon SSC recommendations in 2008, an assumed discard mortality rate of 50% is applied for all gears and species, except for otter trawl gear, which has been updated based on Mandelman et al. 2013. The Skate Committee tasked the Skate PDT with determining whether the revised discard morality rate estimates for trawl gear could be applied to gillnet gear but the PDT has found no supporting evidence for this.

Table 4 – Estimated discards (mt) of skates (all species) by gear type, 1964 - 2012

	Half 1						Half 2						
Year	Line Trawl	Otter Trawl	Shrimp Trawl	Sink Gill Net	Scallop Dredge	Total Half 1	Line Trawl	Otter Trawl	Shrimp Trawl	Sink Gill Net	Scallop Dredge	Total Half 2	Grand Total
1964	441	54,171	0	12	5,883	60,506	471	35,752	0	7	7,027	43,258	103,763
1965	491	59,067	0	17	4,414	63,989	609	39,381	0	5	7,829	47,824	111,812
1966	373	63,304	0	26	6,078	69,781	572	34,031	0	7	5,502	40,112	109,893
1967	319	57,348	0	22	2,944	60,631	379	33,081	0	8	4,035	37,504	98,135
1968	252	56,808	0	37	3,807	60,904	345	31,931	0	10	4,123	36,409	97,313
1969	273	55,730	0	32	2,359	58,395	524	27,736	0	6	2,607	30,873	89,268
1970	299	44,621	0	22	1,628	46,570	479	25,480	0	7	2,341	28,308	74,878
1971	460	35,165	0	21	1,860	37,506	715	19,920	0	8	2,199	22,842	60,348
1972	464	32,764	0	31	1,982	35,241	766	18,774	0	13	2,193	21,746	56,988
1973	566	34,973	0	31	2,206	37,776	754	19,785	0	15	1,666	22,220	59,996
1974	627	36,856	0	58	1,752	39,293	703	17,226	0	24	2,377	20,331	59,624
1975	695	25,513	280	61	2,389	28,937	726	16,923	37	26	4,050	21,762	50,699
1976	470	22,845	66	99	3,902	27,382	418	19,943	0	37	7,019	27,417	54,798
1977	343	27,301	39	169	6,710	34,561	342	21,317	0	47	8,497	30,203	64,764
1978	754	35,675	0	189	7,999	44,617	564	22,772	0	66	12,026	35,428	80,045
1979	838	39,000	26	156	8,822	48,843	785	27,382	0	67	11,326	39,559	88,402
1980	1,009	40,300	21	189	9,808	51,326	338	29,024	0	96	9,288	38,746	90,072
1981	527	43,614	99	258	9,389	53,887	272	25,671	0	93	10,461	36,496	90,383
1982	427	43,877	124	91	7,285	51,805	173	37,260	7	83	10,584	48,108	99,913
1983	396	49,891	115	116	8,658	59,176	182	32,350	22	69	10,066	42,690	101,867
1984	386	48,904	152	123	8,694	58,260	76	30,674	53	94	8,337	39,234	97,494
1985	315	40,693	225	115	6,791	48,140	143	23,149	70	81	7,888	31,331	79,471
1986	421	37,367	252	170	7,308	45,518	149	25,975	83	87	10,257	36,551	82,069
1987	626	36,459	288	140	12,518	50,031	288	23,377	46	85	15,924	39,720	89,752
1988	626	35,635	183	162	14,382	50,987	247	22,370	46	90	16,259	39,012	89,999
1989	536	37,663	73	48	19,609	57,930	211	20,264	17	92	16,377	36,961	94,890
1990	385	50,465	208	347	18,338	69,743	216	35,720	71	73	19,813	55,893	125,636
1991	1,174	22,882	243	99	18,508	42,906	323	29,856	44	113	15,850	46,185	89,091

1992	1,646	13,153	247	269	14,558	29,874	1,105	19,609	0	107	18,088	38,909	68,783
1993	69	7,994	35	212	9,869	18,180	27	21,791	1	110	12,168	34,097	52,277
1994	20	65,500	11	265	6,099	71,896	28	16,301	1	228	5,056	21,613	93,509
1995	28	22,993	8	443	8,733	32,205	30	11,701	1	350	19,845	31,927	64,132
1996	28	15,598	26	419	8,360	24,431	27	25,801	8	131	11,467	37,433	61,864
1997	30	6,633	34	392	11,061	18,151	30	6,784	4	91	6,334	13,243	31,393
1998	25	26,723	6	217	6,819	33,790	34	20,136	0	252	8,444	28,866	62,656
1999	23	3,810	3	599	7,194	11,628	24	9,627	0	249	7,955	17,854	29,482
2000	14	6,917	4	181	5,208	12,324	26	17,040	0	792	4,709	22,568	34,892
2001	20	21,144	0	404	3,767	25,335	22	8,439	0	204	3,249	11,914	37,249
2002	21	12,176	1	391	6,088	18,677	107	9,663	0	2,464	7,696	19,931	38,608
2003	38	17,915	8	522	7,913	26,397	10	18,061	0	443	8,068	26,582	52,980
2004	9	14,423	4	450	5,232	20,118	11	21,684	0	498	4,078	26,271	46,389
2005	91	14,186	2	1,037	6,079	21,395	54	19,196	0	559	4,613	24,421	45,816
2006	195	10,594	0	860	5,728	17,377	17	12,316	1	362	4,935	17,631	35,008
2007	46	14,755	0	1,041	5,796	21,640	27	16,771	0	771	7,222	24,791	46,431
2008	111	10,667	2	1,320	5,073	17,173	65	12,703	0	708	4,939	18,415	35,588
2009	132	10,530	1	1,451	4,053	16,165	176	15,080	0	537	3,237	19,030	35,195
2010	269	9,433	0	1,058	8,082	18,841	209	11,869	0	1,344	5,284	18,706	37,547
2011	86	11,768	0	1,976	5,615	19,444	61	14,760	0	1,205	4,025	20,051	39,495
2012	46	10,173	3	1,612	4,294	16,129	54	14,306	0	984	4,802	20,147	36,275

Table 5 - Total Live and Dead Discards of Skates (all species) for all gear types from 1968 - 2012

Year	Live Discards	Dead Discards
1968	97,313	21,839
1969	89,268	18,543
1970	74,878	16,009
1971	60,348	13,862
1972	56,988	12,594
1973	59,996	13,318
1974	59,624	13,250
1975	50,699	11,967
1976	54,798	14,563
1977	64,764	16,948
1978	80,045	21,207
1979	88,402	22,709
1980	90,072	21,795
1981	90,383	21,519
1982	99,913	22,247
1983	101,867	22,794
1984	97,494	21,897
1985	79,471	17,649
1986	82,069	20,236
1987	89,752	25,446
1988	89,999	25,431
1989	94,890	28,444
1990	125,636	35,770
1991	89,091	31,543
1992	68,783	25,250
1993	52,277	16,968
1994	93,509	23,223
1995	64,133	21,880
1996	61,866	19,365
1997	31,394	11,417
1998	62,658	16,745
1999	29,483	10,655
2000	34,893	10,425
2001	37,250	9,621
2002	38,609	12,603
2003	52,981	15,474
2004	46,390	11,828
2005	45,817	13,460
2006	35,009	11,035
2007	46,432	14,207
2008	35,589	11,495
2009	35,196	9,327
2010	37,548	12,019
2011	39,496	14,161
2012	36,277	10,857

6.1.6 Evaluation of Fishing Mortality and Stock Abundance

Benchmark assessment results from SAW 44 are given in NEFSC 2007a and 2007b. Because the analytic models that were attempted did not produce reliable results, the status of skate overfishing is determined based on a rate of change in the three year moving average for survey biomass. These thresholds vary by species due to normal inter-annual survey variability. Details about the overfishing reference points and how they were chosen are given in NEFSC 2000.

The latest results for 2012 (2013 spring survey for little skate) are given in Table 3. At this time, overfishing occurring on thorny and winter skate species.

6.1.7 Non-Target Species

The skate wing fishery is largely an incidental fishery; fishing effort is expended targeting more profitable species managed under separate FMPs, e.g. NE multispecies and monkfish FMPs. These fisheries have ACLs, effort controls (DAS), possession limits, gear restrictions, and other measures that constrain overall effort on skates. For a full description of the fishing impacts on trips targeting NE multispecies and monkfish please refer to Framework 51 to the NE Multispecies FMP and Framework 8 of the Monkfish FMP (www.nefmc.org). A small number of trips could be described as targeting skates; bycatch on these trips are limited. Monkfish and dogfish comprise the majority of this bycatch and are described below.

NE Multispecies

The Northeast Multispecies FMP manages twenty stocks under a dual management system which breaks the fishery into two components: sectors and the common pool. For stocks that permit fishing, each sector is allotted a share of the each stock's ACL that consists of the sum of individual sector member's potential sector contribution based on their annual catch entitlements. Sector allocations are strictly controlled as hard total allowable catch limits and retention is required for all stocks managed under an ACL. Overages are subject to accountability measures including payback from the sector's allocation for the following year. Common pool vessels are allocated a number of days at sea (DAS) and their effort further is controlled by a variety of measures including trip limits, closed areas, minimum fish size and gear restrictions varying between stocks. Only a very small portion of the ACL is allotted to the common pool. For more detail regarding control of fishing effort on NE Multispecies, please see Framework 51 of the NE Multispecies FMP.

6.1.7.1 Monkfish

Life History: Monkfish, *Lophius americanus*, also called goosefish, occur in the western North Atlantic from the Grand Banks and northern Gulf of St. Lawrence south to Cape Hatteras, North Carolina. Monkfish occur from inshore areas to depths of at least 2,953 ft. (900 m). Monkfish undergo seasonal onshore-offshore migrations. These migrations may relate to spawning or possibly to food availability.

Female monkfish begin to mature at age 4 with 50 percent of females maturing by age 5 (about 17 in [43 cm]). Males generally mature at slightly younger ages and smaller sizes (50 percent maturity at age 4.2 or 14 in [36 cm]). Spawning takes place from spring through early autumn. It progresses from south to north, with most spawning occurring during the spring and early summer. Females lay a buoyant egg raft or veil that can be as large as 39 ft. (12 m) long and 5 ft. (1.5 m) wide, and only a few mm thick. The larvae hatch after about 1 to 3 weeks, depending on water temperature. The larvae and juveniles spend several months in a pelagic phase before settling to a benthic existence at a size of about 3 in (8 cm).

Population Management and Status: NMFS implemented the Monkfish FMP in 1999 (NEFMC and MAFMC 1998). The FMP included measures to stop overfishing and rebuild the stocks through a number of measures. These measures included:

- Limiting the number of vessels with access to the fishery and allocating DAS to those vessels;
- Setting trip limits for vessels fishing for monkfish; minimum fish size limits;
- Gear restrictions;
- Mandatory time out of the fishery during the spawning season; and
- A framework adjustment process.

The Monkfish FMP defines two management areas for monkfish (northern and southern), divided roughly by an east-west line bisecting Georges Bank. Monkfish in both management regions are not overfished and overfishing is not occurring. In recent years the monkfish fishery has fallen fall short of reaching its TAL, despite a healthy stock status. In 2013, limited access monkfish vessels were allocated 39.3 DAS, of which 28 could be used in the southern management area. Additional information on monkfish management can be found on the NEFMC website (http://www.nefmc.org/monk/index.html).

6.1.7.2 Dogfish

Life History: The spiny dogfish, *Squalus acanthias*, occurs in the western North Atlantic from Labrador to Florida. Regulators consider spiny dogfish to be a unit stock off the coast of New England. In summer, dogfish migrate northward to the Gulf of Maine-Georges Bank region and into Canadian waters. They return southward in autumn and winter. Spiny dogfish tend to school by size and, when mature, by sex. The species bears live young, with a gestation period of about 18 to 22 months, and produce between 2 to 15 pups with an average of 6. Size at maturity for females is around 31 in (80 cm), but can vary from 31 to 33 in (78 cm to 85 cm) depending on the abundance of females.

Population Management and Status: The NEFMC and MAFMC jointly develop the spiny dogfish FMP for federal waters. The Atlantic States Marine Fisheries Commission (ASMFC) also developed a plan for state waters. Spawning stock biomass of spiny dogfish declined rapidly in response to a directed fishery during the 1990's. NFMS initially implemented management measures for spiny dogfish in 2001. These measures have been effective in reducing landings and fishing mortality. Based upon the 2009 updated stock assessment performed by the Northeast Fisheries Science Center, the spiny dogfish stock is not presently overfished and overfishing is not occurring. NMFS declared the spiny dogfish stock rebuilt for the purposes of U.S. management in May 2010. Spiny dogfish numbers have continued to increase in recent years. The spiny dogfish fishery is managed with an ACL, commercial quota, and possession limits (currently 4,000 lb per trip). Similar to skates, there is a large degree of overlap between spiny dogfish and NE Multispecies trips where dogfish are landed incidentally to groundfish.

6.2 Marine Mammals and Protected Species

The protected species, listed in Table 6, are found in the environment utilized by the skate fishery. A number of them are listed under the Endangered Species Act of 1973 (ESA) as "endangered" or "threatened", while others are identified as protected under the Marine Mammal Protection Act of 1972 (MMPA). Actions taken to minimize the interaction of the fishery with protected species are described in Section 4.1.1 of Skate Amendment 3. Monthly reports of observed incidental takes recorded through the Northeast Fishery Observer Program (NEFOP) and At-Sea Monitoring Program (ASM) are available on the NEFSC website at http://www.nefsc.noaa.gov/femad/fishsamp/fsb/.

Table 6 – Species Protected Under the Endangered Species Act and/or Marine Mammal Protection Act that May Occur in the Environment Utilized by the Skate Fishery

Species	Status
Cetaceans	
North Atlantic 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
Long-finned pilot whale (*Globicephala melas*)	Protected
Short-finned pilot whale (*Globicephala macrorhynchus*)	Protected
Spotted dolphin (*Stenella frontalis*)	Protected
Risso's dolphin (*Grampus griseus*)	Protected
White-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Bottlenose dolphin: coastal stock (*Tursiops truncatus*)	Protected
Bottlenose dolphin: offshore stock (*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*) – Northwest Atlantic DPS**	Threatened
Fish	
Atlantic salmon (*Salmo salar*)	Endangered
Atlantic sturgeon (*Acipenser oxyrinchus*)	
Gulf of Maine DPS	Threatened
New York Bight DPS	Endangered
Chesapeake Bay DPS	Endangered
Carolina DPS	Endangered
South Atlantic DPS	Endangered

Notes:
**Green sea turtles in U.S. waters are listed as threatened except for the Florida breeding population, which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green sea turtles are considered endangered wherever they occur in U.S. waters.*
*** Although there are a total of nine loggerhead sea turtle DPSs listed under the ESA, the Northwest Atlantic DPS is the only one expected to overlap with the skate fishery.*

It is expected that all of the species identified above have the potential to be affected by the operation of the skate fishery. 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, sea turtles, and ESA-listed fish within the management area for the Skate FMP as well as the known interactions of gear used in the skate fishery with these protected species. Additional background information on the range-wide status of marine mammal, sea turtle, and ESA-listed fish species that occur in the area can be found in a number of published documents. These include status reviews and biological reports (ASSRT 2007; NMFS and USFWS 2007; Hirth 1997; USFWS 1997; Marine Turtle Expert Working Group (TEWG) 1998, 2000, 2007, 2009), recovery plans (NMFS 1991, 1998a, 1998b, 2005a, 2005b, 2010a, 2010b, 2011; NMFS and USFWS 1991, 1992, 2008; ; NMFS *et al*. 2011), marine mammal stock assessment reports (Waring *et al*. 2013), 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). Although not included in the list above, ESA-listed shortnose sturgeon are capable of making coastal migrations, and fish have been tracked between several Maine rivers and down to the Merrimack River in Massachusetts. However, even in the Northeast where these coastal migrations have been documented, shortnose sturgeon do not appear to spend significant time in the marine environment. Since the skate fishery does not operate in or near the rivers where concentrations of shortnose sturgeon predominantly are found and their time in the marine environment is very limited, it is highly unlikely that the fishery will affect shortnose sturgeon.

6.2.1.1 Sea Turtles

Loggerhead, leatherback, Kemp's ridley, and green sea turtles occur seasonally in southern New England and Mid-Atlantic continental shelf waters north of Cape Hatteras, North Carolina. Turtles generally move up the coast from southern wintering areas as water temperatures warm in the spring (James et al. 2005, Morreale and Standora 2005, Braun-McNeill and Epperly 2004, Morreale and Standora 1998, Musick and Limpus 1997, Shoop and Kenney 1992, Keinath et al. 1987). A reversal of this trend occurs in the fall when water temperatures cool. Turtles pass Cape Hatteras by December and return to more southern waters for the winter (James et al. 2005, Morreale and Standora 2005, Braun-McNeill and Epperly 2004, Morreale and Standora 1998, Musick and Limpus 1997, Shoop and Kenney 1992, Keinath et al. 1987). Hard-shelled species typically occur as far north as Cape Cod whereas the more cold-tolerant leatherbacks occur in more northern Gulf of Maine waters in the summer and fall (Shoop and Kenney 1992, STSSN database http://www.sefsc.noaa.gov/species/turtles/strandings.htm).

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

Sea turtles are known to be captured in gillnet and trawl gear; gear types that are used in the skate fishery. Although only loggerhead and leatherback sea turtles have been observed as being captured in gears targeting skates by the NEFOP and ASM, Kemp's ridleys and greens may also be captured in skate gear as their distributions overlap seasonally with the skate fishery and they have been observed as incidental bycatch in trawl and gillnet gear in other Atlantic fisheries (NMFS 2013). According to recent bycatch estimate reports from Murray (2009) and Warden (2011), an average of 9 loggerheads (95% CI: 5-15) were captured annually in skate gillnet gear from 2002-2006 and an average of 7 loggerheads (95% CI: 4-11) were captured annually in skate bottom trawl gear from 2005-2008.

6.2.1.2 Large Cetaceans (Baleen Whales and Sperm Whale)

The most recent Marine Mammal Stock Assessment Report (SAR) (Waring et al. 2013), covering the time period between 2006 and 2010, reviewed the current population trend for each of these cetacean species within U.S. Economic Exclusion Zone (EEZ) waters. The SAR also estimated annual human-caused mortality and serious injury. Finally, it described the commercial fisheries that interact with each stock in the U.S. Atlantic. The following paragraphs summarize information from the SAR.

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke whales) follow a general annual pattern of migration. They migrate from high latitude summer foraging grounds, including the Gulf of Maine and Georges Bank, to low latitude winter calving grounds (Perry et al. 1999, Kenney 2002). However, this is a simplification of species movements as the complete winter distribution of most species is unclear (Perry et al. 1999, Waring et al. 2013). Studies of some of the large baleen whales (right, humpback, and fin) have demonstrated the presence of each species in higher latitude waters even in the winter (Swingle et al. 1993, Wiley et al. 1995, Perry et al. 1999, Brown et al. 2002). Blue whales are most often sighted along the east coast of Canada, particularly in the Gulf of St. Lawrence. They occur only infrequently within the U.S. EEZ (Waring et al. 2002).

North Atlantic right whales are federally listed as endangered under the ESA and a revised recovery plan was published in June 2005. Available information suggests that the North Atlantic right whale population increased at a rate of 2.6 percent per year between 1990 and 2009. The total number of North Atlantic right whales is estimated to be at least 444 animals in 2009 (Waring et al. 2013). The minimum rate of annual human-caused mortality and serious injury to right whales averaged 3.0 mortality or serious injury incidents per year during 2006 to 2010 (2.4 in U.S. waters; 0.6 in Canadian waters) (Waring et al. 2013). Of these, fishery interactions resulted in an average of 1.8 mortality or serious injury incidents per year (1.6 in U.S. waters; 0.2 in Canadian waters). The potential biological removal (PBR) level for this stock is 0.9 animals per year (Waring et al. 2013). The PBR level is the maximum number of animals, not including natural mortalities, which may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.

Humpback whales are also listed as endangered under the ESA, and a recovery plan was published for this species in 1991. The North Atlantic population of humpback whales is conservatively estimated to be 7,698 (Waring et al. 2013). The best estimate for the GOM stock of humpback whale population is 823 whales and current data suggest that the Gulf of Maine humpback whale stock is steadily increasing in size (Waring et al. 2013). The minimum rate of annual human-caused mortality and serious injury to humpback whales averaged 7.8 mortality or serious injury incidents per year during 2006 to 2010 (7.2 in U.S. waters; 0.6 in Canadian waters) (Waring et al. 2013). Of these, fishery interactions resulted in an average of 5.8 mortality or serious injury incidents per year (5.2 from U.S. waters and 0.6 from Canadian waters). The PBR for this stock is 2.7 animals per year (Waring et al. 2013).

Fin, sei, and sperm whales are all federally listed as endangered under the ESA, with recovery plans currently in place. Based on data available for selected areas and time periods, the minimum population estimates for these western North Atlantic whale stocks are 2,817fin whales, 236 sei whales (Nova Scotia stock) (Waring et al. 2013), and 1,187 sperm whales (Waring et al. 2013). Insufficient information exists to determine population trends for these large whale species.

The minimum rate of annual human-caused mortality and serious injury to fin whales averaged 2.0 mortality or serious injury incidents per year during 2006 to 2010 (1.8 in U.S. waters; 0.2 in Canadian waters) (Waring et al. 2013). Of these, fishery interactions resulted in an average of 0.8 mortality or serious injury incidents per year (0.6 from U.S. waters and 0.2 from Canadian waters). The PBR for this stock is 5.6 animals per year (Waring et al. 2013). For sei whales, the minimum rate of annual human-cause mortality and serious injury averaged 1.2 per year, of which 0.6 were a result of fishery interactions. PBR for the Nova Scotia sei whale stock is 0.5 (Waring et al. 2013). For both fin and sei whales, these estimates are likely biased low due to the low detection rate for these species. During 2006-2010, annual average human caused mortality for the North Atlantic stock of sperm whales was 0.6 due to one report of a ship strike mortality in 2006 and reports of one sperm whale mortality in 2009 and one in 2010 in the Canadian Labrador halibut longline fishery. Sperm whales have not been documented as bycatch in the observed U.S. Atlantic commercial fisheries. PBR for this stock is 2.4 animals per year (Waring et al. 2013).

Minke whales are not ESA-listed but are protected under the MMPA, with a minimum population estimate of 16,199 animals for the Canadian east coast stock; however, a population trend analysis has not been conducted for this stock (Waring et al. 2013). The minimum rate of annual human-caused mortality and serious injury averaged 5.0 per year during 2006 to 2010, and of these, 2.6 animals per year were recorded through observed fisheries and 1.0 per year were attributed to U.S. fisheries using stranding and entanglement data (Waring et al. 2013). PBR for this stock is 162 animals per year.

The skate fishery does not operate in low latitude waters where calving and nursing occurs for these six large cetacean species (Aguilar 2002; Clapham 2002; Horwood 2002; Kenney 2002; Sears 2002; Whitehead 2002). In addition, the skate fishery is not likely to adversely modify or destroy designated critical habitat for right whales in the Northeast, which overlaps with the fishery in Cape Cod Bay and the Great South Channel (NMFS 2013).

Gillnet gear is known to pose a risk of entanglement causing injury and death to large cetaceans. Right whale, humpback whale, and minke whale entanglements in gillnet gear have been documented (Johnson *et al*. 2005; Waring *et al. 2008*). However, it is often not possible to attribute the gear to a specific fishery. For the period March 2006 – December 2008, five incidents of whale takes were observed on trips targeting groundfish, all of which were taken in bottom trawl trips. Of those five takes, four were of whales that were in various states of decomposition, while one pilot whale was deemed "fresh". In July 2008, a humpback whale was observed alive and entangled in gillnet gear used to target cod. Also, a fresh dead minke whale was observed in bottom trawl gear used to target winter flounder.

6.2.1.3 Small Cetaceans (Dolphins, Harbor Porpoise and Pilot Whale)

There is fishing related mortality of numerous small cetacean species (dolphins, pilot whales, and harbor porpoises) associated with Northeast Multispecies fishing gear. Seasonal abundance and distribution of each species off the coast of the Northeast U.S. varies with respect to life history characteristics. Some species such as white-sided dolphins and harbor porpoises primarily occupy continental shelf waters. Other species such as the Risso's dolphin occur primarily in continental shelf edge and slope waters. Still other species like the common dolphin and the spotted dolphin occupy all three habitats. Waring et al. (2013) summarizes information on the distribution and geographic range of western North Atlantic stocks of each species.

The most commonly observed small cetaceans recorded as bycatch in multispecies fishing gear (e.g., gillnets and trawls) are harbor porpoises, white-sided dolphins, common dolphins, and pilot whales. These species are described in a bit more detail here. Harbor porpoises are found seasonally within New England and Mid-Atlantic waters. In the Mid-Atlantic, porpoises are present in the winter/spring (typically January through April) and in southern New England waters from December through May. In the Gulf of Maine, porpoises occur largely from the fall through the spring (September through May) and in the summer are found in northern Maine and through the Bay of Fundy and Nova Scotia area. White-sided dolphin distribution shifts seasonally, with a large presence from Georges Bank through the Gulf of Maine from June through September, with intermediate presence from Georges Bank through the lower Gulf of Maine from October through December. Low numbers are present from Georges Bank to Jeffrey's Ledge from January through May (Waring et al. 2013). Common dolphins are widely distributed over the continental shelf from Maine through Cape Hatteras, North Carolina. From mid-January to May they are dispersed from North Carolina through Georges Bank, and then move onto

Georges Bank and the Scotia shelf from the summer to fall. They are occasionally found in the Gulf of Maine (Waring et al. 2013). Pilot whales are generally distributed along the continental shelf edge off the northeastern U.S. coast in the winter and early spring. In late spring, the move onto Georges Bank and into the Gulf of Maine and remain until late fall. They do occur along the Mid-Atlantic shelf break between Cape Hatteras, North Carolina and New Jersey (Waring et al. 2013). Since pilot whales are difficult to differentiate at sea, they are generally considered Globicephala sp. when they are recorded at sea (Waring et al. 2013).

6.2.1.4 Pinnipeds

Harbor seals have the most extensive distribution of the four species of seal expected to occur in the area. Harbor seals sighting have occurred far south as 30° N (Katona et al. 1993, Waring et al. 2013). Their approximate year-round range extends from Nova Scotia, through the Bay of Fundy, and south through Maine to northern Massachusetts (Waring et al. 2013). Their more seasonal range (September through May) extends from northern Massachusetts south through southern New Jersey, and stranding records indicate occasional presence of harbor seals from southern New Jersey through northern North Carolina (Waring et al. 2013). Gray seals are the second most common seal species in U.S. EEZ waters. They occur from Nova Scotia through the Bay of Fundy and into waters off of New England (Katona et al. 1993; Waring et al. 2013) year-round from Maine through southern Massachusetts (Waring et al. 2013). A more seasonal distribution of gray seals occurs from southern Massachusetts through southern New Jersey from September through May. Similar to harbor seals, occasional presence from southern New Jersey through northern North Carolina indicate occasional presence of gray seals in this region (Waring et al. 2013). Pupping for both species occurs in both U.S. and Canadian waters of the western North Atlantic. The majority of harbor seal pupping is thought to occur in U.S. waters. While there are at least three gray seal pupping colonies in U.S., the majority of gray seal pupping likely occurs in Canadian waters. Observations of harp and hooded seals are less common in U.S. EEZ waters. Both species form aggregations for pupping and breeding off eastern Canada in the late winter/early spring. They then travel to more northern latitudes for molting and summer feeding (Waring et al. 2013). Both species have a seasonal presence in U.S. waters from Maine to New Jersey, based on sightings, stranding, and fishery bycatch information (Waring et al. 2013).

6.2.1.5 Atlantic Sturgeon

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

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

A status review for Atlantic sturgeon was completed in 2007 which indicated that five distinct population segments (DPS) of Atlantic sturgeon exist in the United States (ASSRT 2007). On October 6, 2010, NMFS proposed listing these five DPSs of Atlantic sturgeon along the U.S. East Coast as either threatened or endangered species (75 FR 61872 and 75 FR 61904). A final listing was published on February 6th, 2012 (77 FR 5880 and 75 FR 5914). The GOM DPS of Atlantic sturgeon has been listed as threatened, and the New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon have been listed as endangered.

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

Atlantic sturgeon are known to be captured in sink gillnet, drift gillnet, and otter trawl gear (Stein et al. 2004a, ASMFC TC 2007). Of these gear types, sink gillnet gear poses the greatest known risk of mortality for bycaught sturgeon (ASMFC TC 2007; Table 7). Sturgeon deaths were rarely reported in the otter trawl observer dataset (ASMFC TC 2007). However, the level of mortality after release from the gear is unknown (Stein et al. 2004a). In a review of the NEFOP database for the years 2001-2006, observed bycatch of Atlantic sturgeon was used to calculate bycatch rates that were then applied to commercial fishing effort to estimate overall bycatch of Atlantic sturgeon in commercial fisheries. This review indicated sturgeon bycatch occurred in statistical areas abutting the coast from Massachusetts (statistical area 514) to North Carolina (statistical area 635) (ASMFC TC 2007). Based on the available data, participants in an ASMFC bycatch workshop concluded that sturgeon encounters tended to occur in waters less than 50 m throughout the year, although seasonal patterns exist (ASMFC TC 2007). The ASMFC analysis determined that an average of 650 Atlantic sturgeon mortalities occurred per year (during the 2001 to 2006 timeframe) in sink gillnet fisheries. Stein et al (2004a), based on a review of the NMFS Observer Database from 1989-2000, found clinal variation in the bycatch rate of sturgeon in sink gillnet gear with lowest rates occurring off of Maine and highest rates off of North Carolina for all months of the year." As the skate fishery is mostly a bycatch fishery of the monkfish and groundfish fisheries the catch limits set under those FMPs impact the take of Atlantic sturgeon. On December 16, 2013 NMFS completed a biological opinion regarding the combined impacts of the northeast regional fisheries. Overall, fishing including fishing under the monkfish, groundfish and skate FMPs is likely to adversely affect but not likely to jeopardize Atlantic sturgeon. While takes have not be partitioned by FMP, groundfish and monkfish fisheries take a large portion of Atlantic sturgeon, particularly in gillnet gears.

Table 7 - Documented bycatch of Atlantic sturgeon in bottom otter trawl and gillnet gear recorded during NEFOP and ASM programs from 2006-2012. Adapted from NMFS biological opinion (December 16, 2013).

	Otter Trawl gear	Gillnet Gear
2006	28	121
2007	59	112
2008	33	44
2009	49	103
2010	106	69
2011	60	75
2012	42	31

6.2.1.6 Atlantic Salmon

The Atlantic salmon is an anadromous fish species that spends most of its adult life in the ocean but returns to freshwater to reproduce. The Atlantic salmon is native to the North Atlantic Ocean, from the Arctic Circle to Portugal in the eastern Atlantic, from Iceland and southern Greenland, and from the Ungava region of northern Quebec south to the Connecticut River. In the U.S., Atlantic salmon historically ranged from Maine south to Long Island Sound. However, the Central New England DPS and Long Island Sound DPS have both been extirpated (65 FR 69459; November 17, 2000).

There are no bycatch estimates for Atlantic salmon in gillnet or trawl gear. The very low number of observed Atlantic salmon interactions in gillnet and trawl gear as reported in the NEFOP and ASM databases suggests that interactions within the skate management area are rare events. However, given the fact that observer coverage in the fishery is less than 100%, it is likely that some interactions with Atlantic salmon have occurred but were not observed or reported. Due to the effort in the fishery as a whole, and the seasonal overlap in distribution of these species with operation of gillnet and trawl gear, a small number of Atlantic salmon may interact with both gear types (NMFS 2013).

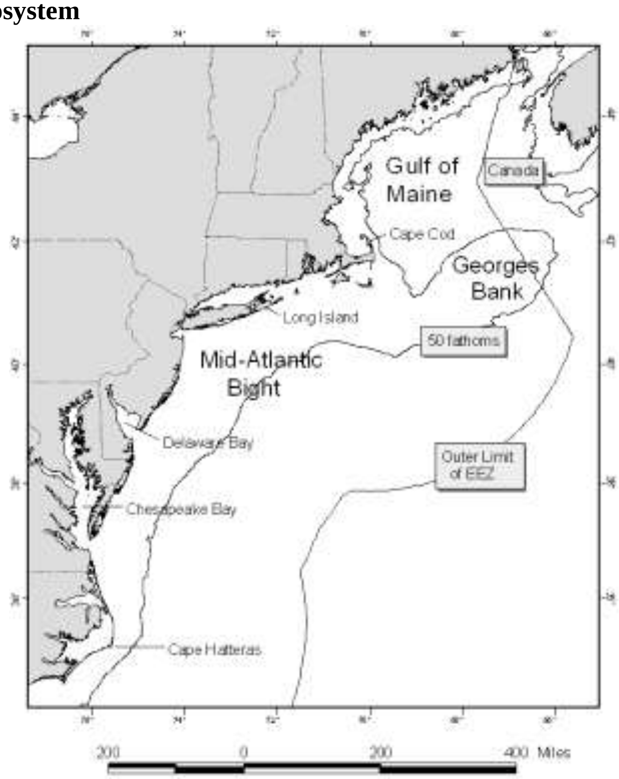
6.3 Physical Environment

The Northeast U.S. Shelf Ecosystem has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The continental slope includes the area east of the shelf, out to a depth of 2000 m. Four distinct sub-regions comprise the NOAA Fisheries Northeast Region: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope (see Map 8 and Map 9).

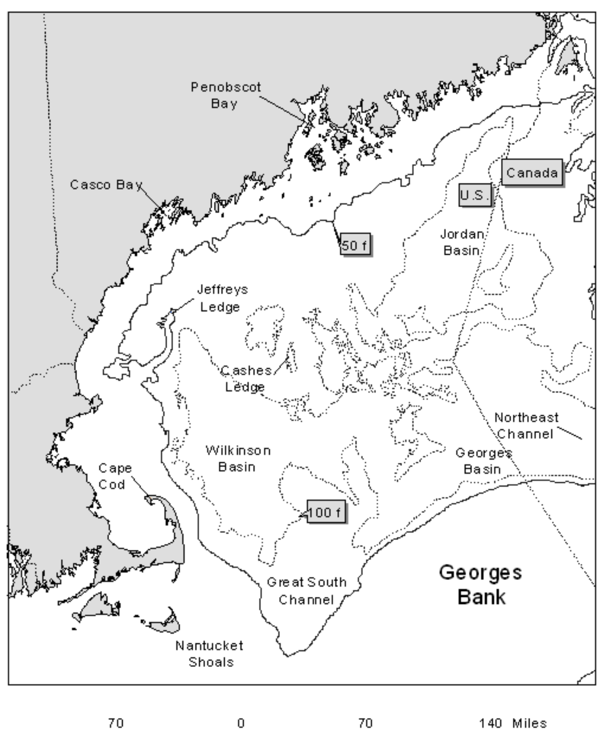
The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is fairly homogenous, with exceptions at the shelf break, some of the canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom.

Pertinent physical characteristics of the sub-regions that could potentially be affected by this action are described in this section. Information included in this document was extracted from Stevenson et al. (2004).

Map 8 - Northeast shelf ecosystem



Map 9 - Gulf of Maine.



Gulf of Maine

Although not obvious in appearance, the Gulf of Maine (GOM) is actually an enclosed coastal sea, bounded on the east by Browns Bank, on the north by the Nova Scotian (Scotian) Shelf, on the west by the New England states, and on the south by Cape Cod and Georges Bank. The GOM was glacially derived, and is characterized by a system of deep basins, moraines and rocky protrusions with limited access to the open ocean. This geomorphology influences complex oceanographic processes that result in a rich biological community.

The GOM is topographically unlike any other part of the continental border along the U.S. Atlantic coast. The GOM's geologic features, when coupled with the vertical variation in water properties, result in a great diversity of habitat types. It contains twenty-one distinct basins separated by ridges, banks, and swells. The three largest basins are Wilkinson, Georges, and Jordan. Depths in the basins exceed 250 meters (m), with a maximum depth of 350 m in Georges Basin, just north of Georges Bank. The Northeast Channel between Georges Bank and Browns Bank leads into Georges Basin, and is one of the primary avenues for exchange of water between the GOM and the North Atlantic Ocean.

High points within the Gulf include irregular ridges, such as Cashes Ledge, which peaks at 9 m below the surface, as well as lower flat topped banks and gentle swells. Some of these rises are remnants of the sedimentary shelf that was left after most of it was removed by the glaciers. Others are glacial moraines and a few, like Cashes Ledge, are outcroppings of bedrock. Very fine sediment particles created and eroded by the glaciers have collected in thick deposits over much of the GOM, particularly in its deep basins. These mud deposits blanket and obscure the irregularities of the underlying bedrock, forming topographically smooth terrains. Some shallower basins are covered with mud as well, including some in coastal waters. In the rises between the basins, other materials are usually at the surface. Unsorted glacial till covers some morainal areas, as on Sewell Ridge to the north of Georges Basin and on Truxton Swell to the south of Jordan Basin. Sand predominates on some high areas and gravel, sometimes with boulders, predominates on others.

Coastal sediments exhibit a high degree of small-scale variability. Bedrock is the predominant substrate along the western edge of the GOM north of Cape Cod in a narrow band out to a depth of about 60 m. Rocky areas become less common with increasing depth, but some rock outcrops poke through the mud covering the deeper sea floor. Mud is the second most common substrate on the inner continental shelf. Mud predominates in coastal valleys and basins that often abruptly border rocky substrates. Many of these basins extend without interruption into deeper water. Gravel, often mixed with shell, is common adjacent to bedrock outcrops and in fractures in the rock. Large expanses of gravel are not common, but do occur near reworked glacial moraines and in areas where the seabed has been scoured by bottom currents. Gravel is most abundant at depths of 20 - 40 m, except in eastern Maine where a gravel-covered plain exists to depths of at least 100 m. Bottom currents are stronger in eastern Maine where the mean tidal range exceeds 5 m. Sandy areas are relatively rare along the inner shelf of the western GOM, but are more common south of Casco Bay, especially offshore of sandy beaches.

Georges Bank

Georges Bank is a shallow (3 - 150 m depth), elongate (161 km wide by 322 km long) extension of the continental shelf that was formed by the Wisconsinian glacial episode. It is characterized by a steep slope on its northern edge and a broad, flat, gently sloping southern flank. The Great South Channel lies to the west. Natural processes continue to erode and rework the sediments on Georges Bank. It is anticipated that erosion and reworking of sediments will reduce the amount of sand available to the sand sheets, and cause an overall coarsening of the bottom sediments (Valentine and Lough 1991).

Glacial retreat during the late Pleistocene deposited the bottom sediments currently observed on the eastern section of Georges Bank, and the sediments have been continuously reworked and redistributed by the action of rising sea level, and by tidal, storm and other currents. The strong, erosive currents affect the character of the biological community. Bottom topography on eastern Georges Bank is characterized by linear ridges in the western shoal areas; a relatively smooth, gently dipping sea floor on the deeper, easternmost part; a highly energetic peak in the north with sand ridges up to 30 m high and extensive gravel pavement; and steeper and smoother topography incised by submarine canyons on the southeastern margin.

The central region of the Bank is shallow, and the bottom is characterized by shoals and troughs, with sand dunes superimposed upon them. The two most prominent elevations on the ridge and trough area are Cultivator and Georges Shoals. This shoal and trough area is a region of strong currents, with average flood and ebb tidal currents greater than 4 km/h, and as high as 7 km/h. The dunes migrate at variable rates, and the ridges may also move. In an area that lies between the central part and Northeast Peak, Almeida *et al.* (2000) identified high-energy areas as between 35 - 65 m deep, where sand is transported on a daily basis by tidal currents, and a low-energy area at depths > 65 m that is affected only by storm currents.

The area west of the Great South Channel, known as Nantucket Shoals, is similar in nature to the central region of the Bank. Currents in these areas are strongest where water depth is shallower than 50 m. This type of traveling dune and swale morphology is also found in the Mid-Atlantic Bight, and further described in that section of the document. The Great South Channel separates the main part of Georges Bank from Nantucket Shoals. Sediments in this region include gravel pavement and mounds, some scattered boulders, sand with storm generated ripples, and scattered shell and mussel beds. Tidal and storm currents range from moderate to strong, depending upon location and storm activity (Valentine, pers. comm.).

<u>Mid-Atlantic Bight</u>

The Mid-Atlantic Bight includes the shelf and slope waters from Georges Bank south to Cape Hatteras, and east to the Gulf Stream. Like the rest of the continental shelf, the topography of the Mid-Atlantic Bight was shaped largely by sea level fluctuations caused by past ice ages. The shelf's basic morphology and sediments derive from the retreat of the last ice sheet, and the subsequent rise in sea level. Since that time, currents and waves have modified this basic structure.

Shelf and slope waters of the Mid-Atlantic Bight have a slow southwestward flow that is occasionally interrupted by warm core rings or meanders from the Gulf Stream. On average, shelf water moves parallel to bathymetry isobars at speeds of 5 - 10 cm/s at the surface and 2 cm/s or less at the bottom. Storm events can cause much more energetic variations in flow. Tidal currents on the inner shelf have a higher flow rate of 20 cm/s that increases to 100 cm/s near inlets.

The shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope (100 - 200 m water depth) at the shelf break. In both the Mid-Atlantic and on Georges Bank, numerous canyons incise the slope, and some cut up onto the shelf itself. The primary morphological features of the shelf include shelf valleys and channels, shoal massifs, scarps, and sand ridges and swales. Most of these structures are relic except for some sand ridges and smaller sand-formed features. Shelf valleys and slope canyons were formed by rivers of glacier outwash that deposited sediments on the outer shelf edge as they entered the ocean. Most valleys cut about 10 m into the shelf, with the exception of the Hudson Shelf Valley that is about 35 m deep. The valleys were partially filled as the glacier melted and retreated across the shelf. The glacier also left behind a lengthy scarp near the shelf break from Chesapeake Bay north to the eastern end of Long Island. Shoal retreat massifs were produced by extensive deposition at a cape or estuary mouth. Massifs were also formed as estuaries retreated across the shelf.

Some sand ridges are more modern in origin than the shelf's glaciated morphology. Their formation is not well understood; however, they appear to develop from the sediments that erode from the shore face. They maintain their shape, so it is assumed that they are in equilibrium with modern current and storm regimes. They are usually grouped, with heights of about 10 m, lengths of 10 - 50 km and spacing of 2 km. Ridges are usually oriented at a slight angle towards shore, running in length from northeast to southwest. The seaward face usually has the steepest slope. Sand ridges are often covered with smaller similar forms such as sand waves, megaripples, and ripples. Swales occur between sand ridges. Since ridges are higher than the adjacent swales, they are exposed to more energy from water currents, and experience more sediment mobility than swales. Ridges tend to contain less fine sand, silt and clay while relatively sheltered swales contain more of the finer particles. Swales have greater benthic macrofaunal density, species richness and biomass, due in part to the increased abundance of detrital food and the physically less rigorous conditions.

Sand waves are usually found in patches of 5 - 10 with heights of about 2 m, lengths of 50 - 100 m and 1 - 2 km between patches. Sand waves are primarily found on the inner shelf, and often observed on sides of sand ridges. They may remain intact over several seasons. Megaripples occur on sand waves or separately on the inner or central shelf. During the winter storm season, they may cover as much as 15% of the inner shelf. They tend to form in large patches and usually have lengths of 3 - 5 m with heights of 0.5 - 1 m. Megaripples tend to survive for less than a season. They can form during a storm and reshape the upper 50 - 100 cm of the sediments within a few hours. Ripples are also found everywhere on the shelf, and appear or disappear within hours or days, depending upon storms and currents. Ripples usually have lengths of about 1 - 150 cm and heights of a few centimeters.

Sediments are uniformly distributed over the shelf in this region. A sheet of sand and gravel varying in thickness from 0 - 10 m covers most of the shelf. The mean bottom flow from the constant southwesterly current is not fast enough to move sand, so sediment transport must be episodic. Net sediment movement is in the same southwesterly direction as the current. The sands are mostly medium to coarse grains, with finer sand in the Hudson Shelf Valley and on the outer shelf. Mud is rare over most of the shelf, but is common in the Hudson Shelf Valley. Occasionally relic estuarine mud deposits are re-exposed in the swales between sand ridges. Fine sediment content increases rapidly at the shelf break, which is sometimes called the "mud line," and sediments are 70 - 100% fines on the slope. On the slope, silty sand, silt, and clay predominate.

The northern portion of the Mid-Atlantic Bight is sometimes referred to as southern New England. Most of this area was discussed under Georges Bank; however, one other formation of this region deserves note. The mud patch is located just southwest of Nantucket Shoals and southeast of Long Island and Rhode Island. Tidal currents in this area slow significantly, which allows silts and clays to settle out. The mud is mixed with sand, and is occasionally resuspended by large storms. This habitat is an anomaly of the outer continental shelf.

Artificial reefs are another significant Mid-Atlantic habitat, formed much more recently on the geologic time scale than other regional habitat types. These localized areas of hard structure have been formed by shipwrecks, lost cargoes, disposed solid materials, shoreline jetties and groins, submerged pipelines, cables, and other materials (Steimle and Zetlin 2000). While some of materials have been deposited specifically for use as fish habitat, most have an alternative primary purpose; however, they have all become an integral part of the coastal and shelf ecosystem. It is expected that the increase in these materials has had an impact on living marine resources and fisheries, but these effects are not well known.

In general, reefs are important for attachment sites, shelter, and food for many species, and fish predators such as tunas may be attracted by prey aggregations, or may be behaviorally attracted to the reef structure.

6.4 Essential Fish Habitat

EFH descriptions and maps for the skate species can be found in the FMP for the Skate Complex and for the other NEFMC-managed species in the NEFMC's 1998 Omnibus EFH amendment. Skate EFH maps are also available for viewing via the Essential Fish Habitat Mapper: http://sharpfin.nmfs.noaa.gov/website/EFH_Mapper/map.aspx. The current EFH text descriptions are linked from this location.

A more detailed discussion of habitat types, as well as biological and physical effects of fishing by various gears in the skate fishery is provided in the 2008 SAFE Report, or Section 7.4.6 of Skate Amendment 3 (NEFMC 2009). An up-dated summary of gear effects research studies that are relevant to the NE region will be included in the revised gear effects section of the NEFMC Omnibus EFH Amendment 2 (Phase 2), which is currently being developed.

6.5 Human Communities/Socio-Economic Environment

The purpose of this section is to describe and characterize the various fisheries in which skates are caught. Descriptive information on the fisheries is included, and where possible, quantitative commercial fishery and economic information is presented.

6.5.1 Overview of the Skate Fishery

The seven species in the Northeast Region skate complex (Maine to North Carolina) are distributed along the coast of the northeast United States from near the tide line to depths exceeding 700 m (383 fathoms). Skates are not known to undertake large-scale migrations, but they do move seasonally in response to changes in water temperature, moving offshore in summer and early autumn and returning inshore during winter and spring. Members of the skate family lay eggs that are enclosed in a hard, leathery case commonly called a mermaid's purse. Incubation time is six to twelve months, with the young having the adult form at the time of hatching (Bigelow and Schroeder 1953). A description of the available biological information about these species can be found in Section 6.1.

Skates are harvested in two very different fisheries, one for lobster bait and one for wings for food. Small, whole skates are among the preferred baits for the regional American lobster (*Homarus americanus*) fishery. The fishery for lobster bait is a more historical and directed skate fishery, involving vessels primarily from Southern New England ports that target a combination of little skates (>90%) and, to a much lesser extent, juvenile winter skates (<10%). The catch of juvenile winter skates mixed with little skates is difficult to differentiate due to their nearly identical appearance.

The bait fishery is largely based out of Rhode Island with other ports (New Bedford, Martha's Vineyard, Block Island, Long Island, Stonington, Chatham and Provincetown) also identified as participants in the directed bait fishery. There is also a seasonal gillnet incidental catch fishery as part of the directed monkfish gillnet fishery, in which skates (mostly winter skates) are sold both for lobster bait and as cut wings for processing. Fishermen have indicated that the market for skates as lobster bait has been relatively consistent. The directed skate fishery by Rhode Island vessels occurs primarily in federal waters less than 40 fathoms from the Rhode Island/Connecticut/New York state waters boundary east to the waters south of Martha's Vineyard and Nantucket out to approximately 69 degrees. The vast majority of the landings are caught south of Block Island in federal waters. Effort on skates increases in state waters seasonally to accommodate the amplified effort in the spring through fall lobster fishery. Skates caught for lobster bait are landed whole by otter trawlers and either sold 1) fresh, 2) fresh salted, or 3) salted and strung or bagged for bait by the barrel. Inshore lobster boats usually use 2 – 3 skates per string, while offshore boats may use 3 – 5 per string. Offshore boats may actually "double bait" the pots during the winter months when anticipated weather conditions prevent the gear from being regularly tended. The presence of sand fleas and parasites, water temperature, and anticipated soak time between trips are determining factors when factoring in the amount of bait per pot.

Size is a factor that drives the dockside price for bait skates. For the lobster bait market, a "dinner plate" is the preferable size to be strung and placed inside lobster pots. Little and winter skates are rarely sorted prior to landing, as fishermen acknowledge that species identification between little skates and small winter skates is very difficult. Quality and cleanliness of the skate are also factors in determining the price paid by the dealer, rather than just supply and demand. The quantity of skates landed on a particular day has little effect on price because there has been ready supply of skates available for bait from the major dealers, and the demand for lobster bait has been relatively consistent. Numerous draggers and lobster vessels have historically worked out seasonal cooperative business arrangements with a stable pricing agreement for skates.

Due to direct, independent contracts between draggers and lobster vessels landings of skates are estimated to be under-documented. While bait skates are always landed (rather than transferred at sea) they are not always reported because they can be sold directly to lobster vessels by non-federally permitted vessels, which are not required to report as dealers.

Lobster bait usage varies regionally and from port to port, based upon preference and availability. Some lobstermen in the northern area (north of Cape Cod) prefer herring, mackerel, menhaden and hakes (whiting and red hake) for bait, which hold up in colder water temperatures; however, the larger offshore lobster vessels still indicate a preference for skates and Acadian redfish in their pots. Some offshore boats have indicated they will use soft bait during the summer months when their soak time is shorter. Skates used by the Gulf of Maine vessels are caught by vessels fishing in the southern New England area.

The other primary market for skates in the region is the wing market. Larger skates, mostly captured by trawl gear, have their pectoral flaps, or wings, cut off and sold into this market. The fishery for skate wings evolved in the 1990s as skates were promoted as "underutilized species," and fishermen shifted effort from groundfish and other troubled fisheries to skates and dogfish. Attempts to develop domestic markets were short-lived, and the bulk of the skate wing market remains overseas. Winter, thorny, and barndoor skates are considered sufficient in size for processing of wings, but due to their overfished status, possession and landing of thorny and barndoor skates has been prohibited since 2003. Winter skate is therefore the dominant component of the wing fishery, but illegal thorny and barndoor wings still occasionally occur in landings (90 day finding for Thorny Skate). The assumed effectiveness of prohibition regulations is thought to be 98% based on recent work that examined port sampling data (90 day finding for Thorny Skate). That means 98% or more of the skates being landed for the wing market are winter skates, so regulations for the wing fishery primarily have an impact on that species.

The wing fishery is a more incidental fishery that involves a larger number of vessels located throughout the region. Vessels tend to catch skates when targeting other species like groundfish, monkfish, and scallops and land them if the price is high enough.

The southern New England sink gillnet fishery targets winter skates seasonally along with monkfish. Highest catch rates are in the early spring and late fall when the boats are targeting monkfish, at about a 5:1 average ratio of skates to monkfish. Little skates are also caught incidentally year-round in gillnets and sold for bait. Several gillnetters indicated that they keep the bodies of the winter skates cut for wings and also salt them for bait. Gillnetters have become more dependent upon incidental skate catch due to cutbacks in their fishery mandated by both the Monkfish and Multispecies FMPs. Gillnet vessels use 12-inch mesh when monkfishing, catching larger skates. Southern New England fishermen have reported increased catches of barndoor skates in the last few years.

Only in recent years have skate wing landings been identified separately from general skate landings. Landed skate wings are seldom identified to species by dealers. Skate processors buy whole, hand-cut, and/or onboard machine-cut skates from vessels primarily out of Massachusetts and Rhode Island. Because of the need to cut the wings, it is relatively labor-intensive to fish for skates. Participation in the skate wing fishery, however, has recently grown due to increasing restrictions on other, more profitable groundfish species. It is assumed that more vessels land skate wings as an incidental catch in mixed fisheries than as a targeted species.

New Bedford emerged early-on as the leader in production, both in landed and processed skate wings, although skate wings are landed in ports throughout the Gulf of Maine and extending down into the Mid-Atlantic. New Bedford still lands and processes the greatest share of skate wings. Vessels landing skate wings in ports like Portland, ME, Portsmouth, NH, and Gloucester, MA are likely to be landing them incidentally while fishing for species like groundfish and monkfish.

The current market for skate wings remains primarily an export market. France, Korea, and Greece are the leading importers. There is a limited domestic demand for processed skate wings from the white tablecloth restaurant business. Winter skates landed by gillnet vessels are reported to go almost exclusively to the wing market. Fishermen indicate that dealers prefer large-sized winter skates for the wing market (over three pounds live weight).

The Northeast skate complex was assessed in November 1999 at the 30th Stock Assessment Workshop (SAW 30) in Woods Hole, Massachusetts. The work completed at SAW 30 indicated that four of the seven species of skates were in an overfished condition: winter, barndoor, thorny and smooth. In addition, overfishing was thought to be occurring on winter skate. In March 2000, NMFS informed the Council of its decision to designate the NEFMC as the responsible body for the development and management of the seven species included in the Northeast Region's skate complex. NMFS identified the need to develop an FMP to end overfishing and rebuild the resources based on the conclusions presented at SAW 30.

During the development of this FMP, the Skate PDT and the NMFS SAW assessment process (http://www.nefsc.noaa.gov/nefsc/saw/) have continued to update the status determinations for the skate species based on the biomass reference points used during SAW 30[2].

The development of the FMP in 2002 and a description of issues that the Council encountered is described in Section 3.2 of the Amendment 3 document (NEFMC 2009). Early problems included a lack of information about the biology of skates, population dynamics, and the fishery. The FMP initially set limits on fishing related to the amount of groundfish, scallop, and monkfish DAS and measures in these and other FMPs to control the catch of skates. Initially, it was thought that barndoor, smooth, rosette, and thorny skates were overfished and that overfishing of winter skate was occurring.

Amendment 3 became effective on July 16, 2010, implementing a new ACL management framework that capped catches at specific levels determined from survey biomass indices and median exploitation ratios. The amendment established a two-year specification cycle and set specifications for the 2010 and 2011

[2] These biological reference points have since been updated by Amendment 3 and revised to account for strata consistently sampled by the FSV Albatross IV and the newer FSV Henry B. Bigelow.

fishing years. After the 2010 fishing year is complete, the amendment tasks the Council and Skate PDT with analyzing the results, updating the indices, and recommending new specifications for the 2012 and 2013 fishing years. These 2012-2013 specifications would also include adjustments to account for prior overages, as accountability measures. This specification document addresses these issues using the process established by Amendment 3.

In addition to the ACL framework and accountability measures, the amendment also included technical measures that reduced the skate wing possession limit from 20,000 (45,400 whole weight) to 5,000 (11,350 whole weight) lbs. of skate wings, established a 20,000 lb. whole skate bait limit for vessels with skate bait letters of authorization, and allocated the skate bait quotas into three seasons proportionally to historic landings.

The ACL specifications for the 2010 and 2011 fishing years were set using a three year (2006-2008) skate biomass average applied to the median exploitation ratio (the length of the time series varies by skate species) to set an ACL, reduced by 25% to an ACT that accounts for scientific and management uncertainty, reduces the ACT by the estimated discard rate in 2006-2008 (2009 discard estimates were not yet available), and allocates the remainder to allowable landings which were split 66.5/33.5% between the skate wing and bait fisheries, respectively. A small amount (3%) was set aside for skate landings by vessels fishing in state waters without a federal skate permit.

Framework Adjustment 1 evaluated alternatives for setting a lower skate wing possession limit to keep landings below the 9,209 mt TAL and keep the fishery open year around. Landings and discards for 2009 were however updated and included in the Framework Adjustment 1 analysis. New daily landings data for 2010 were also included to estimate an appropriate possession limit. The industry also advised that a lower limit in May-Aug would enhance economic value in Sep-Apr when prices and skate quality were better. And for various reasons, the skate wing landings in 2010 were higher than projected they would be with both a 20,000 lbs. possession limit before July 16, 2010 and a 5,000 lbs. possession limit after Amendment 3 implementation.

While the 20,000 lb. skate wing possession limit was effective before July 16, 2010 the skate wing landings nearly doubled compared to the same period in 2009. Furthermore, the daily landings of skate wings only declined by 19% when the 5,000 lb. skate wing possession limit was in effect from July 16 to September 3, 2010, compared to the same time period in 2009. Once the 500 lbs. incidental skate wing limit became effective on September 3, 2010 the daily wing landings dropped and it appears that the skate wing TAL will be exceeded only by a small amount, despite the high landings under the 20,000 lb. possession limit early in the fishing year. Discards on some trips have undoubtedly increased, but the reduced possession limit will prevent boats from making trips to target skates, the reduced mortality possibly offsetting most or all of this anticipated increase in discards on trips targeting non-skate species. Therefore the effect on total discards is unknown at this point.

As a result of the Framework Adjustment 1 analysis, the Council set a 2,600 lbs. skate wing possession limit from May 1 to Aug 30, 2011 and a 4,100 lbs. skate wing possession limit from Sep 1, 2011 to Apr 30, 2011.

During the end of the 2010 fishing year (Jan – Apr), the Skate PDT developed the analyses needed to update the ACL with new data, including calibrations of the survey tow data collected by the new FSV Bigelow in 2009-2011 and recent discard mortality research for little and winter skates captured by vessels using trawls.

Even without consideration of this change in survey methodology, substantial increases in skate biomass had been observed in 2008-2010 compared with the 2006-2008 period used in Amendment 3 to set 2010-

2011 specifications. In particular, the three year average biomass for little skate increased from 5.04 kg/tow (unadjusted strata) to 7.848 kg/tow and for winter skate from 5.230 kg/tow (unadjusted strata) to 9.684 kg/tow (see table below).

The Amendment 3 ACL framework allows the Council to set an aggregate skate ACL that is the product of a three year average stratified mean biomass and the median exploitation ratio (catch/biomass) through 2007. These parameters were chosen to be somewhat conservative and hence take into account scientific uncertainty. From this ACL value, the FMP specification process deducts a 25% buffer to account for management uncertainty to set an ACT and then deducts an assumed discard rate (updated to the 2008-2010 dead discards) to set a TAL, allocated between the skate bait and wing fisheries, according to historic share established by Amendment 3. The re-estimated discard rate also incorporates new discard mortality estimates for little (20%) and winter (12%) skates captured by trawls.

6.5.1.1 Catch

The skate fishery caught 56% of the overall ACL in FY 2012; this was a decrease on FY 2011 landings (Table 8). No AMs were triggered in FY 2012 as there was no overage. The wing fishery caught 70.5% of the wing TAL; the bait fishery caught 76.2% of the bait TAL. State landings in FY 2012 were 1,407 mt. Total discards in FY 2012 were 11,179 mt.

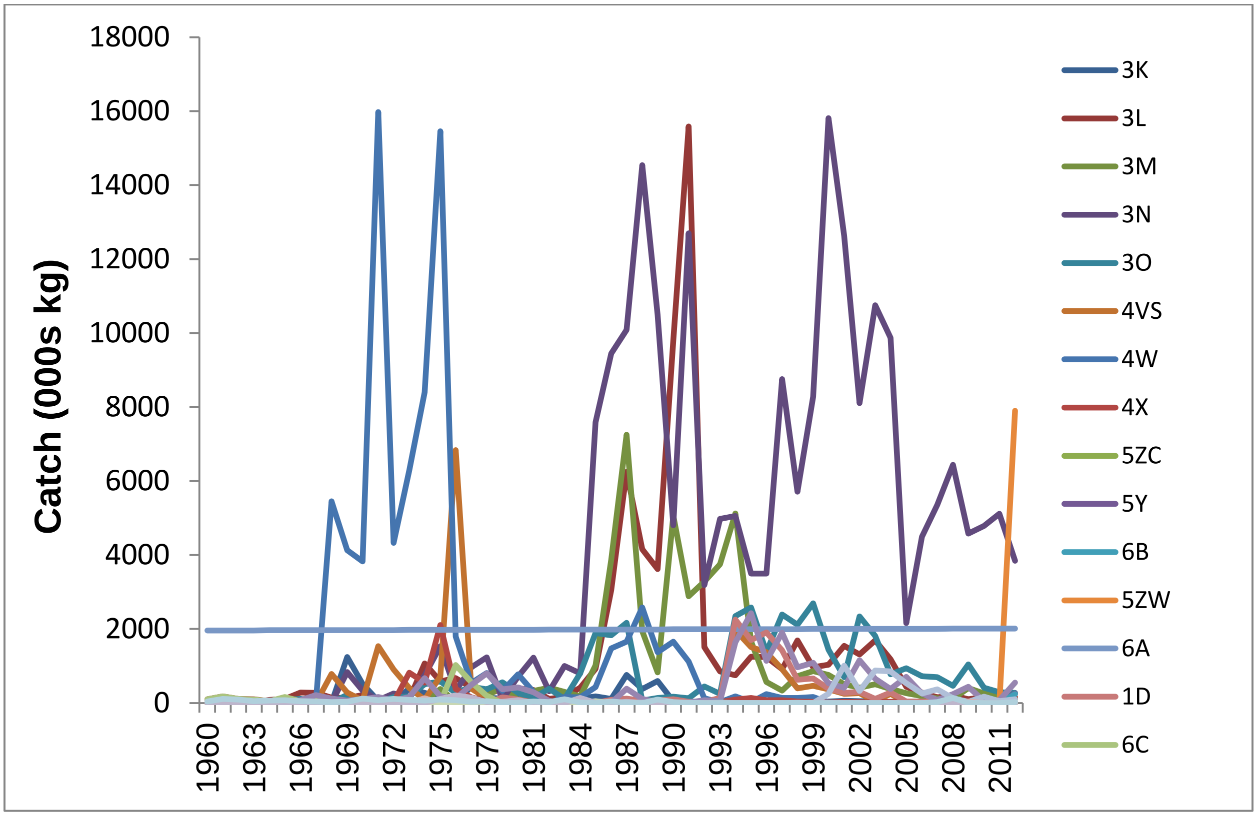
Table 8 – Skate catch and landings (mt) in FY 2011 and 2012

	2011		**2012**	
Management Specification	Specification Amount	Catch/Landings (mt)	Specification Amount	Catch/Landings
ABC/ACL	50,435	32,187	50,435	28,203
ACT	37,826	32,187	37,826	28,203
Assumed Discards + State Landings	16,265	16,265	14,461	12,586
TAL (Bait + Wing)	21,561	15,922	23,365	15,617
TAL Bait	7,223	4,132	7,827	5,504
TAL Wings	14,338	11,790	15,538	10,113

6.5.1.2 Canadian skate landings

Historical information on Canadian skate fisheries and management was described in the 2000 SAFE Report for skates, and can also be found in Swain et al. (2006) and Kulka et al. (2007), and the 2012-2013 specifications package (NEFMC 2012). NAFO skate catches by division were updated through 2012 (Figure 1).

Figure 1 - NAFO Skate Catch by division, 1960-2012



6.5.1.3 Recreational skate catches

In general, skates have little to no recreational value and are not intentionally pursued in any recreational fisheries. Catch information (2009-2012) for Atlantic coast skates from MRIP is presented in Table 9. Recreational skate catches have declined from 61,102 lbs. in 2009 to 4,062 in 2012 (Table 9).

Recreational *harvest* of skates (MRFSS A+B1 data), where skates were retained and/or killed by the angler, vary by species and state (please refer to the MRIP website for these data http://www.st.nmfs.noaa.gov/st1/recreational/queries/). The vast majority of skates caught by recreational anglers are considered released alive, but do not account for post-release mortality caused by hooking and handling.

New Jersey, New York, Rhode Island, and Virginia reported the largest recreational skate catches over the time series (please refer to the MRIP website for these data http://www.st.nmfs.noaa.gov/st1/recreational/queries/). Recreational fishers in Maine did not report catching any skates between 2009 and 2013. Landings by species varied by state; clearnose skate was caught by more states further south (please refer to the MRIP website for these data http://www.st.nmfs.noaa.gov/st1/recreational/queries/).

Reliability of skate recreational catch estimates from MRFSS is a concern. Total catch estimates (A+B1+B2), however, appear to be more reliable than harvest estimates (A+B1 only). Since skates are not valuable and heavily-fished recreational species, the number of MRFSS intercepts from which these estimates are derived is likely to have been very low. The fewer intercepts from which to extrapolate total catch estimates there are, the less reliable the total catch estimates will be.

Table 9 - Estimated recreational skate harvest (lbs) by species, 2009-2012 (A+B1)

	Winter	Smooth	Clearnose	Little	Total
2009	0	0	61,074	28	61,102
2010	4,505	0	45,740	0	50,245
2011	0	173	37,130	1,423	38,726
2012	1,772	0	2,290	0	4,062

Source: NMFS/MRIP (PSE >50 for all values indicating imprecise estimates)
http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/index
No reported harvest for species not listed.

6.5.1.4 Landings by fishery and DAS declaration

Note that NMFS estimates commercial skate landings from the dealer weighout database and reports total skate landings according to *live weight* (i.e., the weight of the whole skate). This means that a conversion factor is applied to all wing landings so that the estimated weight of the entire skate is reported and not just the wings. While *live weight* is necessary to consider from a biological and stock assessment perspective, it is important to remember that vessels' revenues associated with skate landings are for *landed weight* (vessels in the wing fishery only make money for the weight of wings they sell, not the weight of the entire skate from which the wings came).

Due to the relative absence of recreational skate fisheries, virtually all skate landings are derived from regional commercial fisheries. Skates have been reported in New England fishery landings since the late 1800s. However, commercial fishery landings never exceeded several hundred metric tons until the advent of distant-water fleets during the 1960s (for a full description of historic landings please refer to Amendment 3, NEFMC, 2009). Total skate landings have fluctuated between two levels between FY 2009 and 2012 (Table 10). The fluctuations in landings are largely attributable to the wing fishery as landings in the bait fishery have remained relatively stable (Table 11). It is not clear what is driving the trend in wing landings as quota is not thought to be limiting to the fishery. One potential explanation is the decrease in winter skate survey index that suggests fewer winter skate were available to the fishery.

Table 10 – Total Landings in the Skate Fisheries

Fishing Year	Landings (in lbs)
2009	41,634,696
2010	32,347,014
2011	41,103,304
2012	33,084,082
Grand Total	148,169,096

Table 11 – Landings by Skate Fishery Type

FY	Disposition	Landings (in lbs)
2009	Bait	9,049,822
	Wing	32,584,874
2010	Bait	10,020,271
	Wing	22,326,743
2011	Bait	10,861,122
	Wing	30,242,182
2012	Bait	10,789,031
	Wing	22,295,051
Grand Total		148,169,096

Total fishing revenue from all species on active skate vessels also declined in 2012 (Table 12).

Table 12 - Total fishing revenue (all species) from active skate vessels

Year	Total Revenue
2009	603,863,486
2010	724,533,778
2011	725,270,981
2012	690,935,796
Grand Total	**2,744,604,041**

Landings by DAS declaration indicate that a large portion of bait is landed while on a multispecies (sector and common pool) trip (Table 13). Landings under a monkfish declaration may be underestimated because of reporting. A large amount of total skate landings have no associated declaration. The majority of the wing landings are associated with monkfish trips. The skate wing fishery is predominantly an incidental fishery, where skate wings are harvested on trawl and gillnet trips primarily targeting more valuable NE multispecies (cod, haddock, flounders, etc.) and/or monkfish. Therefore, the fishing effort associated with the skate wing fishery can be directly tied to effort patterns and constraints in these other fisheries. Fishing effort for skate wings will tend to only increase when DAS allocations and usage increase (and vice versa), which may occur independently of skate quotas. Similarly, the rate and magnitude of skates discarded by these fisheries are directly proportional to DAS usage.

Table 13 - Total skate landings (lbs live weight) by DAS program, FY2012.

VMS Declaration	Bait	Wing
Mults Sector	1,702,725	1,903,586
Mults Common	1,358,315	6,943,323
Monkfish	53,780	8,580,391
Scallop	15,375	41,991
Unmatched/No Declaration	4,961,386	4,044,169
DOF	2,697,450	781,750
Total	10,789,031	22,295,210

Source: NMFS, Fisheries Statistics Office

6.5.1.5 Trends in number of vessels

The number of skate permits has declined between FY 2009 and 2012. On a broader time scale, between FY2003 and 2013, there was an increase in skate permits with a high occurring in 2007 (Table 14).

Table 14 - Number of Skate Permits issued

AP_Year	Number of skate permits issued
2003	1,968
2004	2,391
2005	2,632
2006	2,675
2007	2,685
2008	2,633
2009	2,574
2010	2,503
2011	2,326
2012	2,265
2013	2,043

The number of active permits has decreased between 2009 and 2012 (Table 15). This decrease may contribute to the observed trend in wing landings shown in Table 11, with fewer active permits in years with lower landings.

Table 15 - Number of Active Permits between 2009 and 2012

FY	Number of active permits
2009	571
2010	547
2011	561
2012	525

6.5.1.6 Trends in revenue

Skate revenue decreased in FY2012 despite quota not being limiting (Table 16). The decrease in revenue is largely attributable to changes in wing revenue and landings (Table 17).

Table 16 – Total Skate Revenue

FY	Revenue
2009	$ 7,380,043
2010	$ 7,786,423
2011	$ 8,419,911
2012	$ 6,645,435
Grand Total	$ 30,231,812

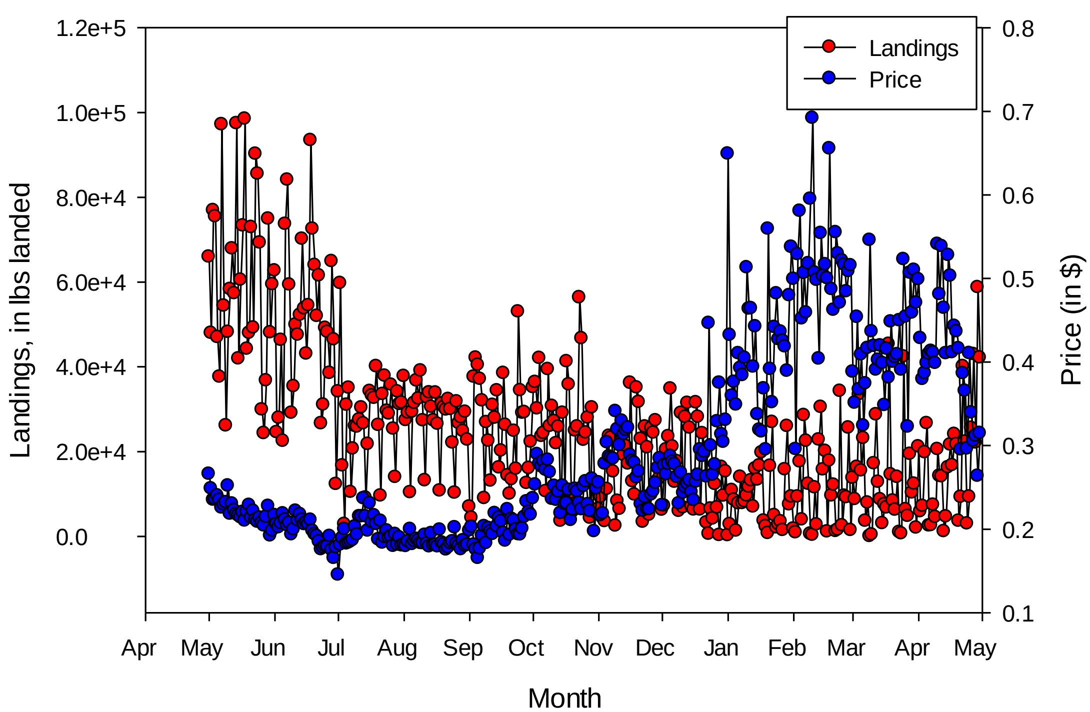
Table 17 - Total Skate Revenue by Fishery (Bait and Wing)

FY	Disposition	Revenue
2009	Bait	$ 872,669
	Wing	$ 6,507,374
2010	Bait	$ 2,624,844
	Wing	$ 5,161,579
2011	Bait	$ 1,128,278
	Wing	$ 7,291,633
2012	Bait	$ 1,113,427
	Wing	$ 5,532,008
Grand Total		$ 30,231,812

6.5.1.7 Skate prices

For a historic account of trends in skate prices in relation to market supply and demand, refer to the FEIS of Amendment 3. In FY2012, wing prices increased throughout the fishing year, while landings appear to decline (Figure 2). Amendment 3 analyses identified an inverse relationship between domestic supply of wings and price, as would be expected with an elastic supply and demand response.

Figure 2 - Relationship between skate wing prices and landings since May 1, 2012. *Prices for skate wings were 2.27 times the converted whole skate prices shown in the figure*.



6.5.2 Fishing Communities

There are over 100 communities that are homeport to one or more Northeast groundfish fishing vessels. These ports occur throughout the coastal northeast and mid-Atlantic. Consideration of the social impacts on these communities from proposed fishery regulations is required as part of the National Environmental Policy Act (NEPA) of 1969 and the Magnuson Stevens Fishery Conservation and Management Act, 1976. Before any agency of the federal government may take "actions significantly affecting the quality of the human environment," that agency must prepare an Environmental Assessment (EA) that includes the integrated use of the social sciences (NEPA Section 102(2)(C)). National Standard 8 of the MSA stipulates that "conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities" (16 U.S.C. § 1851(a)(8)).

A "fishing community" is defined in the Magnuson-Stevens Act, as amended in 1996, as "a community which is substantially dependent on or substantially engaged in the harvesting or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community" (16 U.S.C. § 1802(17)). Determining which fishing communities are "substantially dependent" on, and "substantially engaged" in, the groundfish fishery can be difficult. In recent amendments to the fishery management plan the council has categorized communities dependent on the groundfish resource into primary and secondary port groups so that community data can be cross-referenced with other demographic information. Descriptions of 24 of the most important communities involved in the multispecies fishery and further descriptions of North East fishing communities in general can be found on North East Fisheries Science Center's website (http://www.nefsc.noaa.gov/read/socialsci/community_profiles/).

Although it is useful to narrow the focus to individual communities in the analysis of fishing dependence there are a number of potential issues with the confidential nature of the information. There are privacy concerns with presenting the data in such a way that proprietary information (landings, revenue, etc.) can be attributed to an individual vessel or a small group of vessels. This is particularly difficult when presenting information on small ports and communities that may only have a small number of vessels and that information can easily be attributed to a particular vessel or individual.

6.5.2.1 Overview of Ports

There were a total of 75 ports where skate were landed in 2012. They include ports from all states in the Northeast plus North Carolina. Skate bait was landed in 17 ports in 2012 with skate wings landed in 72 ports. This represented a decrease in landings and number of ports for the wing fishery on 2011 (79 bait ports), while the bait fishery remained relatively constant in terms of landings but decreased in number of ports (24 ports in 2011). New Bedford, MA and Chatham still dominate skate landings. New Bedford and Chatham dominate skate wing landings, and Point Judith dominates skate bait landings.

Only 31 ports received at least $10,000 in FY 2012 from skate; 13 ports receive at least $100,000 per year. New Bedford, MA, Point Judith, RI, and Chatham, MA were the highest grossing ports. There are 43 ports that landed at least 10,000 lbs of skate. As expected the top ports in landings were Point Judith, Chatham and New Bedford.

Table 18 outlines commercial landings of skates by individual states from FY2009 – FY2012. Massachusetts and Rhode Island continue to dominate the skate fishery, in most years. Skate landings fluctuate by year in both fisheries. Skate bait was landed primarily in Point Judith, Tiverton, Newport, New Bedford and Stonington (CT). Secondarily, bait skate is landed in, Chatham and Provincetown. Point Judith's landings have accounted for 39-67% of bait landings between 2000 and 2007. Point Judith landings have declined somewhat in recent years, while landings in Newport, Tiverton and New Bedford have risen significantly. Other ports such as Montauk have individual vessels which sell skate directly to lobster and other pot fishermen for bait, though there are no major skate bait dealers here. Bait skate is primarily landed by trawlers, often as a secondary species while targeting monkfish or groundfish. Since 2003, with the implementation of the original Skate FMP, all vessels landing skate must be on a groundfish Day-at-Sea (DAS).

New Bedford is one of the major skate wing or food skate ports. Skate wings are also landed significantly in Gloucester, Chatham, Point Judith, Boston and Barnegat Light. Secondarily they are landed in Portland. Since 2000, skate wing landings in Provincetown have been on the decline, while Chatham landings have risen. Both trawlers and gillnets catch food skate. Some trawlers target skate, with others catching skate as a bycatch. Most of the gillnet vessels are targeting skate. The gillnets are based largely in Chatham but also in New Bedford. There is a very small skate wing fleet in Virginia, though it has dramatically declined in recent years. Most of these are monkfish gillnets though some draggers caught skate as a bycatch at the height of the fishery.

Table 18 - Total Skate landings by fishery and state

FY	DISPOSITION	STATE	Revenue (in $)	Landings (in lbs)
2009	Bait	CT	486	100
		MA	200,079	2,043,465
		MD	35	175
		NJ	46,010	349,032
		RI	620,709	6,593,550
		VA	5,350	63,500
	Bait Total		872,669	9,049,822
	Food	CT	92,313	544,411
		MA	4,833,231	23,537,183
		MD	18,328	139,747
		ME	2,076	5,813
		NC	548	3,725
		NH	3,605	14,555
		NJ	385,823	2,174,166
		NY	288,283	1,458,601
		RI	835,257	4349,024
		VA	47,910	357,649
	Food Total		6,507,374	3,2584,874
2010	Bait	CT	1,569,279	644,244
		MA	250,956	1,599,765
		MD	934	8,496
		NJ	48,814	516,887
		RI	753,110	7,241,592
		VA	1,751	9,287
	Bait Total		2,624,844	10,020,271
	Food	CT	168,252	423,848
		MA	2,646,071	12,065,409
		MD	16,530	65,514
		ME	4,647	10,012
		NC	5,673	17,361
		NH	1,784	6,966
		NJ	609,734	2,661,087
		NY	520,774	2,128,177
		RI	1,081,201	4,341,377
		VA	106,913	606,992
	Food Total		5,161,579	22,326,743
2011	Bait	CT	5,385	23,950
		MA	293,792	2,478,875
		MD	120	13,270

		NJ	32,792	575,919
		NY	75	227
		RI	796,114	7,766,581
		VA	0	2,300
	Bait Total		1,128,278	10,861,122
	Food	CT	171,173	786,312
		MA	4,089,342	15,898,905
		MD	18,389	96,489
		ME	2,208	7,334
		NC	1,117	4,976
		NH	2,740	9,751
		NJ	752,122	3,652,368
		NY	472,707	2,232,517
		RI	1,688,054	7,043,150
		VA	93,781	510,380
	Food Total		7,291,633	30,242,182
2012	Bait	CT	5,394	23,425
		MA	194,896	1,533,632
		MD	104	10,400
		NJ	43,987	752,578
		NY	62	357
		RI	868,893	8,467,734
		VA	91	905
	Bait Total		1,113,427	10,789,031
	Food	CT	249,343	1,160,436
		MA	2,918,637	11,788,996
		MD	5,244	23,419
		ME	999	3,707
		NC	105	411
		NH	1,412	4,737
		NJ	386,999	1,550,114
		NY	513,241	2,184,773
		RI	1,374,112	5,219,176
		VA	81,916	359,282
	Food Total		5,532,008	22,295,051
Grand Total			30,231,812	148,169,096

6.5.3 Skate Dealers

There were 130 skate dealers in 2012. Based on dealer data Massachusetts and Rhode Island dominated landings and revenue in 2012 (Table 19).

Table 19 - Landings and Revenue by State from Dealer Data for FY 2012

FY	Disposition	State	Revenue (in $)	Landings (in lbs.)
2012	**Bait**	CT	5,394	23,425
		MA	194,896	1,533,632
		MD	104	10,400
		NJ	43,987	752,578
		NY	62	357
		RI	868,893	8,467,734
		VA	91	905
	Bait Total		**1,113,427**	**10,789,031**
	Food	CT	249,343	1,160,436
		MA	2,918,637	11,788,996
		MD	5,244	23,419
		ME	999	3,707
		NC	105	411
		NH	1,412	4,737
		NJ	386,999	1,550,114
		NY	513,241	2,184,773
		RI	1,374,112	5,219,176
		VA	81,916	359,282
	Food Total		**5,532,008**	**22,295,051**

6.5.4 Skate Fishing Areas

Vessels landing bait skate generally fish in the inshore waters of SNE, are most often trawlers, and frequently fish in an exempted fishery (Figure 3).

Vessels landing skates for the wing market generally fish on Georges Bank, in the Great South Channel near Cape Cod, or west of the Nantucket Lightship Area in Southern New England (SNE) waters. Gillnet wing vessels often also fish east of Cape Cod (Figure 4).

Vessels that land skate as a bycatch often fish in Massachusetts Bay and on Georges Bank. Scallop dredges with general category permits often catch skate while fishing in the Great South Channel. There is also a mixed monkfish/skate fishery west of the Nantucket Lightship Area and off northern New Jersey, near Point Pleasant.

Figure 3 - Skate bait landings by statistical area for FY 2012

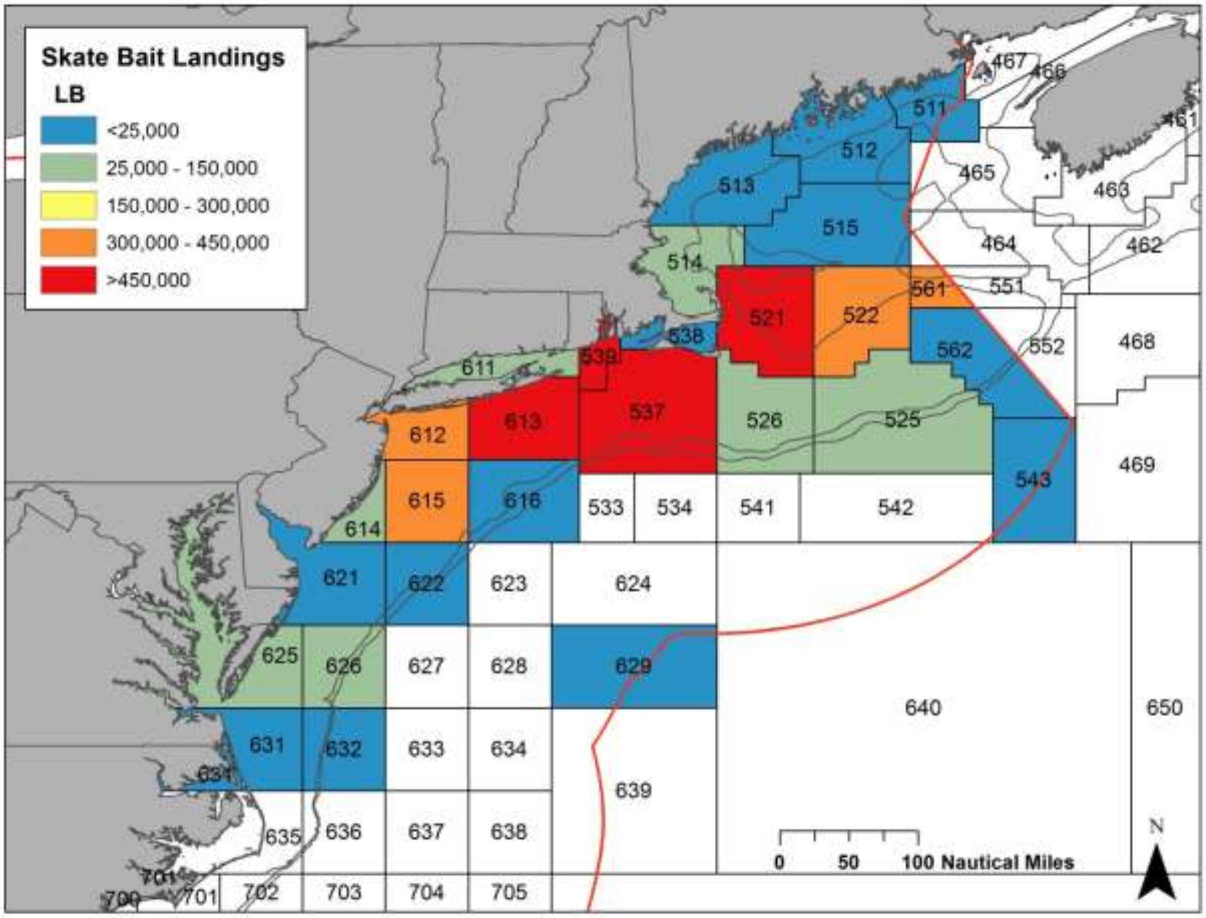
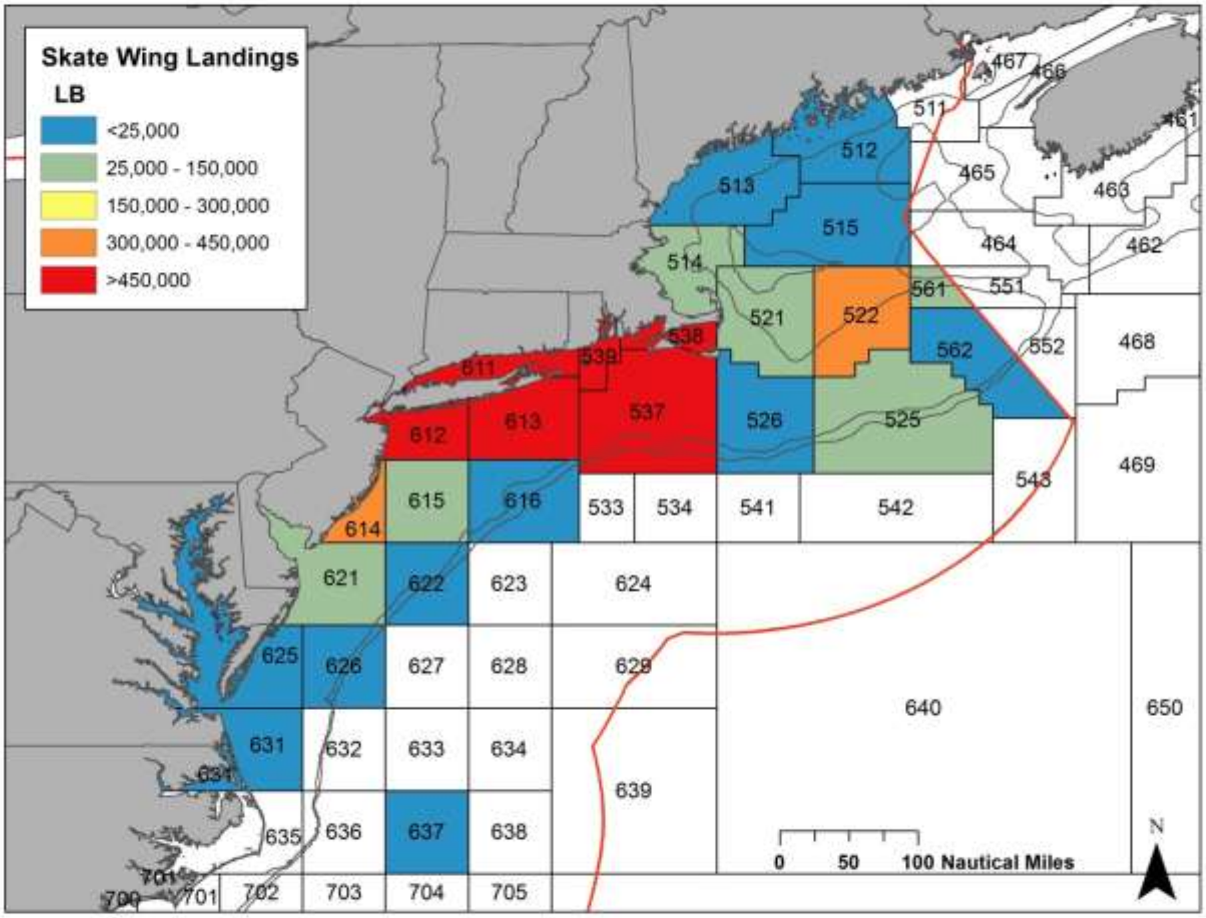


Figure 4 - Skate wing landings by statistical area for FY 2012



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7.0 ENVIRONMENTAL CONSEQUENCES (EA)

7.1 Biological Impacts

7.1.1 Updates to Annual Catch Limits

7.1.1.1 Option 1: No Action (ACL =ABC of 50,435 mt, ACT of 37,826mt, TAL of 23,365 mt, Wing TAL=15,538 mt, Bait TAL=7,827 mt)

The No Action alternative would maintain the ACL specifications as those established in the 2012-2013 specifications package (NEFMC, 2012). This would allow a higher than recommended catch at a time when survey indices have decreased for five of the seven skate species, which may negatively impact the complex. Thorny and winter skates are experiencing overfishing; barndoor, thorny and smooth skates are in rebuilding plans. Allowing a higher ACL than is suggested appropriate by the survey indices (See Option 2, ACL=35,479), could hinder rebuilding of species experiencing overfishing. This alternative would not incorporate the best available science; it would not utilize the most recent survey indices or revised discard mortality rate estimates for trawl gear. Therefore, the No Action alternative would have a moderate, negative impact on the skate resource. Option 1 would also have a moderately negative impact on the skate complex when compared to Option 2.

7.1.1.2 Option 2: Revised Annual Catch Limit Specifications (ACL= ABC of 35,479 mt, ACT of 27,275 mt, TAL of 18,001 mt, Wing TAL =11,169, Bait TAL 5,626) (*Preferred Alternative)*

Option 2 would revise the ACL for the skate complex using the most recent best available science – revised survey indices and discard mortality rate estimates. The revised ACL was calculated using the revised median catch/biomass exploitation ratio (updated with the revised discard mortality rate estimates for trawl gear) and the most recent 3 year moving average of the relevant NEFSC trawl survey. Catches at or below the median catch/biomass exploitation ratio have shown a tendency for biomass to increase more frequently and by a greater amount than catches that were above the median exploitation ratio [see Appendix I of Amendment 3 (NEFMC 2009)].

The biological impacts of the ACL and allocations to discards and catch result mainly from preventing overfishing and keeping catches below a level that has been shown in Amendment 3 to produce larger and more frequent increases in skate biomass[3]. Variations in landings and discards may cause catch to exceed the ACT and any overages of the risk-adverse ACT will be absorbed by the 25% management uncertainty buffer. Any overages of the ACL will trigger accountability measures. Thus it is highly unlikely that skate catches will exceed the ACL. A more detailed review of this analysis is given in Appendix 1, Document 4 of Amendment 3 (NEFMC 2009).

Skates are ubiquitous in most fisheries and are caught by most gear types. A smaller number of trips landed the full wing possession limit indicating a small directed fishery (Figure 5); the majority of landings were below the wing possession limit, suggesting that the incidental fishery takes advantage of the additional revenue from skates. The reduced ACL is not likely to affect fishing effort (in directed or incidental fisheries), unless the incidental trip limit is triggered, which may impact fisheries that also land skate, e.g. monkfish because of the high levels of skates also caught in this fishery. The decrease in ACL would be expected to positively impact overall skate biomass based on the relationship between catch and

[3] Projections based on analytical models are not available however because the attempted analytical stock assessment models have not been reliable for management (NEFSC 2007b).

biomass. The decreased ACL would potentially decrease overall skate landings but since the fishery has not achieved its TAL in the past, this may not result in a large reduction in landings and have more of a neutral impact. This could address overfishing on winter skate by reducing the total amount landed. Reduced landings may increase discards, however, possession of barndoor, thorny, and smooth skates is currently prohibited. Combined with the limited mortality of discarded skates (add reference to discard section in Affected environment) a potential increase in discards would have a minor positive to neutral impact on skate biomass. Only if effort shifts away from where these species are found could a change positively impact these species. Therefore we expect a neutral impact on the skate resource, and minor positive impacts when compared to the No Action.

Table 20 - Current and proposed 2012-2013 specifications including changes in input parameters: C/B exploitation medians, updated stratified mean biomass in FSV Albatross IV units, and an average mean discard mortality rate weighted by estimated discards by species and fishing gear.

	Current Specifications **2008-2011 survey, 2008-2011 discards**	**Proposed 2014-2015 Specifications** **2010-2012 survey; 2010-2012 discards**
ACL specifications		
ABC/ACL (mt)	50,435	35,479
ACT (mt)	37,826	27,275
TAL (mt)	24,088	18,001
Assumed state landings	723	1206
Federal TAL	23,365	16,795
Wing TAL	15,538	11,169
Bait TAL	7,827	5,626
C/B medians		
Barndoor	2.938	2.64
Clearnose	5.910	3.98
Little	2.384	2.14
Rosette	3.622	2.57
Smooth	2.388	2.80
Thorny	2.300	1.27
Winter	2.256	1.83
Survey biomass (mean kg/tow)		
Barndoor	1.114	1.22
Clearnose	0.933	0.97
Little	7.848	7.11
Rosette	0.040	0.033
Smooth	0.161	0.23
Thorny	0.245	0.18
Winter	9.684	6.68
Discard rate	36.3%	34%

7.1.2 Skate Wing Possession Limit Alternatives

7.1.2.1 Option 1: No Action – 2,600 lbs from May 1 to Aug 31; 4,100 lbs from Sept 1 to Apr 30 *(Preferred Alternative)*

The No Action alternative would keep the current possession limits as set in Framework Adjustment 1. An analysis conducted in FW1 indicated that mortality decreased as possession limits decreased. This alternative therefore is expected to have low negative impacts on the skate complex when compared to Option 2 because this option allows a higher possession limit, but more positive impacts when compared to Option 3. In 2010, wing possession limits were set at 5,000 lbs that resulted in a short directed fishery before the 85% TAL trigger was reached resulting in an incidental trip limit of 500 lbs for the remainder of the fishing year. The incidental trip limit, if triggered early in the season, can greatly increase skate discards and could hinder more profitable fishing if a high level of skate is encountered that can't be landed and makes fishing difficult. Therefore the No Action alternative would have positive impacts when compared to Option 3.

The skate specifications methodology was designed to prevent overfishing of the skate complex. Provided the wing fishery does not exceed its TAL, this alternative is not expected to negatively impact the skate complex. The wing TAL set in the 2012-2013 specifications package was not achieved in FY2012. The TAL proposed in FW2 is more likely to be achieved under this No Action alternative than under Option 2. This alternative would have neutral to low negative impacts on the complex because it is unlikely to cause the skate wing TAL to be exceeded.

7.1.2.2 Option 2: Revised Skate Wing Possession Limit – 1,500 lbs from May 1 to Aug 31; 2,400 lbs from Sept 1 to Apr 30

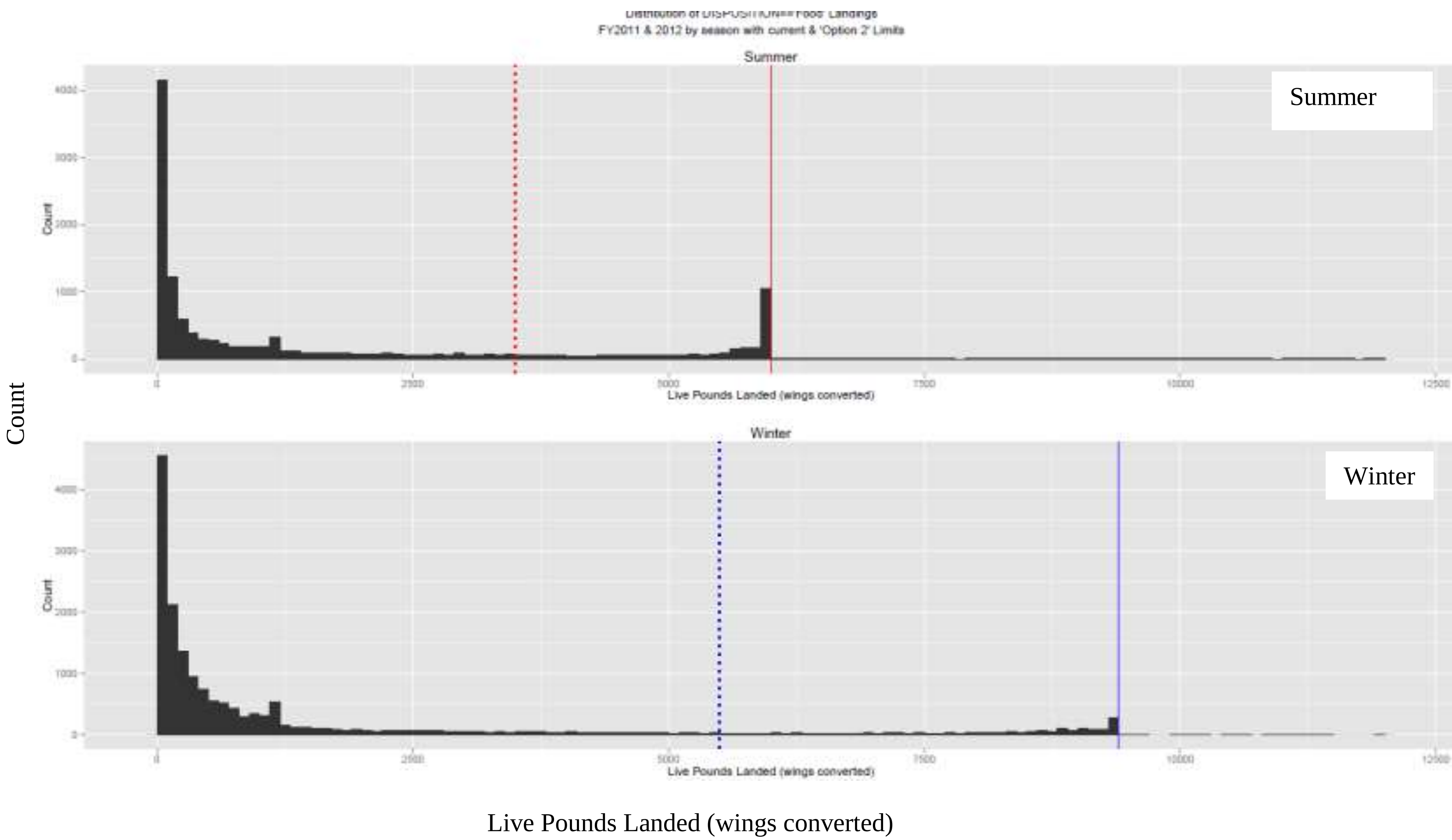
Option 2 would reduce the trip limits to a level that would not trigger the incidental trip limit. The limits were set to prevent overages of the TAL, not reduce effort on skate. This measure would reduce directed effort and allow the fishery to be executed for the entire fishing year, however, it is likely to increase discards of skate and not impact overall skate effort. It would be expected to have a positive impact on the complex as skate mortality is expected to decrease with decreasing possession limits.

The main biological effect of the skate wing possession limit is on the discard mortality, as a proportion of total catch. With a low possession limit, the fishery may not be able to land the allocated TAL and optimum yield will not be achieved. With a high possession limit, the fishery may reach the 85% TAL trigger early in the season (as it did during FY 2010) and skates will be discarded on trips that target other species and whose catch exceeds the 500 lbs. incidental skate wing limit[4]. The TAL trigger results in a 500 lbs trip limit for the remainder of the FY resulting in the closure of the directed skate fishery. This effect may be exacerbated by vessels fishing for skates in state waters in response to the stricter skate regulations in Federal waters and by vessels that target other species in lieu of skates, but continue to discard incidental catches of skates. In order to minimize biological impacts on skates and other species, the skate wing possession limit should be set at a level that will 1) allow the fishery to take the skate wing TAL and 2) will not close the directed skate fishery early. It is also possible that the effects on barndoor, smooth, and thorny skates will be greater if the skate fishery closes early and vessels shift effort onto other species that may have a greater interaction with these skates.

[4] Framework Adjustment 1 (NEMFC 2011) considered and proposed raising the incidental skate possession limit from 500 to 1,250 lbs. to reduce discards but this measure was disapproved by NMFS.

Based on an examination of seasonal wing landings for FY2011 and FY2012 combined, approximately 5,000 trips would have exceeded the proposed trip limits under Option 2 (Figure 5). This alternative may impede the fishery from landing its TAL.

Figure 5- Frequency of trips landing wings by weight for FY 2011 and FY 2012 by season



Examining the relationship between landings and price shows an increase in price per pound of landed skate occurred in the second half of the fishing year (Figure 2). The fishery landed more skate at the beginning of the fishing year under the lower trip limit. In FY 2012, there could be more vessels landing skates, existing vessels in the skate fishery took more trips, or vessels landed more of their skate catch when targeting other species. The only changes in impacts caused by the first two responses above are economic. The last response (landing more skates that are caught while targeting other species) might not change the amount of skates captured, but fewer skates would be discarded (and, as a result, fewer would as a result survive when the discard mortality is less than 100%). Option 2 would have slightly more positive impacts compared to Option 1and 3 because of decrease possession limits which are expected to decrease mortality.

7.1.2.3 Option 3: Revised Skate Wing Possession Limit – 5,000 lbs year round

This Option would result in a higher trip limit that was maintained throughout the year. This Option would be expected to have greater negative biological impacts than Options 1 and 2. This Option would be more likely to result in an overage of the TAL and triggering of the incidental trip limit (Table 24) when compared to behavior in previous fishing years In 2010, wing possession limits were set at 5,000 lbs that resulted in a short directed fishery before the 85% TAL trigger was reached resulting in an incidental trip limit of 500 lbs for the remainder of the fishing year. The incidental trip limit, if triggered early in the season, can greatly increase skate discards and could hinder more profitable fishing if a high level of skate is encountered that can't be landed and makes fishing difficult. The trip limits were designed to prevent an overage of the TAL and not to reduce fishing effort on skate. This Option would not prevent the likelihood of overfishing occurring on a species; after the incidental trip limit was triggered, the level of discarding of skate would increase. The incidental trip limit would reduce directed skate trips but could shift effort onto other species managed under other FMPs. Therefore Option 3 would have a moderate negative impact on the skate resource and greater negative impacts compared to Options 1 and 2.

7.1.2.4 Option 1: No Action – 25,000 lbs year round (*Preferred Alternative*)

This alternative would maintain the skate bait possession limit at 25,000 lbs. An analysis conducted in FW1 indicated that mortality decreased as possession limits decreased. This alternative therefore is expected to have low negative impacts on the skate complex when compared to Option 2. However, the skate specifications were designed to prevent overfishing of the complex. The bait fishery has not exceeded its TAL in recent fishing years. Provided the bait fishery does not exceed its TAL, this alternative would have minimal impacts to the skate complex. This alternative would have neutral to low negative impacts on the complex because it would not cause the skate bait TAL to be exceeded.

7.1.2.5 Option 2: Revised Skate Bait Possession Limit – 20,000 lbs year round

This Option would reduce the skate bait possession limit to 20,000 lbs. An analysis conducted in FW1 indicated that mortality decreased as possession limits decreased. Because this alternative would reduce the possession limit a small reduction in mortality would be expected. This alternative therefore is expected to have low positive impacts on the skate complex when compared to Option 2. However, the skate specifications were designed to prevent overfishing of the complex. The bait fishery has not exceeded its TAL in recent fishing years. In order to achieve its TAL, the bait fishery may compensate for the reduced possession limit by increasing the number of trips taken, depending on the level of costs associated with extra trips and availability of DAS for more profitable fishing activity. Provided the bait fishery does not exceed its TAL, this alternative is not expected to negatively impact the skate complex. This alternative would have neutral to low positive impacts on the complex because it may cause the skate bait TAL to be underachieved.

7.1.3 Skate VTR and Dealer Reporting Requirements

7.1.3.1 Option 1: No Action

The No Action alternative would not modify the reporting codes available. This is largely an administrative action that would not directly impact on the biology of the complex but it would not help in improving species specific reporting of landings, which is a requirement of the FMP and which may, in time, improve stock assessments (or make more models available for use). Option 1 would have neutral biological impacts and would have similar impacts to Option 2.

7.1.3.2 Option 2: Revised Skate VTR and Dealer Reporting Requirements (*Preferred Alternative*)

This alternative would remove the unclassified VTR code for the bait fishery and would remove the unclassified and species codes that are not landed in the wing fishery in order to improve the species specific reporting of landings. This measure does not apply to discards. This is an administrative measure that would not directly impact the biology of the complex but more precise information would in time improve the stock assessment and location based reporting of species landed. Currently over 40% of skate landings are reported as "unclassified". Option 2 would have minor long-term, positive biological impacts and would have minor, positive impacts compared to Option 1.

7.2 Biological Impact on non-target species and other discarded species

7.2.1 Annual Catch Limit Alternatives

The skate wing fishery is largely an incidental fishery prosecuted during fishing under other FMPs as previously mentioned. Catch of non-skate species on trips landing skates are controlled by the DAS limits, sector rules, or other discard limiting measures in other FMPs. For information regarding recent limits in other fisheries, please refer to the discussion of cumulative effects (Section 7.7). On the small portion of trips where skates are directly targeted, common non-target species include monkfish and spiny dogfish.

Vessels that target skates in lieu of other fish while on a DAS are likely to catch and possibly discard lower amounts of other species. Because these discards are controlled by measures in other fisheries, the impacts to non-skate species from annual catch limit alternatives are negligible above those already analyzed for actions in the other FMPs.

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7.2.2 Skate Wing Possession Limit Alternatives

The Skate FMP requires that all vessels landing skates on a DAS trip comply with the wing possession limit; any non-DAS trip has an incidental trip limit of 500 lbs of skate wing. Despite the reduced ACL under Option 2, effort on skates may not be impacted under the current wing possession limit because of the fishery not achieving its TAL in recent years, unless the incidental trip limit is triggered. The incidental trip limit would result in less fishing for skates and possibly increased targeting of other species to make up the difference in skate landings and revenue. Because the catch of the other species, including landings and discards, are accounted for under other FMPs, the wing possession limit alternatives are expected to have negligible impacts to non-skate species above those already analyzed for actions in the other FMPs.

7.2.3 Skate VTR and Dealer Reporting Requirements

These alternatives are administrative in nature and deal only with the reporting of skate catch and landings. Therefore they are expected to have no impacts to any non-skate species.

In summary, relative to no action, these proposed specifications for the skate fishery are not expected to result in any significant impacts on non-target species. Even if the incidental possession limit is triggered before the end of the fishing year, forcing vessels to discard skates at a higher rate, the discard mortality rates appear to be relatively low.

7.3 Essential Fish Habitat (EFH) Impacts

7.3.1 Updates to Annual Catch Limits

7.3.1.1 Option 1: No Action (ACL =ABC of 50,435 mt, ACT of 37,826mt, TAL of 23,365 mt, Wing TAL=15,538 mt, Bait TAL=7,827 mt)

Option 1 would maintain current specifications levels from the 2012-2013 fishing years for fishing years 2014-2015.

- The aggregate skate ABC/ACL would stay at 50,435 mt.
- The ACT would stay at 37,826 mt.
- The TAL would stay at 23,365 mt.

The TAL is allocated amongst the bait and wing fisheries. Each fishery has its own daily trip limits. By regulation, the wing fishery can only land clearnose and winter skates as they are above the preferred market size but not possession prohibited like barndoor, thorny, or smooth skates. Winter skates constitute the bulk of the catch. The bait fishery is also prohibited from possessing or landing barndoor, thorny, and smooth skates, and generally prefers to take smaller animals, i.e. little skates and juvenile winter skates. In 2011 and 2012, the fishery did not reach either the bait TAL or the wing TAL (Table 21).

EFH impacts are related to the amount and location of fishing effort, and the gear type used. Skates are caught using both gillnets and bottom trawls. Gillnets have a much smaller footprint overall than otter trawls because they are a fixed gear, and the quality of the per unit area impact is also lower (Stevenson *et al*. 2004). EFH for the northeast skate species was determined to have a low vulnerability to sink gillnet gear (Stevenson *et al*. 2004). Thus, the gillnet component of the skate fishery is not causing adverse effects to EFH. Bottom otter trawls have a relatively large area swept footprint and their per unit area impact aggregated over this larger footprint causes adverse effects to EFH. The skate fishery is largely an incidental fishery; measures that affect fishing effort in fisheries such as NE multispecies and monkfish may influence EFH impacts attributed to the skate fishery.

Option 1 would produce minor negative impacts to the EFH resource as effort is largely controlled by regulations in other fisheries. Option 1 may have low negative impacts on EFH compared to Option 2 as fishing effort would not be reduced under this Option.

Table 21 – Catch relative to TAL in FY 2011 and 2012

	2011		**2012**	
	Specification Amount	Catch/Landings (mt)	Specification Amount	Catch/Landings
TAL (Bait + Wing)	21,561	15,922	23,365	15,617
TAL Bait	7,223	4,132	7,827	5,504
TAL Wings	14,338	11,790	15,538	10,113

7.3.1.2 Option 2: Revised Annual Catch Limit Specifications (ACL= ABC of 35,479 mt, ACT of 27,275 mt, TAL of 18,001 mt, Wing TAL =11,169, Bait TAL 5,626) (*Preferred Alternative*)

Option 2 would adjust skate specifications for fishing years 2014-2015 as follows:

- The aggregate skate ABC/ACL would decrease from 50,435 to **35,479** mt.
- The ACT would likewise decrease from 37,826 to **26,609** mt.
- The TAL would decrease from 23,365 to **16,385** mt. (10,896 wing, 5,489 bait)

The lower Option 2 TALs are similar to the landings in 2012, as shown in the table above. Similarity in patterns of fishing (i.e. amount and location) between 2012 and 2014-2015 may be reasonable to assume if trip limits are kept the same and spatial management of locations fished by the skate fishery do not change. If catch/landings remain at current levels, Option 2 would have minimal negative impacts to EFH relative to Option 1, No Action. If effort under the lower TALs declines as compared to No Action, impacts to EFH would likely decrease.

7.3.2 Skate Wing Possession Limit Alternatives

7.3.2.1 Option 1: No Action – 2,600 lbs from May 1 to Aug 31; 4,200 lbs from Sept 1 to Apr 30 (*Preferred Alternative*)

Option 1 would maintain the Framework Adjustment 1 skate wing possession limits of **2,600** lbs. from May 1 to Aug 31 and **4,100** lbs. from Sep 1 to Apr 30, or until the 85% TAL trigger has been met and it appears that without adjustment the fishery will exceed the annual TAL. This alternative would not alter the 85% trigger. If the higher trip limits allow for fewer trips that may mitigate any negative impacts. If the incidental possession limit is triggered, the number of trips may slightly decline, and/or the duration of some trips may be reduced. Option 1 may have low negative impacts on EFH compared to Option 2 as fishing effort would not be reduced under this Option. However, total impact on EFH is controlled by fishing effort in the multispecies and monkfish fisheries, where the vast majority of skate landings are derived.

7.3.2.2 Option 2: Revised Skate Wing Possession Limits – 1,500 lbs from May 1 to Aug 31; 2,400 lbs from Sept 1 to Apr 30

Option 2 would decrease these possession limits to 1,500 lbs. (May 1 to Aug 31) and 2,400 lbs. (Sep 1 to Apr 30). Although vessels do not hit the possession limit on every trip (Table 23), the lower limits would probably decrease landings in the wing fishery. This can be inferred from the fact that roughly 5,000 of the FY 2011 and FY 2012 wing trips would have been above the limits suggested in this alternative (see biological impacts section). Thus, impacts to EFH would likely decline under these lower limits relative to No Action limits. However, a lower possession limit may mean that the fishery will not be able to land the TAL and achieve optimum yield. As stated previously, under any of these options, overall EFH impacts are controlled by effort in the multispecies and monkfish fisheries.

7.3.2.3 Option 3: Revised Skate Wing Possession Limit – 5,000 lbs year round

Option 3 would increase the possession limit to 5,000 lbs. year round. Given a fixed TAL, higher catches per trip or more trips could trigger the 85% TAL limit earlier in the year, thus shifting fishing effort earlier into the fishing year (see discussion of this in the biological impacts section 7.1). There is precedent for such a pattern, as the 85% TAL trigger was reached earlier in FY 2010 when the possession limit was higher than it is now. In terms of EFH impacts, Option 3 probably has similar minor negative impacts to the No Action, although those impacts may be distributed differently throughout the year. To the extent that catch rates for large winter skate vary seasonally, it may be more efficient to target these skates during particular times of year. Given a fixed TAL, more efficient fishing will reduce habitat impacts as compared to less efficient fishing.

7.3.3 Bait Possession Limit Alternatives

7.3.3.1 Option 1: No Action – 25,000 lbs year round (*Preferred Alternative*)

This alternative would maintain the skate bait possession limit at 25,000 lbs. Vessels that obtain a Skate Bait Letter of Authorization would be able to retain up to 25,000 lbs. of whole skates. This alternative would have moderate negative impacts on EFH. If the higher trip limits allow for fewer trips that may mitigate any negative impacts when compared to other alternatives. Option 1 may have low negative impacts on EFH compared to Option 2 as fishing effort would not be reduced under this Option.

7.3.3.2 Option 2: Revised Skate Bait Possession Limit – 20,000 lbs year round

This alternative would reduce the skate bait possession limit from 25,000 lbs. to **20,000** lbs. This alternative is included for analysis to meet MSA requirements, but is not expected to be selected by the Council. The lower bait limit would probably decrease effort in the bait fishery, which is largely conducted on an order by order basis. It is possible that if orders remain high an increased number of trips might be necessary, however, costs incurred by fishing may mitigate potential increases. Thus, impacts to EFH would likely decline under these lower limits relative to No Action limits. However, a lower possession limit may mean that the fishery will not be able to land the TAL and achieve optimum yield.

7.3.4 Skate VTR and Dealer Reporting Requirements

7.3.4.1 Option 1: No Action

The No Action alternative would maintain the skate VTR and dealer reporting codes as established in the original FMP. The original FMP included codes for each species, plus a combined little/winter code and an unclassified skate code. This administrative measure would have neutral impacts on EFH.

7.3.4.2 Option 2: Revised Skate VTR and Dealer Reporting Requirements (*Preferred Alternative*)

This alternative would remove the unclassified skate bait VTR reporting code. This alternative would also remove the unclassified and species that are not landed in the wing fishery due to size restrictions, i.e. little skate, little/winter skate, smooth skate, and rosette skate. This is an administrative alternative and is not expected to impact skate catch or fishing behavior. Similar to Option 1, this administrative measure would have neutral impacts on EFH; the intent is to improve the specificity of reporting in the fishery.

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7.4 Impacts on Endangered and Other Protected Species (ESA, MMPA)

The protected resources that may be impacted by interactions with fishing gear used to catch skates are identified in Section 6.2 Marine Mammals and Protected Species.

7.4.1 Updates to Annual Catch Limits

7.4.1.1 Option 1: No Action (ACL =ABC of 50,435 mt, ACT of 37,826mt, TAL of 23,365 mt, Wing TAL=15,538 mt, Bait TAL=7,827 mt)

The No Action alternative would maintain the ACL limits as those established in the 2012-2013 specifications package (NEFMC, 2012). This would maintain fishing effort at a higher than recommended level under Option 2. This would have potentially higher interactions with protected resources as a higher TAL would be expected to result in more fishing, resulting in low negative impacts. However, this may be tempered by the incidental nature of the skate wing fishery. Skate for the wing fishery are typically caught on trips targeting groundfish, monkfish, or scallops. The catch of these species is controlled by DAS and/or sector catch allocations. Since the possession of skates mostly requires vessels to be fishing on a NE Multispecies, Scallop, or Monkfish DAS, fishing effort on skates and potential protected species interactions are largely constrained by other FMPs. Because of this the higher quota is not expected to incentivize increased targeting of skate. Figure 5 indicates that in FY2011 and FY2012 only a small number of trips landed the full wing possession limit. As noted in FW1, the action is also not likely to result in any spatial or temporal shifts in fishing effort that might increase the risk of interaction with protected species. Therefore this alternative will have a minor negative impact on protected resources and a slightly more negative impact than Option 2.

7.4.1.2 Option 2: Revised Annual Catch Limit Specifications (ACL= ABC of 35,479 mt, ACT of 27,275 mt, TAL of 18,001 mt, Wing TAL =11,169, Bait TAL 5,626) (*Preferred Alternatives*)

Option 2 would revise the ACL for the skate complex using the most recent and best available science. The reduction in the ACL may result in less directed fishing effort and reduces the possibility that interactions with protected species may occur. Overall impacts will be tempered by the incidental nature of the fishery Skate for the wing fishery are typically caught on trips targeting groundfish, monkfish, or scallops. The catch of these species is controlled by DAS and/or sector catch allocations. Since the possession of skates mostly requires vessels to be fishing on a NE Multispecies, Scallop, or Monkfish DAS, fishing effort on skates and potential protected species interactions are largely constrained by other FMPs. Because of this lower quotas will not have much of an impacts on protected resources. . Figure 5 indicates that in FY2011 and FY2012 only a small number of trips landed the full wing possession limit. As noted in FW1, the action is also not likely to result in any spatial or temporal shifts in fishing effort that might increase the risk of interaction with protected species. Overall, Option 2 would have minor negative impacts on protected species but have a low positive impact on protected species when compared to Option 1.

7.4.2 Skate Wing Possession Limit Alternative

7.4.2.1 Option 1: No Action – 2,600 lbs from May 1 to Aug 31; 4,100 lbs from Sept 1 to Apr 30 (*Preferred Alternative*)

The No Action alternative would maintain the seasonal wing possession limits as established in FW 1. The impact of possession limits on fishing effort is unknown as skates are typically landed on trips targeting groundfish, monkfish or scallops. The maintenance of the existing possession limits would not allow for an increase in directed fishing effort. Option 1 would have neutral impacts on protected species compared to Options 2 and 3.

7.4.2.2 Revised Skate Wing Possession Limit – 1,500 lbs from May 1 to Aug 31; 2,400 lbs from Sept 1 to Apr 30

Option 2 would reduce the wing possession limit for skates. It is not clear that changing the skate possession limit changes the level of fishing effort. If however, the reduction in the possession limit reduces directed fishing effort on skates, this reduction will occur during the summer months when interactions of skate gear with turtles tend to be higher in Southern New England and Georges Bank. Vessels may shift fishing effort to areas of lower skate density to reduce skate encounters that can be time consuming; there is no economic benefit to discarding skate. Option 2 would have low positive impacts on protected species compared to Options 1 and 3.

7.4.2.3 Option 3: Revised Skate Wing Possession Limit – 5,000 lbs year round

Option 3 would raise the wing trip limit to 5,000 lbs which is projected to trigger the incidental trip limit. This would be expected to have biological impacts on skates and economic impacts, however, skates are typically landed on trips targeting other species and this trip limit may not impact protected species. It is not clear how changing the skate wing possession limit affects fishing effort. The increased trip limit may affect fishing effort and negatively impact protected resources. Vessels may choose to fish in areas of high skate density under this possession limit, which may impact any protected species in these areas. Option 3 could have low negative impacts on protected resources compared to Options 1 and 2, if it increases effort.

7.4.3 Skate Bait Possession Limit Alternatives

7.4.3.1 Option 1: No Action – 25,000 lbs year round (*Preferred Alternative*)

The No Action alternative would maintain the current trip limit of 25,000 lbs with a Letter of Authorization. This would not change current fishing effort and would likely not change the (neutral to low positive) impacts on protected species as established in previous management actions. Option 1 would have similar impacts to Option 2 as only a small number of trips land the full bait trip limit in a fishing year.

7.4.3.2 Option 2: Revised Skate Bait Possession Limit – 20,000 lbs year round

Option 2 would lower the bait possession limit to 20,000 lbs with a Letter of Authorization. This would have a positive impact on protected species if fishing effort was impacted by the reduction, however, this may be unlikely as only a small number of trips land the current bait possession limit. Option 2 would have similar impacts to Option 1.

7.4.4 Skate VTR and Dealer Reporting Requirements

7.4.4.1 Option 1: No Action

The No Action alternative would not modify the reporting codes available. This is largely an administrative action that would not directly impact protected resources as it would not improve reporting of interactions with protected resources. Option 1 would have neutral impacts on protected resources. Option 1 would have similar impacts on protected resources as Option 2.

7.4.4.2 Option 2: Revised Skate VTR and Dealer Reporting Requirements (*Preferred Alternative*)

This alternative would remove the unclassified VTR code for the wing fishery and improve the species specific reporting of landings. This measure does not apply to discards. This is an administrative measure that would not directly impact protected resources as it would not improve reporting of interactions with protected resources. Option 2 would have neutral impacts on protected resources. Option 2 would have similar impacts on protected resources as Option 1.

7.5 Economic Impacts

7.5.1 Updates to Annual Catch Limits Alternatives

Alternatives for updating ACL are described in Section 4.1. The No Action Alternative would not be consistent with the Act. The Preferred Alternative would lower TAL across the skate wing and bait fisheries.

7.5.1.1 Option 1: No Action (ACL =ABC of 50,435 mt (111 million lb), ACT of 37,826 mt (83 million lb), TAL of 23,365 mt (52 million lb), Wing TAL=15,538 mt (34 million lb), Bait TAL=7,827 mt (17 million lb))

Under the No Action Alternative, no changes in ACL or TAL would occur. No additional economic impacts beyond those already analyzed in previous plan amendments and framework adjustments are expected in the short run (the status quo ACL would reduce the risk of closing the directed skate wing fishery before the end of the fishing year; refer to A3 and FW1 for the complete analyses). Although recent landings have been below TAL, this alternative carries the distinct possibility of allowing landings to exceed the TAL based on revised data. Based on dealer data, the total skate revenue in FY2012 was $6,645,435; if the average price per pound of skate wings remains within the recent range (~$0.25.lb), the total revenue from skate wings would not be expected to significantly decrease. In the long run, this option may lead to future declines in biomass and catch, more restrictive regulation, and the failure to reach optimum yield, which would result in a negative and potentially significant economic impact to the fishery.

Table 22 - Total Skate Landings and Revenue by Fishing Year (Source: NMFS VTR/Dealer data)

FY	Total Landings (in lbs)	Total Revenue
2009	41,634,696	$ 7,380,043
2010	32,347,014	$ 7,786,423
2011	41,103,304	$ 8,419,911
2012	33,084,082	$ 6,645,435
Grand Total	148,169,096	$ 30,231,812

7.5.1.2 Option 2: Revised Annual Catch Limit Specifications (ACL= ABC of 35,479 mt, ACT of 27,275 mt, TAL of 18,001 mt, Wing TAL =11,169, Bait TAL 5,626) (*Preferred Alternative*)

Under this alternative, TAL would be reduced from 23,365 metric tons to 16,385 mt. Reductions in the ACL and TAL themselves do not necessarily necessitate changes in management measures, reductions in fishery effort, or changes in fishery profits. In this case, the Option 2 TAL (16,385 mt) remains above the total catch by federally reporting vessels from FY 2012 (14,429 mt), but is below FY2011 total catch by federally reporting vessels from 2011 (18,081 mt). FY2011 represents the recent maximum total landings. Relative to Option 1: No Action, this alternative would result in a higher likelihood of triggering AMs.

Accountability measures (AMs) are triggered when catch of skate wings reaches 85% of the wing TAL or 90% for the skate bait fishery, as established in Framework Adjustment 1 and Amendment 3 to the Northeast Skate Complex FMP. Amendment 3 mandated that skate wing possession limits be reduced to the incidental limit of 500 lbs when the AM is triggered. For the skate bait fishery, when 90% of the ACL is achieved the bait possession limit is reduced to the current wing fishery possession limit (either the possession limit implemented in this FW or the incidental trip limit of 500 lbs.). For either fishery, a lower TAL increases the likelihood of triggering AMs that reduce possession limits to incidental levels. This would also have negative short-term economic impacts with the severity depending on when in the fishing year the TAL trigger was reached; the incidental possession limit would effectively prevent any directed fishing for skate (either wing or bait). While the long-run economic benefits of both skate fisheries depend on meeting, but not exceeding, the TAL, short-term negative economic impacts may accrue to the targeted skate fishery as a result of this alternative.

The magnitude of the impact of increased triggering of AMs depends on two factors: the number of vessels that target skates and would therefore be affected by reduced trip possession limits, and the probability of triggering AMs under this alternative compared to the status quo. To avoid exceeding the TAL, revised trip possession limits could be necessary, and are discussed and evaluated for economic impacts in Section 7.5.2 and Section 7.5.3. Revised trip possession limits would be the primary driver of short-run economic impacts from a revised TAL under the assumption that the TAL is optimally set.

7.5.2 Skate Wing Possession Limit Alternatives

7.5.2.1 Option 1: No Action – 2,600 lbs from May 1 to Aug 31; 4,100 lbs from Sept 1 to Apr 30 (*Preferred Alternative*)

When combined with Updates to ACL Alternative 1: No Action, this alternative would not increase or decrease short-term economic benefits beyond those analyzed in Framework Adjustment 1, which set seasonal skate wing possession limits. Long-term, negative economic impacts would be realized only if the long-term health of the stock were to decline, as would be expected if an ACL is set at an amount higher than that determined by the best available science. However, allowing an ACL to remain at a level below that mandated by the best available science would be inconsistent with the Act.

When combined with Updates to ACL Alternative 2: Revised ACL Specifications, the wing possession limits associated with this alternative could potentially result in more frequent triggering of AMs due to the triggering threshold remaining at 85% of TAL and a decreased TAL. The distribution and estimated magnitude of the economic impact of a lower TAL combined with status quo possession limits is similar to, but of lesser magnitude than the impact associated with Skate Wing Possession Limit Alternative – Option 3: Revised Skate Wing Possession Limits, analyzed below. In that analysis, the fishery is presumed to close due to AMs in December. Under this assumption, 10 vessels would see a reduction of more than 10 percent of their total landings revenue under FY2011 conditions, and 5 would see reductions of more than 15 percent of total landings revenue. One vessel would see reductions of over 30 percent.

Option 1: No Action, combined with the preferred Updates to ACL Alternative – Option 2: Revised ACL Specifications, would not be as likely to trigger AMs as the scenario analyzed below; thus, the impact from this option would be lower, and the number of affected vessels would be fewer. Given the lesser impact of this alternative relative to both Option 2 and Option 3, this alternative is identified as the preferred alternative. It would not significantly affect a substantial number of permit-level or affiliate (“ownership group”) level entities.

7.5.2.2 Option 2: Revised Skate Wing Possession Limits – 1,500 lbs from May 1 to Aug 31; 2,400 lbs from Sept 1 to Apr 30

This alternative is described in Section 4.2.2. The total number of unique permits landing skate wings during FY2011 and FY2012 was 616. Of these, 228 unique permits landed greater than 1,500 lbs of wings from May 1 to Aug 31 (Summer season) or greater than 2,400 lbs from Sep 1 to Apr 30 (Winter season) during fishing year (FY) 2011 and 2012. 151 unique permits recorded trip landings within 100 lbs of the season's trip possession limit over a total of 2,034 trips. These trips are most likely to be "skate targeting" trips.

A simulation of the effects of revised trip possession limits was performed based on FY2011 and FY2012 data. While future fishing behavior and effort may vary significantly from past effort due to exogenous influences such as weather, ex-vessel prices, and the availability of other species, recent fishing behavior and effort is the best feasible predictor of future effort. The results discussed here do not account for future, unknown changes in fishery dynamics, but provide a reasonable and feasible estimate of the impact of alternative trip possession limits.

Over fishing years 2011 and 2012, an average of 2,809,247 lbs (wing weight, 2,892 mt live weight) of skate wings would not have been landed each year under this option. In addition to this, some number of skate targeting trips that did occur in FY2011 and FY2012 would not have taken place at all as a result of the lower trip possession limits. This would occur when the maximum revenue under the trip limits would be less than the expected total cost of the trip itself, which is unknown.

Table 23 shows the total landings for FY2011 and FY2012, the number of trips that exceeded the trip possession limits proposed in this alternative, and the truncated landings, assuming that all trips occurring at the higher 2011-2012 limits would still occur, but with landings truncated at the proposed limits. The purpose is to gain an understanding of how many trips would be affected by this alternative.

Total skate wing landings in 2011 would have been at least 3,441 mt lower under the proposed trip possession limits. For 2011, total skate wing landings would have been at least 2,343 mt lower. Total skate wing landings for 2011 and 2012 would have been 9,759 and 7,264, respectively. In both cases, the total skate landings would not have exceeded the TAL associated with the ACL set by Option 2 (above). Although 2011 had the highest landings of the last three years, the total landings that fishing year would have fallen short of the TAL set in Option 2: Revised Annual Catch Limit Specifications by approximately 1,317 mt (12.1%).

Table 23 - Landings in excess of Option 2 proposed trip possession limits (FY2011 - FY 2012)

	Actual Landings			**Option 2: Revised Skate Wing Possession Limits**				
	Total Landings (mt)	**Trips (count)**	**TAL (mt)**	**Proposed TAL (mt)**	**# of trips in excess of Opt. 2**	**Landings in excess of Opt. 2 (mt)**	**Truncated total landings (mt)**	**Percent of "Option 2: Revised Annual Catch Limit Specification" TAL**
2011	13,200	16,479	15,538	10,896	2,831 (17.1%)	3,441	9,579	87.9%
2012	9,608	13,624	15,538	10,896	2,178 (16.0%)	2,343	7,264	66. 7%

Source: SAFIS/CFDBS; includes all non-bait landings from federal permit-holders converted to live weight

Under this option, a total of 43 permits, all of which qualify as small businesses at both the permit level and the affiliate (or "ownership group" level), would have lost greater than 5% of total permit revenue, and 25 vessels would have lost greater than 10% of total permit revenue. This number of affected entities exceeds the number of potentially affected entities associated with either Option 1 or Option 3.

While revenues are not perfectly correlated with profits, a change in revenue represents a decrease in economic well-being for the permit-holder. Implementation of Option 2: Revised Skate Wing Possession Limits would likely result in landings well below each of the proposed TALs, including Option 1: No Action, which is the highest proposed TAL. Failure to land a TAL due to trip possession limits signifies a real and negative economic impact to the skate wing fishery. Furthermore, trip possession limits may encourage increased discarding, leading to under-estimated fishing mortality and declines in stocks relative to optimum levels.

7.5.2.3 Option 3: Revised Skate Wing Possession Limits – 5,000 lbs year round

This alternative would eliminate the seasonal trip limits and replace them with a constant skate wing possession limit of 5,000 lbs (11,350 live lbs). This alternative is described in detail in Section 4.2.3.

The economic benefit of an increase in trip possession limits depends upon the corresponding skate wing TAL. To estimate the likelihood of exceeding a proposed TAL, a counterfactual trip landing was generated for every trip in FY2011 and FY2012. To simulate landings under a 5,000 lbs possession limit, the landings are set at either (1) 5,000 lbs (wing weight) *if and only if* the actual trip landings were greater than 100 live lbs below the actual trip possession limit (in live pounds), or (2) the actual trip landings *if* the actual trip landings was less than 100 live lbs below the actual trip possession limit (in live pounds). For example, a trip landing 5,820 live lbs of skate wings during a summer month (trip possession limit: 2600 wing lbs x 2.27 conversion factor = 5,902 live lbs) would be within 100 live lbs of the possession limit, would be considered a "skate targeting / maximizing" trip, and would be assigned a counterfactual landing of 5,000 lbs (11,350 live lbs). A trip landing 5,800 live lbs at the same time would *not* be considered a "skate targeting / maximizing" trip, and the counterfactual would be the actual landing lbs (5,800).

The counterfactual represents a likely upper-bound for landings. Although trips within 100 live lbs of the possession limit may be accurately assumed to be "skate targeting / maximizing," the actual landings of these trips under the higher proposed possession limits may not consistently reach the new limit. This is a methodological limit on analysis; complete information on actual catch under higher possession limits is not observable in the data and is thus not feasibly available.

Table 24 shows the counterfactual landings under this possession limit option. In both FY2011 and FY2012, the TAL would likely have been exceeded. FY2011 represented a peak year for skate landings; in the FY2011 counterfactual, AMs would have been triggered in October, and TAL would have been exceeded as early as November. Counterfactual catch in FY2011 would have exceeded TAL by 4,229 mt (live weight).

Table 24 - Landings in excess of Option 3 proposed trip possession limits (FY2011-FY2012)

	Actual Landings				**Option 3: Revised Skate Wing Possession Limits**			
	Total Landings (mt)	**Trips (count)**	**Trips within 100lbs of Possession Limit**	**Permits Landing within 100lbs of Possession Limit At Least Once**	**Total Est. Landings (mt)**	**Est. Percent of Option 2: Revised ACL Specification TAL (10,896 mt)**	**Est. Month Option 2: Revised ACL Spec. AM Triggered**	**Est. Month Option 2: Revised ACL Spec. TAL Exceeded**
2011	13,200	16,479	1,169 (7.1%)	126 of 550 (22.9%)	15,125	139%	October	November
2012	9,608	13,624	856 (6.3%)	101 of 513 (19.7%)	11,303	104%	December	April

Source: SAFIS/CFDBS; includes all non-bait landings from federal permit-holders converted to live weight

Distribution of Impacts from Triggering Accountability Measures

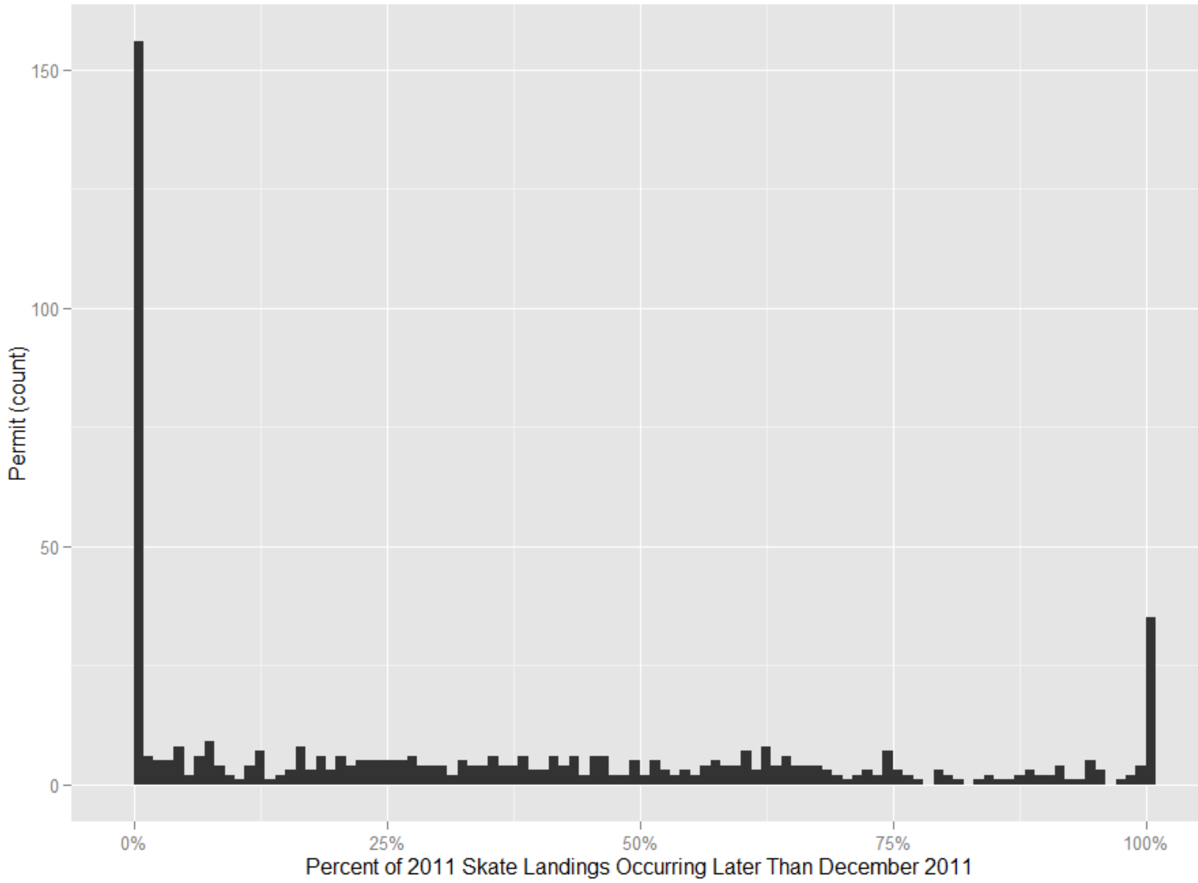
FY2011 counterfactual landings suggest that the skate wing fishery triggered AMs in November of FY2011 under the proposed trip possession limits and under Preferred Alternative Option 2: Revised ACL Specification. When a TAL is likely to be binding before the end of the fishing year, an incentive for derby-style fishing exists where individual permit-holders intensify skate landings prior to the triggering of AMs. Existing data is not sufficient to estimate how effort would shift (or the intensity of the derby-style fishing) given that skates are not frequently targeted, and are landed only as sellable by-catch by many permit-holders.

In FY2011, the recent peak of skate wing landings, 550 unique permits landed skates. Of these, 208 (37.8%) landed skates in December or later and would be affected by an early closure.[5] These are landings that would not be possible under Option 3 due to the triggering of AMs in October and the exceeding of TAL by November. However, some number of these permit-holders would be capable of shifting skate landings to earlier in the fishing year. To be negatively impacted by the triggering of AMs and the exceeding of TAL, a permit-holder would have to disproportionately rely on skate wing landings from December to April. Figure 6 shows the distribution of reliance on landings in December or later. 176 of 550 permits (32%) caught 50% of more of all FY 2011 skate landings in December of FY2011 or later; 82 (15%) caught 75% or more in that period; and 35 (6%) caught 100% of skate landings during that period.

For permit-holders that landed 100% of FY2011 skate landings in December or later, the mean FY total landings per permit were 9,659 and the median landings were 1,217. For permit-holders that landed more than 75% of FY2011 skate landings in December or later, the mean total landings per permit were 29,867 and the median landings were 4,741. Permit-holders that rely on December or later skate landings recorded 29 of 1,169 (2.9%) of all “skate targeting / maximizing” trips.

[5] 406 total permits landed skates in December or later. 208 permits landed skates in excess of the incidental trip limit of 1,250 lbs wing weight in December of FY2011 or later. Even when TAL is exceeded and AMs have been triggered, landings of up to 1,250 lbs are allowed.

Figure 6 - Distribution of Permit-Aggregated Shares of FY2011 Skate Landings in December or Later



The 82 permit-holders that rely heavily (>75%) on late-season skate landings and would be significantly affected by closures triggered by increased possession limits land a substantial amount of skate wings and may occasionally target skates, although the extent to which they could shift landings to offset losses is unknown. Although overall economic benefits from skate wing landings are independent of season landed, the negative impacts of this option would fall primarily on these 82 permit-holders rather than the fishery at large. Home ports for these vessels are primarily Barnegat Light, NJ (11 of 36 skate-landing permits rely on Winter season skate landings), Gloucester, MA (5 of 51), New Bedford, MA (5 of 42), Boston, MA (4 of 36), and Belford, NJ (3 of 12). Vessels landing primarily during Summer, when the fishery is more likely to be open under this option, would accrue the largest share of benefits.

Vessels that disproportionately rely on late-season landings for skate landings but do not rely on skates as a signification portion of their landing portfolio will be minimally affected by this alternative. Of the 82 vessels that gain a significant share of skate landings from December-or-later landings, 10 vessels rely on skate landings for greater than 10 percent of total revenue, and 15 vessels rely on skate landings for greater than 5 percent of total revenue. Multiplying the percent of total revenue that the vessel lands in skates by the total share of skate landings that could potentially be lost due to a December skate fishery closure yields an estimate of the percent of total vessel revenue that could potentially be lost (assuming effort cannot be shifted to pre-closure periods) as a result of this alternative. This share exceeds 10 percent for 10 vessels, all of which are considered “small businesses” at both the permit level and the affiliate (or “ownership group” level). Five vessels exceed 15 percent, and one vessel reaches 31 percent.

7.5.3 Bait Possession Limit Alternatives

7.5.3.1 Option 1: No Action – 25,000 lbs year round (*Preferred Alternative*)

This action would keep the skate bait possession limit constant at 25,000 lbs. Total federally-reported skate bait landings in FY2011 and FY2012 were 4,880 mt and 4,821, respectively. FY2011 represents the recent peak of skate bait landings, but this amount does not exceed the trigger amount (90% of TAL) for *any* of the proposed TALs.

In FY2011, zero trips landed within 1,000 lbs of the possession limit. In 2012, 18 out of the 1,478 (1.2%) federally-reported skate bait landings came within 1,000 lbs of the 25,000 lbs trip limit. No measurable economic impacts would results from this alternative, and it is unlikely that the skate bait fishery, under this option, would trigger AMs at any proposed TAL.

7.5.3.2 Option 2: Revised Skate Bait Possession Limit – 20,000 lbs year round

This action would lower the skate bait possession limit to 20,000 lbs. In FY2011, one trip out of 1,733 (.05%) landed greater than the proposed possession limit. In FY2012, 115 out of 1,478 (7.8%) trips landed greater than the proposed possession limit. In FY2011 and FY2012, a total of 256,840 lbs of skate bait were landed in excess of the proposed possession limits. This amount represents only1.2% of all FY2011-FY2012 landings. Although vessels who reach the lower proposed possession limit can shift additional catch to other trips to offset potential losses, the impact of this proposed possession limit would have an upper-bound economic loss of 128,420 lbs of skate bait per year, assuming that TAL is not exceeded under either possession limit.

An average reduction of 128,420 lbs for a fishery that has not reached TAL would represent a real, negative economic loss in comparison to Option 1: No Action. TAL is not likely to be exceeded, nor is the 90% AM trigger expected to be reached, under either possession limit. Therefore, no future benefits are gained through a reduction in catch and the proposed constraining possession limit constitutes an un-necessary economic loss for the skate fishery.

7.5.4 Skate VTR and Dealer Reporting Requirements Alternatives

These proposed alternatives alter reporting requirements to align data collection with the goals and objectives stated in the corresponding Fishery Management Plan. Although Option 2: Revised Skate VTR and Dealer Reporting Codes would eliminate a frequently-used classification for skates ("Unclassifiable Skates"), the "Little/Winter Skate" classification would remain available. Little and Winter Skates are not easily discerned from other skates, however, under all proposed alternatives, the little/winter classification would provide sufficient coverage for easy dockside classification.

Both alternatives would result only in recordkeeping changes and would not present additional measurable costs to the fishery. Therefore, neither alternative proposed would result in any economic impact.

7.6 Social Impacts

7.6.1 Updates to Annual Catch Limits

ACL alternatives are described in Section 4.1 and include decreases in the ACL, in the aggregate skate ACL, and in the skate bait and skate wing fishery TALs.

7.6.1.1 No Action

Under the No Action Alternative, the skate catch limits would be those proposed by the 2012-2013 specifications. No additional impacts on human communities beyond those already analyzed in the 2012-2013 specifications package and FW1 EA are expected. The FW1 EA determined that the action would have positive economic and social benefits, mainly by reducing the risk of closing the directed skate wing fishery early in the fishing year. This was expected to prolong the fishing season, stabilize skate wing markets and revenue, maintain processing jobs, and reduce the incentives for derby-style fishing behavior. The two seasonal skate wing possession limits implemented by FW1 (2,600 lbs for May 1 through August 31, and 4,100 lbs for September 1 through April 30) were also expected to increase efficiency and revenue in the skate wing fishery by allowing more landings when prices are typically higher, and when winter skates can generally be captured closer to shore. Option 1 would have more positive impacts than Option 2.

7.6.1.2 Option 2: Revised Annual Catch Limit Specifications (*Preferred Alternative*)

Under Option 2, the specifications are calculated using the best available science that includes revised discard mortality rate estimates for four of the seven skate species. The reduced ACL and TAL have the potential to impact fishing behavior and profits; the reduction also would increase the potential of the AM being triggered before the end of the fishing year. Based on recent landings, the revised specifications are not thought to be restrictive of landings. Option 2 might allow for a higher percentage of the TAL to be landed, which would have positive impacts. This option incorporates revised discard mortality rates and reduces the assumed rate for trawl gear for the two primary skate species landed. This option would not apportion a larger percentage of the catch to dead discards and would allow for a higher TAL based on fewer dead discards, which would have positive impacts. Option 2 would have neutral impacts based on recent landings compared to Option 1.

7.6.2 Skate Wing Possession Limit Alternatives

7.6.2.1 Option 1: No Action – 2,600 lbs from May 1 to Aug 31; 4,100 lbs from Sept 1 to Apr 30 (*Preferred Alternative*)

This option would maintain the current skate wing possession limits established in FW1. Option 1 might have more negative impacts compared to Option 2 if an AM is triggered before the end of the fishing year, assuming there is a reduction in the TAL. Compared to Option 3, Option 1 would have fewer negative impacts.

7.6.2.2 Option 2: Revised Skate Wing Possession Limits – 1,500 lbs from May 1 to Aug 31; 2,400 lbs from Sept 1 to Apr 30

This Option would reduce the trip limit in both seasons to 1,500 lbs from May to Aug 31 and 2,400 lbs from Sep 1 to Apr 30. This option would likely reduce the likelihood of an AM being triggered before the end of the fishing year but may negatively impact landings if fishermen are encountering more skates than they can land. Option 2 may also reduce the ability of fishermen to land their TAL. Compared to Option 1, Option 2 would have neutral impacts on fishermen as the likelihood of an AM being triggered is reduced but it makes it more difficult for fishermen to achieve the total TAL. Option 2 has more positive impacts when compared to Option 3.

7.6.2.3 Option 3: Revised Skate Wing Possession Limits – 5,000 lbs year round

This Option would raise the skate wing trip limit to 5,000 lbs and remove the seasonal component. This option would allow the fishery to achieve its TAL, however, the likelihood of an AM being triggered greatly increases. Based on the simulated impacts of the revised trip limits described in Section 7.5.2.3 it is highly likely that the TAL would be exceeded under this option. Option 3 has more negative impacts compared to Options 1 and 2.

7.6.3 Skate Bait Possession Limit Alternatives

7.6.3.1 Option 1: No Action – 25,000 lbs year round (*Preferred Alternative*)

This Option would maintain the current skate bait possession limit at 25,000 lbs, with a Letter of Authorization. The trip limit is unlikely to result in an overage of the TAL and would have neutral impacts on the fishery. It is included in this document to meet MSA requirements. Compared to Option 2, Option 1 would have more positive impacts on the fishery.

7.6.3.2 Option 2: Revised Skate Bait Possession Limit – 20,000 lbs year round

Option 2 would reduce the skate possession limit to 20,000 lbs, with a letter of Authorization. This would have negative impacts on the fishery as it would reduce the possession limit on a fishery that has not exceeded the TAL and is not likely to. It would make it more difficult for the fishery to achieve the TAL. Option 2 would have more negative impacts compared to Option 1.

7.6.4 Skate VTR and Dealer Reporting Requirements

7.6.4.1 Option 1: No Action

This Option would maintain the VTR and dealer reporting codes as established in the original FMP. This is an administrative measure and would be expected to have neutral, if any, impacts on the fishery. Option 1 would have similar neutral impacts to Option 2.

7.6.4.2 Option 2: Revised Skate VTR and Dealer Reporting Requirements (*Preferred Alternative*)

This Option would revise the VTR and dealer reporting codes to more accurately reflect what is being caught in each fishery and would remove the unclassified reporting code to be more consistent with the requirement of the original FMP to report species specific landings. This is an administrative measure and would be expected to have neutral, if any, impacts on the fishery. Option 2 would have similar neutral impacts to Option 1.

7.7 Cumulative effects analysis

The need for a cumulative effects analysis (CEA) is referenced in the CEQ regulations implementing NEPA (40 CFR Part 1508.25). CEQ regulations define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action." The purpose of this CEA is to consider the effects of the Proposed Action and the combined effects of many other actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective; rather, the intent is to focus on those effects that are truly meaningful. This section serves to examine the potential direct and indirect effects of the alternatives in Framework 2 together with past, present, and reasonably foreseeable future actions that affect the skate environment. It should also be noted that the predictions of potential synergistic effects from multiple actions, past, present and/or future will generally be qualitative in nature.

Valued Ecosystem Components (VECs): The CEA focuses on VECs, specifically including:

- Physical environment/habitat (including EFH);
- Regulated stocks (skate complex);
- Non-target species and bycatch;
- Protected resources/endangered species; and
- Human communities.

Temporal and Geographic Scope of the Analysis: The temporal range that will be considered for habitat, allocated target species, non-allocated target species and bycatch, and human communities, extends from 2010, the year that Amendment 3 was implemented, through May 1, 2014 the beginning of the next fishing year. While the effects of actions prior to Amendment 3 are considered (see Amendment 3 for a full cumulative effects analysis), the cumulative effects analysis for this action is focused primarily on Amendment 3 and subsequent actions because Amendment 3 implemented ACLs for skates and included major changes to management of the skate fishery. For endangered and protected species, the context is largely focused on the 1980s and 1990s, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. In terms of future actions, this analysis examines the period between the expected implementation of this framework (May 1, 2014) and 2019.

The broad geographic scope considered for cumulative effects to habitat, allocated target species, and non-allocated target species and bycatch consists of the range of species, primary ports, and geographic areas (habitat) discussed in Section 6.0 (Affected Environment) of the document. Similarly, the range of each endangered and protected species as presented in Section 6.2 of this document will be the broad geographic scope for that VEC, however, the most likely geographic scope for all cumulative effects will be the Gulf of Maine, Georges Bank, and Southern New England waters where most of the skate fishery occurs. The geographic scope for the human communities will consist of those primary port communities from which vessels fishing for skates originate.

7.7.1 Summary of Direct/Indirect Impacts of the Proposed Action

The direct and indirect effects on the VECs from the revised ACL analyzed in this supplemental EA (Preferred Alternative) compared to what the impacts would be if the skate specifications approved are those described in the No Action Alternative are summarized in Table 25 below. The nomenclature used is the following:

- Physical Environment: positive = actions that improve or reduce disturbance of habitat; negative = actions that degrade or increase disturbance of habitat;
- Biological Environment: positive = actions that increase stock size; negative = actions that decrease stock size;
- Human Communities: positive = actions that increase revenue and well-being of fishermen and/or associated businesses; negative = actions that decrease revenue and well-being of fishermen and/or associated businesses

Table 25 - Summary of Direct and Indirect Effects of the Alternatives

Alternative	Valued Ecosystem Components (VECs)				
	Physical Env	Biological Environment			Human Communities
	Habitat/EFH	Allocated Target Species	Non-Allocated Target Species and Bycatch	Protected Resources	Skate fishery participants
ACL alternatives described in Section 4.1					
No-Action Alternative	Low Negative	Moderate Negative	Low Negative	Low Negative	Negative
Proposed Alternative	Low Positive	Positive	Positive	Low Positive	Low Negative
Skate wing fishery possession limit alternatives described in Section 4.2					
No-Action Alternative	Low Negative	Low Negative	Neutral	Neutral	Low Negative
Proposed Alternative 1	Low Positive	Low Positive	Low Positive	Low Positive	Negative
Proposed Alternative 2	Low Negative	Negative	Negative	Low Negative	Negative
Skate bait fishery possession limit alternatives described in Section 4.3					
No-Action Alternative	Low Negative	Low Negative	Neutral	Neutral to Low Positive	Not Measureable
Proposed Alternative	Low Positive	Neutral to Low Positive	Low Positive	Neutral to Low Positive	Low Negative
Skate VTR and Dealer Reporting Requirements described in Section 4.4					
No-Action Alternative	Neutral	Neutral	Neutral	Neutral	Neutral
Proposed Alternative	Neutral	Neutral	Neutral	Neutral	Neutral

Impacts to the physical and biological environment from the proposed action were assessed and found to be negligible. In general, the reduced allowable amounts of skate catch and landings are not likely to result in considerable changes in fishing effort. Fishing effort for skates is largely controlled by DAS in the groundfish, monkfish, and scallop fisheries. The amount of fishing effort in the fishery in FY 2014-2015 is likely to be similar FY 2012 effort and will be within the scope of fishing effort analyzed in Amendment 3 and FW1, as well as in recent actions in the DAS fisheries noted above.

7.7.2 Past, Present and Reasonably Foreseeable Future Actions

Detailed information on the past, present, and reasonably foreseeable future actions that may impact this action can be found in the FEIS for Amendment 3 and in the FW1 EA (Section 6.6.10). The information on relevant past, present and reasonably foreseeable future actions and their impacts are summarized in this section.

Other Fishing Effects: Past, Present and Reasonably Foreseeable Future Skate and Related Management Actions

The following is a summary of the past, present, and reasonably foreseeable future fishing actions and effects thought most likely to impact this cumulative effects assessment. The three FMP's that have had the greatest impact on skate fishery VECs, other than the Skate FMP, are the Atlantic Sea Scallop, Monkfish, and NE Multispecies FMPs, because of the spatial overlap of the fisheries, the relatively high level of incidental catch of skate in those fisheries, and the fact that more than 90 percent of the skate permit holders are also permitted in one or the other of those three fisheries. For additional information on the cumulative effects and to view the complete summary of the history of the Skate FMP, please see Amendment 3 (NEFMC 2009) and Section 6.6.10 of the FW1 EA (NEMFC 2011).

Past and Present Actions:

Skates. Amendment 3 to the Skate FMP implemented an ACL and AMs for the skate complex and was designed to reduce skate discards and landings sufficiently to rebuild stocks of thorny and smooth skates, and to prevent other skates from becoming overfished. Skate FW1, implemented in May 2011, reduced skate possession limits and adjusted other measures to lengthen the fishing season for the directed skate wing fishery. The Regional Administrator has also published a proposed rule to implement an Emergency Action to raise the 2011 specifications, with an ACL of 50,435 mt. The 2012-2013 specifications package set an ACL of 50,435 mt.

NE Multispecies. Amendment 16 and FW 44 to the NE Multispecies FMP are regulations that have effectively reduced fishing effort for skates as well as other targeted groundfish. FW 45 implemented a variety of measures including revision of biological reference points, updated ACLs for several groundfish stocks, and established new closed areas to protect spawning cod. Framework 46 was implemented in September 14, 2011 and modified the provisions that restrict mid-water trawl catches of haddock. Framework Adjustment 47 was implemented May 1, 2012 and set specifications for some groundfish stocks for FY 2012-2014, modified AMs for the groundfish fishery and the administration of the scallop fishery AMs, revised common pool management measures. Framework Adjustment 48 (FW 48) was partially implemented on September 30, 2013. That action proposes revised status determination criteria for several stocks, modifies the sub-ACL system, adjusts monitoring measures for the groundfish fishery, and changes several accountability measures (AMs). Framework Adjustment 50 was also implemented on September 30, 2013 which set specifications for many groundfish stocks and modified the rebuilding program for SNE/MA winter flounder.

Monkfish. Monkfish Amendment 5 implemented ACL and AMs for the monkfish fishery, and updated the biological reference points for monkfish stocks. FW 7 reduced the ACT for the monkfish Northern Fishery Management Area (NFMA) and increased the allocated DAS to 40 days per vessel; possession limits for the NFMA for permit categories A and C were set at 1,250 lbs tail weight and 600 lbs tail weight for B and D permit categories.

Atlantic Sea Scallops. Amendment 15 to the Scallop FMP implemented ACLs and AMs for the scallop fishery. It also included updates to EFH, biological reference points, the research set-aside program, and other measures to improve the limited access general category fishery. Framework 21 set specifications and area access programs for FY2010. FW 22 implemented fishery specifications for 2011 and 2012 to prevent overfishing on scallops and help improve the yield-per-recruit in the resource. It built upon the measures implemented by Amendment 15, and adjusted DAS and access area trip allocations, and implemented measures to minimize fishery interactions with endangered sea turtles. FW 23 had provisions to improve the effectiveness of the accountability measure adopted under A15 for the yellowtail flounder sub-ACL, to consider specific changes to the general category NGOM management program to address potential inconsistencies, to consider modifications to the vessel monitoring system to improve fleet operations, and included measures to minimize impacts on sea turtles with a turtle deflector dredge. Groundfish Framework Adjustment 49/Scallop FW adjustment 24 is a joint Northeast Multispecies/Atlantic Sea Scallop action that modifies the dates for scallop vessel access to the year-round groundfish closed areas; this action was implemented on May 20, 2013.

Spiny Dogfish. Along with skates, spiny dogfish are one of the primary incidental species in the NE multispecies fishery. Spiny dogfish have historically been landed more with bottom gillnets rather than bottom trawls. Specifications for FY 2010 and 2011 included an overall commercial quota (15 million lbs in 2010; 20 million lbs in 2011) and a 3,000-lb trip limit. Fishing effort is largely constrained by NE Multispecies and Monkfish DAS. A3 to the spiny dogfish FMP established a research set aside program, updated EFH definitions, and included year-end rollover of management measures and revisions to the quota allocation scheme.

American Lobster. Since the skate bait fishery supplies a large proportion of bait to lobster trap fisheries, regulations affecting lobster fishing effort may influence demand for skate products. NMFS is in rulemaking to limit future access and control trap fishing effort in Lobster Management areas 2 (southern MA and RI waters) and the Outer Cape Area (east of Cape Cod, MA). This action will address measures to: implement a trap transferability system in these areas, as well as Area 3 (the offshore Area from ME to NC); allow trap transfers among qualifiers; and impose a trap reduction or conservation tax on any trap transfers. Another action proposes to limit future access into the lobster trap fishery in Lobster Area 1 (the inshore Gulf of Maine). This action is intended to discourage lobster non-trap vessels from entering the lobster trap fishery, and discourage lobster trap vessels fishing in other lobster management areas from entering the Area 1 lobster trap fishery.

Atlantic Herring. The impacts of the herring fishery on skates catch is considered negligible. However, the 2013-2015 herring specifications increase the ABC to 114,000 mt. Herring are often used as lobster bait in the Gulf of Maine and the Area 1A TAC increased to 29,775 mt. As the supply of herring bait for the lobster fishery declines, it could result in increased demand for skate bait.

Mid-Atlantic Species. Skates are occasionally caught as bycatch in various fisheries managed by the Mid-Atlantic Fishery Management Council (e.g., summer flounder, scup, black sea bass, bluefish). NMFS has recently proposed regulations implementing the Mid-Atlantic ACL Omnibus Amendment, which will implement ACLs and AMs for all species managed by the Mid-Atlantic Council. As many of these fisheries are jointly managed with the Atlantic States Marine Fisheries Commission (ASMFC), seasons, quotas, trip limits, and other measures are specified by state agencies. The implementation of ACLs and AMs for these fisheries will help constrain total catch of these species, as well as bycatch of non-target species like skates.

Large Whales. The Atlantic Large Whale Take Reduction Program (ALWTRP) requires the use of sinking groundlines, which may have a negligible to low negative impact on habitat due to associated bottom sweep by the groundline. In addition, required use of weak links in gillnets may result in floating "ghost gear," which could snag on and damage bottom habitat.

Future Actions:

Skates. Skate fishery specifications for FY 2014 and FY 2015 would replace the management measures implemented by the 2012-2013 specification package. Without approval of the proposed action in this specifications document, the ACL specifications would revert back to ones set by the 2012-2013 specifications package. Overfishing is occurring on thorny and winter skates; the Council prioritized management action to address thorny overfishing status in 2014 but this action and its reduction in ACL is expected to address winter skate overfishing status. The industry has asked the Council to consider limiting access to the skate fishery and the Council requested NMFS set a control date for skate uses other than bait; a control date for the bait fishery was set in 2010.

NE Multispecies. FW 51, if approved by NMFS, would modify the rebuilding programs for Gulf of Maine cod and American plaice and set specifications for white hake and stocks managed by the U.S./Canada Resource Sharing agreement (Eastern Georges Bank cod, Eastern Georges Bank haddock, and Georges Bank yellowtail flounder). FW51 also would establish an accountability measure for the Georges Bank yellowtail flounder sub-ACL in small-mesh fisheries, a mechanism to transfer quota between US and Canada shared stocks, a mechanism to transfer Eastern Georges Bank haddock quota to Western Georges Bank haddock quota, a revised discard strata for Georges Bank yellowtail flounder, and possession of yellowtail flounder in the scallop fisheries..

Monkfish. FW 8, if approved by NMFS, would establish new specifications for the monkfish fishery, including Days at Sea (DAS) and trip limits. Catch limits in the fishery are not expected to change based on the advice of the NEFMC's SSC to maintain existing ABCs following the 2013 monkfish assessment update. Increase in the DAS may result in a small increase in effort as this fishery does no currently harvest its full TAL. This action would also increase flexibility for permit category H fishermen and SMA vessels.

Atlantic Sea Scallops. The Council is currently developing FW 25 to the Scallop FMP. The action is expected to set specifications for FY 2014 and FY 2015 including OFL, ABC, scallop ACLs and associated set-asides, day-at-sea allocations, general category fishing allocations, and area rotation schedule and allocations for the 2014 fishing year as well as default measures for FY 2015 that are expected to be replaced by a subsequent action.

Spiny Dogfish. The Mid-Atlantic Fishery Management Council and NEFMC are currently developing an action to set specifications for spiny dogfish for FY2014 and FY2015, to set trip limits, and recommend RSA percentages.

Essential Fish Habitat. Reasonably foreseeable future actions that will likely affect habitat include the EFH Omnibus Amendment (under development at this time). The EFH Omnibus Amendment will provide for a review and update of EFH designations, identify HAPCs, as well as provide an update on the status of current knowledge of gear impacts. It will also include new proposals for management measures for minimizing the adverse impact of fishing on EFH that will affect all species managed by the NEFMC.

Sea Turtles. The Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic Ocean and Gulf of Mexico ("Strategy") is a gear-based approach to addressing sea turtle bycatch. NMFS is considering increasing the size of the escape opening for Turtle Excluder Devices (TEDs) in the summer flounder fishery, expanding the use of TEDs to other trawl fisheries, and modifying the geographic scope of the TED requirements (74 FR 88 May 8, 2009).

Atlantic Sturgeon. Atlantic sturgeon has been proposed for listing under the Endangered Species Act (ESA). The Biological Opinion regarding Atlantic Sturgeon issued on December 16, 2013 did not find listing of sturgeon or any additional measures to reduce interactions with sturgeon to be necessary.

Non-Fishing Effects: Past, Present and Reasonably Foreseeable Future Actions

Non-fishing activities that occur in the marine nearshore and offshore environments and their watersheds can cause the loss or degradation of habitat and/or affect the species that reside in those areas. Section 6.6.10.2 in the FW1 EA provides a summary of past, present, and reasonably foreseeable non-fishing activities and their expected effects on VECs in the affected environment. The following discussions of impacts are based on past assessments of activities and assume these activities will likely continue into the future as projects are proposed.

Construction/Development Activities and Projects: Construction and development activities include, but are not limited to, point source pollution, agricultural and urban runoff, land (roads, shoreline development, wetland loss) and water-based (beach nourishment, piers, jetties) coastal development, marine transportation (port maintenance, shipping, marinas), marine mining, dredging and disposal of dredged material and energy-related facilities. These activities can introduce pollutants (through point and non-point sources), cause changes in water quality (temperature, salinity, dissolved oxygen, suspended solids), modify the physical characteristics of a habitat or remove/replace the habitat altogether. Many of these impacts have occurred in the past and present and their effects would likely continue in the reasonably foreseeable future. It is likely that these projects would have negative impacts caused from disturbance, construction, and operational activities in the area immediately around the affected project area. However, given the wide distribution of the affected species, minor overall negative effects to offshore habitat, protected resources, allocated target stocks, and non-allocated target species and bycatch are anticipated since the affected areas are localized to the project sites, which involve a small percentage of the fish populations and their habitat. Thus, these activities for most biological VECs would likely have an overall low negative effect due to limited exposure to the population or habitat as a whole. Any impacts to inshore water quality from these permitted projects, including impacts to planktonic, juvenile, and adult life stages, are uncertain but likely minor due to the transient and limited exposure. It should be noted that wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and, as such, may indirectly constrain the sustainability of the allocated target stocks, non-allocated target species and bycatch, and protected resources.

Restoration Projects: Other regional projects that are restorative or beneficial in nature include estuarine wetland restoration; offshore artificial reef creation, which provides structure and habitat for many aquatic species; and eelgrass (*Zostera marina*) restoration, which provides habitat for many juvenile fishes. Due to past and present adverse impacts from human activities on these types of habitat, restorative projects likely have slightly positive effects at the local level.

Protected Resources Rules: The NMFS final Rule on Ship Strike Reduction Measures (73 FR 60173, October 10, 2008) is a non-fishing action in the US-controlled North Atlantic that is likely to affect endangered species and protected resources. The goal of this rule is to significantly reduce the threat of ship strikes on North Atlantic right whales and other whale species in the region. Ship strikes are considered the main threat to North Atlantic right whales; therefore, NMFS anticipates this regulation will result in population improvements to this critically endangered species.

Energy Projects: Cape Wind Associates (CWA) has received approval to construct a wind farm on Horseshoe Shoal, located between Cape Cod and Nantucket Island in Nantucket Sound, MA. The CWA project would have 130 wind turbines located as close as 4.1 miles off the shore of Cape Cod in an area of approximately 24 square miles with the turbines being placed at a minimum of 1/3 of a mile apart. The potential impacts associated with the CWA offshore wind energy project include the construction, operation, and removal of turbine platforms and transmission cables; thermal and vibration impacts; and changes to species assemblages within the area from the introduction of vertical structures. Other offshore projects that can affect VECs include the construction of offshore liquefied natural gas (LNG) facilities such as the project "Neptune." As it related to the impacts of the Proposed Action, the Neptune project is expected to have small, localized impacts where the pipelines and buoy anchors contact the bottom.

7.7.3 Summary of Cumulative Effects

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

Physical Environment/Habitat/EFH

The management measures described above in the NE Multispecies, Scallop, Monkfish, and Skate FMPs, largely have positive effects on habitat due to reduced fishing efforts, consequently reducing gear interaction with habitat. The other FMP actions that reduce fishing effort generally result in fewer habitat and gear interactions, resulting in low positive effects on habitat. The ALWTRP resulted in low negative to negligible effects on habitat due to the possibility of groundline sweep on the bottom and "ghost gear." The proposed TED requirements would possibly have negative effects on habitat due to potential slight increases in towing time. However, this gear is still being tested. The effects of the proposed action on habitat are considered neutral. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions has resulted in low positive effects on habitat.

Climate change is expected to have an impact on the physical characteristics and habitat aspects of marine ecosystems, and possibly change the very nature of these ecosystems. Increased frequency and intensity of extreme weather events, like hurricanes, may change the physical structure of coastal areas. Water circulation, currents, and the proportion of source waters/freshwater intrusion have been observed to be changing (Ecosystem Status Report, NEFSC, 2011) which influences salinity, water column stratification, transport of nutrients, and food web processes. All of these factors, in addition to others like ocean acidification and changes to water chemistry (Rebuck et al. in prep), threaten living elements of the marine environment, such as corals and shellfish, and may be related to the observed shifts in the planktonic community structure that forms the basis of the marine food web (ecosystem status report).

While the impact analysis in this action is focused on direct and indirect impacts to the physical environment and EFH, there are a number of non-fishing impacts that must be considered when assessing cumulative impacts. Many of these activities are concentrated near-shore and likely work either additively or synergistically to decrease habitat quality. Other non-fishing factors such as climate change and ocean acidification are also thought to play a role in the degradation of habitat. The effects of these actions, combined with impacts resulting from years of commercial fishing activity, have negatively affected habitat. However, impacts from the proposed action were found to be negligible. Therefore, when considering the cumulative effects of this action in combination with past, present, and reasonably foreseeable future actions, no significant impacts to the physical environment, habitat or EFH from the proposed action are expected.

Target Species

The management measures described above are expected to have overall neutral to low positive impacts on target species (skates). Effort limits in the NE Multispecies, Monkfish, and Scallop FMPs are likely to constrain skate catches, while the Skate FMP and the proposed action are likely to convert more skate dead discards into landings (relatively neutral fishing mortality) and divert some fishing activity to trips targeting skates.

Future measures that will likely restrict fishing effort (EFH Omnibus) will also have positive effects on target species. Future measures such as the TED requirements would likely result in positive effects to target species because they may help reduce bycatch. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions has resulted in positive effects on target species. The decline in allowable herring landings could open up new markets for alternative lobster baits, some of it filled by either whole skate landings or by the carcasses of skates landed for the wing market.

Climate change is already impacting fishery resources by shifting distributions, abundances, and phenology of species and the communities that depend on them. For example, cold water species are shifting northward. Some of these shifts are in response to warming waters and some are in response to changes in population abundance and age-structure. Water temperatures are known to exert significant influence different life stages, on reproductive and developmental processes, growth rates, and increase the likelihood of disease. With shifting species distribution, loss of habitat, and changes in mortality, the ability of some fish stocks to respond to harvesting pressure may be reduced, while the ability of some fish stocks may be increased.

These impacts are expected to intensify in the future, increasing the need for a better understanding of which fishery resources are the most vulnerable. NMFS has developed a tool for rapidly assessing and indexing the vulnerability of fish stocks to climate change. The index can help fishery managers identify high vulnerability stocks and more effectively target limited research and assessment resources on stocks of highest concern. The methodology combines a stock's exposure and sensitivity (which includes adaptive capacity) to estimate overall vulnerability. Pilot tests have found the methodology to be robust across temperate and tropical ecosystems. A full assessment will be run in the northeast U.S. for all managed fish and shellfish species in the Spring of 2014 (Nelson et al. in prep).

As found in the cumulative effects analysis for FW1, the long-term trend has been positive for cumulative impacts to target species. While thorny skate remains overfished, effort reductions in the NE Multispecies, Monkfish, and Scallop FMPs have allowed other skate stocks to rebuild, and the rebuilding process for others is underway. Due to differences in effort and species distributions, only marginal increases in barndoor, smooth, and thorny skates catch is expected to result from the proposed action, certainly not enough to cause a stock to become overfished and not enough to derail increases in stock biomass for rebuilding stocks. Further, indirect impacts from the effort reductions in other FMPs are also thought to contribute to skate mortality reductions. These factors, when considered in conjunction with the proposed action which would have negligible impacts to target species due to the implementation of the recommended ACL, would not have any significant cumulative impacts.

Non-Target Species and Bycatch

Actions that reduce fishing effort have had positive effects on non-target species and bycatch because in general, less fishing effort results in less impact to non-allocated target species and bycatch. Conversely, actions that increase fishing effort are considered to have low negative effects on non-target species and bycatch because more fishing generally results in more bycatch. Increases in directed skate fishing effort are likely to come from diverted fishing activity targeting other species, due in part to the requirement to have a multispecies, scallop, or monkfish DAS limited access permit. And when this occurs, it would decrease catch of non-target species that occur more frequently in other areas than those where vessels fish for skates.

Catch of primary non-target species in the skate fishery is monitored and controlled through other FMPs. TED requirements would likely have a positive effect on non-target species and bycatch and discards as they would likely exclude some of these species from capture in the cod end. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions has resulted in positive effects on non-target species and bycatch.

Skates are typically harvested incidentally to fishing for other more valuable species. The primary non-target and bycatch species analyzed for the purposes of this EA are monkfish, spiny dogfish, groundfish, and prohibited skates (barndoor, thorny, and smooth). Management efforts in the past have led to these species being managed under their own FMP. While some groundfish stocks remain in an overfished condition, or subject to overfishing, actions in the NE Multispecies FMP (e.g. Amendment 16) are attempting to control mortality on these stocks. Monkfish, spiny dogfish, barndoor skate, and smooth skate are no longer overfished or experiencing overfishing. Only thorny skate remains overfished, but there is little overlap between skate or groundfish fishing effort and thorny skate distribution (e.g. deep basins in the Gulf of Maine) (NEFMC 2009). Mortality and effort controls such as NE Multispecies, Monkfish, and Scallop DAS collectively help reduce bycatch of non-target species. Impacts to all of these species from the proposed action were found to be negligible, and the proposed action would not result in any significant cumulative direct or indirect impacts.

Protected Resources

Past and present actions in fisheries that catch skates (groundfish, monkfish, scallop) have had negligible or positive effects on protected resources. Management plans for marine mammals have implemented effort restrictions and had positive affects by reducing injuries and deaths. Future positive impacts are likely.

For sea turtles, changes to both their marine and terrestrial environment due to climate change pose a challenge. Recent studies suggest that warming temperatures at nesting beaches could have the strongest impacts on sea turtle populations due to reduced nest success and recruitment (Santidrian-Tomillo et al. 2012; Saba et al. 2012). Additionally, increased severity of extreme weather events may create erosion and damage to turtle nest and nesting sites (Goldenberg et al 2001; Webster et al 2005, IPCC 2007), resulting in a further reduction in nest success and recruitment. These potential declines in the success of nesting could have profound effects on the abundance and distribution of sea turtles. Moreover, warming air temperature can also affect the demography of sea turtle populations because the sex ratio of hatchling sea turtles is determined by the temperature during incubation in nesting beaches. Female offspring are produced at warmer temperatures and thus climate change could lead to a lower ratio of males in the population. Changes in water circulation near nesting beaches could affect the early life history stages of sea turtles by transporting passively-drifting hatchlings to waters that may have increased predation rates (Shillinger et al. 2012). Furthermore, prey availability and quality may also be affected by climate change but these projections are far less certain.

Marine mammals are subject to impacts from global climate change through climate variability, water temperature changes, changes to ocean currents, changes in impact primary productivity and prey species availability. For example, shifts in zooplankton patch formation, which have already been observed, could affect the feeding opportunities and therefore populations of North Atlantic Right Whales (NEQ website). Susceptibility to disease, changes in toxicant exposure, and decreased reproductive success with rising ocean temperatures and related climate-ecosystem changes is also of concern (Burek et. al, 2008). Species that migrate to feeding grounds in polar regions (including many baleen whale populations) may be more susceptible to climate change in the near-term since conditions in the polar regions are changing more rapidly than in temperate regions.

The proposed action is not expected to increase the potential for gear interactions with protected species. This action would likely have negligible impacts on protected resources. Historically, the implementation of FMPs has resulted in reductions in fishing effort and as a result, past fishery management actions are thought to have had a slightly positive impact on strategies to protect protected species. Gear entanglement continues to be a source of injury or mortality, resulting in some adverse effects on most protected species to varying degrees. One of the goals of future management measures will be to decrease the number of marine mammal interactions with commercial fishing operations. The cumulative result of these actions to meet mortality objectives will be slightly positive for protected resources. The effects from non-fishing actions are also expected to be low negative as the potential for localized harm to VECs exists. The combination of these past actions along with future initiatives to reduce turtle interactions through the Sea Turtle Strategy when considered with the proposed action would not result in significant cumulative impacts.

Human Communities

The effects of past, present, and reasonably foreseeable future fishery management actions have been slightly positive on nearly all VECs with the exception of human communities. Mandated reductions in fishing effort have resulted in negative economic impacts to human communities. Management measures designed to benefit protected resources and restrict fishing effort have low negative effects on the human communities. However, the implementation of annual catch limits and expansion of opportunities through numerous sectors and achievement of the larger goal of fishing groundfish stocks at sustainable rates and rebuilding groundfish stocks to of scallops, spiny dogfish, and monkfish have also helped increase revenue and positive economic impacts. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions has resulted in negative effects on human communities.

As both the physical and ecological elements of the coastal and marine environments change through the impacts described in this section, there will be increasing challenges for the communities and individuals that depend on healthy and productive coasts and marine fisheries. The dynamics of certain fisheries may change entirely. Human communities also face a variety of other threats from changing climate including to human health concerns, energy, transportation, water resources, and food production.

The proposed action would have neutral impacts on human communities; the decrease in allowable landings of skates reduces landings to levels observed in recent fishing years. The status quo possession limits would allow the fisheries to maximize potential of achieving the TAL. Therefore, the proposed action when taken into consideration with past, present, and reasonably foreseeable future actions is not expected to have significant cumulative impacts. Table 26 summarizes the cumulative effects resulting from implementation of the proposed action and CEA baseline.

Table 26 - Cumulative Effects resulting from implementation of the proposed action and CEA Baseline.

		Biological Impacts				
		Habitat Impacts	Allocated Target Species	Non-allocated Target Species and Bycatch	Endangered/ Protected Species	Human Community Impacts
Cumulative Effect Baseline	Effects of Past, Present, and Reasonably Foreseeable Future Non-Fishing Actions	Low negative / negligible	Low negative / negligible	Low negative / negligible	Low negative / negligible	Low negative / negligible
	Effects of Past, Present, and Reasonably Foreseeable Future Fishing Actions	Positive	Positive	Positive	Negligible / positive	Negative
Direct and Indirect Effects of Proposed /Supplemental Action		Negligible	Negligible	Negligible	Negligible	Negligible
Cumulative Effects Summary of Effects from implementation of Proposed Action and Cumulative Effect Baseline		Negligible	Negligible	Negligible	Negligible	Negligible

8.0 Applicable Law

8.1 MAGNUSON-STEVENS FISHERY MANAGEMENT AND CONSERVATION ACT (MSA)

Section 301 of the Magnuson-Stevens Act requires that FMPs contain conservation and management measures that are consistent with the ten National Standards. The most recent Skate FMP changes implemented by Amendment 3 and FW1 address how the proposed management actions comply with the National Standards (refer to Section 6.1 of Amendment 3 and Section 7.1 of the FW1 EA). Under Amendment 3, the NEFMC adopted conservation and management measures that would rebuild overfished skate stocks to achieve, on a continuing basis, the optimum yield for US fishing industry using the best scientific information available consistent with National Standards 1 and 2. The Skate FMP and implementing regulations manage all seven skate species throughout their entire US range, as required by National Standard 3. Amendment 3 (Section 6.1) and FW1 (Section 7.1) describes how the measures implemented under that action do not discriminate among residents of different states consistent with National Standard 4, do not have economic allocation as their sole purpose (National Standard 5), account for variations in these fisheries (National Standard 6), avoid unnecessary duplication (National Standard 7), take into account fishing communities (National Standard 8), addresses bycatch in fisheries (National Standard 9), and promote safety at sea (National Standard 10). By proposing to meet the National Standards requirements of the Magnuson-Stevens Act through future FMP amendments and framework actions, the NEFMC will ensure that overfishing is prevented, overfished stocks are rebuilt, and the maximum benefits possible accrue to the ports and communities that depend on these fisheries and the Nation as a whole.

The proposed action would comply with all elements of the Magnuson-Stevens Act, including the National Standards, and the Skate FMP. This action is being taken in response to new data that indicate an increase in skate biomass, new research on little and winter skate discard mortality, and new information about how the wing fishery responds to various possession limits. The FW1 EA, completed prior to the development of the updated skate ACL, did not contain an analysis of the revised ACL and associated catch limits. Therefore, this EA analyzes the impacts of the revised ABC, ACL, and TALs for skates and adjustments to wing and bait fishery possession limits, in compliance with applicable laws requirement for an analysis of proposed measures.

8.2 National Environmental Policy Act (NEPA)

8.2.1 Finding of No Significant Impacts (FONSI)

This supplemental EA updates the Finding of No Significant Impact (FONSI) consistent with the conclusions derived in the Amendment 3 SEIS, the FW1 EA, and this document.

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

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

Response: The Proposed Action would not jeopardize the sustainability of any of the target species (primarily winter and little skates) affected by the action. The Preferred Alternative adopts catch limits or management measures that are consistent with target fishing levels that have been identified as promoting rebuilding and/or sustaining stock sizes.

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

Response: The Proposed Action is not expected to jeopardize the sustainability of any non-target species. Fishing for skates is typically done on trips targeting more valuable species such as groundfish and monkfish. Effort and catch in these fisheries are controlled by DAS and/or sectors and trip limits. Changes in skate catch limits, therefore, are not expected to influence the sustainability of other species caught on trips that land skates.

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

Response: The Proposed Action is not expected to allow substantial damage to the ocean and coastal habitats and/or Essential Fish Habitat (EFH) as defined under the Magnuson-Stevens Act and identified in the FMP. This action is not expected to result in increases in total fishing effort but may result in shifts to/from areas where vessels target skates depending on the level of TAL caught.

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

Response: The Proposed Action is not expected to have a substantial adverse impact on public health and safety. The reduced amount of allowable skate landings combined with the status quo possession limits are not projected to shorten the fishing year based on landings in recent years.

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

Response: On December 16, 2013 NMFS completed a biological opinion regarding the combined impacts of the northeast regional fisheries. Overall, it was concluded that fishing (including monkfish, groundfish and skate FMPs) is likely to adversely affect but not likely to jeopardize any endangered or threatened species, marine mammals, or critical habitat. However, given the incidental nature of the skate fishery, any impacts from this action will be very minor. As discussed in Section 7.4, these species are expected to have very minimal impacts from the minor changes in fishing effort that are proposed by this action.

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

Response: The Proposed Action is not expected to have a substantial impact on biodiversity and ecosystem function within the Gulf of Maine, Georges Bank, or Southern New England regions, where the skate fishery primarily occurs. The proposed action is not expected to increase fishing effort in the directed skate fishery or in any of the fisheries that catch skate. Effort restrictions in the multispecies, monkfish, and scallop fisheries have proven effective at limiting the impacts of fishing.

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

Response: There are no significant social and economic impacts of the Proposed Action that are interrelated with natural or physical environmental effects. The Proposed Action would maintain possession limits at a level that is likely to enable the skate fishery to remain open year around, while addressing the overfishing status of a targeted skate species. While fishing industry members that fish for skates would benefit socially and economically by the approval of this action, it is not related with any impacts associated with the biological or physical environment. Such impacts are negligible.

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

Response: The effects of the Proposed Action on the quality of human environment are not expected to be highly controversial. The Proposed Action would not modify the majority of measures proposed by the 2012-2013 specifications package, primarily only the decrease in the ACL and TALs. The Proposed Action is not expected to negatively impact habitat, allocated target species, non-allocated target species and bycatch, or protected resources. The methodology of ACL calculation was established in Amendment 3 to the FMP; the Preferred Alternatives don't change that method, rather it only updates the input data. While uncertainty exists in the stock assessment and ABC estimation method for skates, this action is based on the best scientific data available.

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

Response: This action merely revises catch and landings limits for the skate fishery for fishing years 2014 and 2015. Other types of commercial fishing already occur in this area and although it is possible that historic or cultural resources such as shipwrecks could be present, vessels try to avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear. Therefore, it is not likely that the proposed action would 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?*

Response: The effects of the Proposed Action on the human environment are not expected to be highly uncertain or involve unique or unknown risks. Vessels fishing for skates will primarily use trawl and gillnet gear, and maintain traditional fishing practices which will have no greater impact on habitat, protected species, and limit bycatch species than under current conditions. The skate fishery has been successfully managed under the FMP, and the trends in biomass for nearly all managed skates are encouraging. Therefore, the effects on the human environment are not uncertain or involve unique or unknown risks.

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

Response: The cumulative effects analysis presented in Section 7.7 considers the impacts of the Proposed Action in combination with relevant past, present, and reasonably foreseeable future actions and concludes that no significant cumulative impacts are expected from the approval of the revised catch limits for skates. Further, the Proposed Action would not have any significant impacts when considered individually or in conjunction with any of the other actions presented (fishing related and non-fishing related).

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

Response: The impacts of the proposed measures on the human environment are described in Section 7.0 of the EA. This action merely revises catch and landings limits in the skate fishery for fishing years 2014 and 2015. Although there are shipwrecks present in the area where fishing occurs, including some registered on the National Register of Historic Places, vessels typically avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear. Therefore, it is not likely that the proposed action would adversely affect the historic resources listed above.

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

Response: No non-indigenous species would be introduced during the Proposed Action because the increase in catch affects the scope of current fishing practices and does not introduce new methods. No non-indigenous species would be used or transported during fishing activities. Therefore, the Proposed Action would not be expected to result in the introduction or spread of a non-indigenous species.

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

Response: Amendment 3 established a process in the Skate FMP to estimate ACL and associated catch limits for skates. These catch limits are determined in relation to estimates of skate catch and biomass trends. Significant effects are unlikely, because any future changes to catch limits are constrained by the biomass estimates, and a sustainable proportion of catch from the resource. Most other direct and indirect impacts of the proposed action are not likely to establish any precedents for future actions with significant effects.

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?*

Response: The Proposed Action is not expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment. Vessels fishing for skates are required to comply with all local, regional, and national laws and permitting requirements.

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

Response: The Proposed Action is not expected to result in cumulative adverse effects that could have a substantial effect on target or non-target species. As stated in Section 7.7, impact on resources encompassing skates, groundfish, and other stocks is expected to be minimal.

DETERMINATION

In view of the information presented in the FW1 EA and this document, the analysis contained in the supporting EA prepared for the approval of revised catch limits for skates, it is hereby determined that the approval of the revised Skate ABC and catch limits will not significantly impact the quality of the human environment as described above and in the supporting EA. In addition, all beneficial and adverse impacts of the Proposed Action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement (EIS) for this action is not necessary.

John K. Bullard
Regional Administrator Greater Atlantic Region, NMFS

8/14/14
Date

8.2.2 List of preparers; point of contact

Questions concerning this document may be addressed to:
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The information contained in this document was prepared throughout the cooperative efforts of the Skate Plan Development Team members, and other members of the staffs of NMFS and the New England Fishery Management Council. Contributors are:

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8.2.3 Agencies consulted

This proposed action was developed by the New England Fishery Management Council in coordination with the National Marine Fisheries Service and the Mid-Atlantic Fishery Management Council.

8.2.4 Opportunity for public comment

The Preferred Alternatives were developed during the period August 2013 through January 2014 and were discussed at the following meetings. Opportunities for public comment were provided at each of these meetings.

Date	Meeting Type	Location
2013		
8/15/2013	Skate PDT	Hyatt Place, Braintree, MA
9/16/2013	Science and Statistical Committee	Omni Hotel, Providence, RI
9/20/2013	Joint Advisory Panel and Skate Oversight Committee	Holiday Inn, Peabody, MA
9/24-9/26/2013	Council Meeting	Cape Codder Resort, Hyannis, MA
10/30/2013	Skate PDT Conference Call	
11/15/2013	Science and Statistical Committee	Omni Hotel, Providence, RI
11/20/13	Council Meeting	Newport Marriot Hotel, Newport, RI
12/20/2013	Skate PDT Conference Call	
2014		
1/15/2014	Joint Advisory Panel and Skate Oversight Committee	Sheraton Harborside, Portsmouth, NH
1/28-1/30/2014	Council Meeting	Sheraton Harborside, Portsmouth, NH

8.3 Endangered Species Act (ESA)

Section 7 of the ESA requires Federal agencies conducting, authorizing, or funding activities that affect threatened or endangered species to ensure that those effects do not jeopardize the continued existence of listed species. In a Biological Opinion dated December 16, 2013, NMFS determined that fishing activities conducted under the Skate FMP and its implementing regulations are not likely to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS or result in the destruction or adverse modification of critical habitat. An informal consultation under the ESA for FW1 measures was conducted. This action is consistent with, and does not affect the analysis and conclusions of the FW1 EA regarding compliance with the ESA. For further information, refer to Section 8.2 of the FW1 EA.

8.4 Marine Mammal Protection Act (MMPA)

NMFS has reviewed the impacts of FW1 and the Skate FMP on marine mammals and concluded that the specifications are consistent with the provisions of the MMPA and would not alter existing measures to protect the species likely to inhabit the management unit of the Skate FMP. For further information on the potential impacts of the proposed management action, see Section 7.4 of this document.

8.5 Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the CZMA requires that all Federal activities which affect any coastal use or resource be consistent with approved state coastal zone management programs (CZMP) to the maximum extent practicable. NMFS has reviewed the relevant enforceable policies of each coastal state in the NE region for this action and has determined that this action is incremental and repetitive, without any cumulative effects, and is consistent to the maximum extent practicable with the enforceable policies of the CZMP of the following states: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia, and North Carolina. NMFS finds this action to be consistent with the enforceable policies to manage, preserve, and protect the coastal natural resources, including fish and wildlife, and to provide recreational opportunities through public access to waters off the coastal areas. Pursuant to the general consistency determination provision under Section 307 of the CZMA and codified at 15 CFR 930.36(c), NMFS sent a general consistency determination applying to Amendment 3 to the Skate FMP, and all routine Federal actions carried out in accordance with the FMP, to the following states: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia, and North Carolina on December 18, 2009. New Hampshire, Connecticut, Pennsylvania, New Jersey, Delaware, Virginia, and North Carolina have concurred with this determination. For the remaining states that have not responded, consistency has been inferred pursuant to the consistency letter.

8.6 Administrative Procedure Act

Section 553 of the APA establishes procedural requirements applicable to rulemaking by federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process and to give the public adequate notice and opportunity for comment. At this time, no abridgement of the rulemaking process for this action is being requested.

8.7 Information Quality Act (IQA)

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

Utility

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

This document is the principal means by which the information contained herein is available to the public. The information provided in this document is based on the most recent available information from the relevant data sources. The development of this document and the decisions made by NMFS to propose this action are the result of a multi-stage public process.

The *Federal Register* notice that implements the proposed revision to the skate catch limits would be made available in printed publication and on the NMFS NE Regional Office website. Instructions for obtaining a copy of this supplemental EA are included in the *Federal Register* notice.

Integrity

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

Objectivity

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

This information product uses information of known quality from sources acceptable to the relevant scientific and technical communities. Stock status (including estimates of biomass) and the recommended ACL reported in this product are based on the results of the NEFSC bottom trawl survey and catch statistics reported to NMFS, and were subject to peer-review through the Council's Skate PDT and SSC. These methods were developed and peer-reviewed during the 2008 Northeast Data Poor Stocks Working Group stock assessment of the skate complex (NEFSC 2009). These reports are developed using an approved, scientifically valid sampling process. Original analyses in this supplemental EA build upon the analyses contained in Amendment 3 and the FW1 EA, and were prepared using data from accepted sources, and the analyses have been reviewed by NOAA.

Despite current data limitations, the measures proposed for this action were selected based upon the best scientific information available (NEFMC 2011). The principal author of this document is a professional fishery scientist employed by the Council, the chair of the Council's Skate Plan Development Team, and is familiar with the available data and information relevant to the state of the regulated fisheries under the FMP, fishing techniques in the NE Region, biology of skates, and the socioeconomic impacts of the fisheries on impacted communities.

The policy choices are clearly articulated in Section 4.0, of this document, as the management alternatives considered in this action. The supporting science and analyses, upon which the policy choices are based, are summarized and described, or incorporated by reference, in Sections 6.0 and 7.0 of this supplemental EA. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency.

The review process used in preparation of this supplemental EA involves the Northeast Fisheries Science Center, the Northeast Regional Office, and NMFS Headquarters. The Center's technical review is conducted by senior level scientists with specialties in population dynamics, stock assessment methods, demersal resources, population biology, and the social sciences. Review by staff at the Regional Office is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. Final approval of the action proposed in this supplemental EA and clearance of any rules prepared to implement resulting regulations is conducted by staff at NMFS Headquarters, the Department of Commerce, and the United States Office of Management and Budget.

8.8 Executive Order 13132 (Federalism)

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

8.9 Executive Order 13158 (Marine Protected Areas)

The Executive Order on Marine Protected Areas requires each federal agency whose actions affect the natural or cultural resources that are protected by an MPA to identify such actions, and, to the extent permitted by law and to the maximum extent practicable, in taking such actions, avoid harm to the natural and cultural resources that are protected by an MPA. The E.O. directs federal agencies to refer to the MPAs identified in a list of MPAs that meet the definition of MPA for the purposes of the Order. The E.O. requires that the Departments of Commerce and the Interior jointly publish and maintain such a list of MPAs. As of the date of submission of this Amendment, the list of MPA sites has not been developed by the departments. No further guidance related to this Executive Order is available at this time.

8.10 Paperwork Reduction Act

The purpose of the PRA is to control and, to the extent possible, minimize the paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by, or for, the Federal Government. PRA for data collections relating to the Skate FMP have been considered and evaluated under the original Skate FMP implemented in 2003, and approved by the Office of Management and Budget (OMB). This action relies upon the existing collections, including those approved by the OMB under the original FMP, and does not propose to modify any existing collections or to add any new collections. Therefore, no review under the PRA is necessary for this action.

8.11 Regulatory Impact Review

8.11.1 Executive Order 12866

The purpose of E.O 12866 is to enhance planning and coordination with respect to new and existing regulations. This E.O. requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be "significant." Section 7.5 of this document represents the RIR, which includes an assessment of the costs and benefits of the Proposed Action in accordance with the guidelines established by E.O. 12866.

E.O. 12866 requires a review of proposed regulations to determine whether or not the expected effects would be significant, where a significant action is any regulatory action that may:

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

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

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

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

A more detailed discussion of economic impact is provided in Section 7.5. The discussion to follow provides a summary of those findings.

8.11.1.1 Objectives

The goals and objectives of Framework Adjustment 2 are the same as those detailed in the original Northeast Skate Complex FMP and are as follows:

Goal: Consistent with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act and other applicable laws, to develop a Fishery Management Plan to research and manage the Northeast Skate Complex at long-term sustainable levels

Objective 1: Collect information critical for substantially improving knowledge of skate fisheries by species and for monitoring: (a) the status of skate fisheries, resources, and related markets and (b) the effectiveness of skate management approaches

Objective 2: Implement measures to: protect the two currently overfished species of skates (barndoor and thorny) and increase their biomass to target levels, reduce fishing mortality on winter skate, and prevent overfishing of the other species in the Northeast skate complex – this may be accomplished through management measures in other FMPs (groundfish, monkfish, scallops), skate-specific management measures, or a combination of both as necessary.

Objective 3: Develop a skate permit system, coordinate data collection with appropriate state agencies for vessels fishing for skates or catching skates as bycatch only in state waters, and work with the fishing industry to establish a catch reporting system consistent with industry capabilities, including the use of study fleets.

Objective 4: Minimize the bycatch and discard mortality rates for skates caught in both directed and on-directed fisheries through the promotion and encouragement of experimentation, conservation engineering, and gear development.

Objective 5: Promote and encourage research for critical biological, ecological, and fishery information based on the research needs identified in the Skate SAFE Report and scoping document, including the development and dissemination of a skate species identification guide.

Objective 6: Minimize, to the extent possible, the impacts of skate management approaches on fisheries for other species on which New England and Mid-Atlantic fishermen depend (for example, groundfish, monkfish, scallops, and fluke), recognizing the interconnected nature of skate and other fisheries in the Northeast Region.

Objective 7: To the extent possible, manage clearnose and rosette skates separately from the other five species in the skate complex, recognizing that these two species are distributed primarily in the Mid-Atlantic and South Atlantic regions.

8.11.1.2 Description

A description of the entities affected by this Framework Adjustment, specifically the stakeholders of the Northeast Skate Fishery, is provided in Section 6.5 of this document.

8.11.1.3 Problem Statement

The need and purpose of the actions proposed in this Framework Adjustment are set forth in Section 3.2 of this document and are incorporated herein by reference.

8.11.1.4 Analysis of Alternatives

This section provides an analysis of each proposed alternative of FW2 as mandated by EO 12866. The focus will be on the expected changes 1) in net benefits and costs to stakeholders of the Northeast Skate fishery, 2) changes to the distribution of benefits and costs within the industry, 3) changes in income and employment, 4) cumulative impacts of the regulation, and 5) changes in other social concerns. Much of this information is captured already in the detailed economic impacts and social impacts analyses of Sections 7.5 and 7.6 of this document. This RIR will summarize and highlight the major findings of the economic impacts analysis provided in Section 7.5 of this document, as mandated by EO 12866. For social impacts of each alternative, see Section 7.6.

8.11.1.4.1 Updates to Annual Catch Limits

A detailed description of this alternative can be found in Section 4.1 of this document.

8.11.1.4.1.1 Option 1: No Action

Under the no Action Alternative, no changes in ACL or TAL would occur. Although recent landings have been below the TAL, this alternative carries the distinct possibility of allowing landings to exceed the TAL based on revised data. In the long run, this option may lead to future declines in biomass and catch, more restrictive regulation and the failure to reach optimum yield, which would result in a negative and potentially significant economic impact to the fishery.

8.11.1.4.1.2 Option 2: Revised Annual Catch Limit Specifications (Preferred Alternative)

Under this alternative, the TAL would be reduced from 23,365 mt to 16,385 mt. Reductions in the ACL and TAL themselves do not necessarily necessitate changes in management measures, reductions in fishery effort, or changes in fishery profits. The Option 2 TAL (16,385 mt) remains above the total catch by federally reporting vessels from FY 2012 (14,429 mt). Accountability Measures (AMs) are triggered when catch of skate wings reaches 85% of the wing TAL or 90% for the skate bait fishery, as established in FW1 and A3 to the FMP. For either fishery, a lower TAL increases the likelihood of triggering AMs that reduce possession limits to incidental levels (500 lbs). While the long-run economic benefits of both skate fisheries depend on meeting, but not exceeding, the TAL, short-term negative economic impacts may accrue to the targeted skate fishery as a result of this alternative.

8.11.1.4.2 Skate Wing Possession Limit Alternatives

A detailed description of this alternative can be found in Section 4.2 of this document.

8.11.1.4.2.1 Option 1: No Action (Preferred Alternative)

When combined with Updates to ACL Alternative 2: Revised ACL Specifications, the wing possession limits associated with this alternative could potentially result in more frequent triggering of AMs due to the triggering threshold remaining at 85% of TAL and a decreased TAL. The distribution and estimated magnitude of the economic impact of a lower TAL combined with status quo possession limits is presumed to close the fishery due to AMs in December.

Under the assumption of more frequent AM triggers, 10 vessels would see a reduction of more than 10 percent of their total landings revenue under FY2011 conditions, and 5 would see reductions of more than 15 percent of total landings revenue. One vessel would see reductions of over 30 percent. Impacts could be mitigated to some degree by these vessels shifting seasonal effort away from winter, when AMs are more likely to be triggered, and into summer.

In most cases, this option would result in overall landings closer to TAL compared to Option 2, and would result in less frequent AM triggering compared to Option 3. Therefore, Option 1: No Action represents the net-benefit maximizing alternative.

8.11.1.4.2.2 Option 2: Revised Skate Wing Possession Limit

Option 2 would reduce the wing possession limit for skates. It is not clear that changing the skate possession limit changes the level of fishing effort. If however, the reduction in the possession limit reduces directed fishing effort on skates, this reduction will occur during the summer months when interactions of skate gear with turtles tend to be higher in Southern New England and Georges Bank. Vessels may shift fishing effort to areas of lower skate density to reduce skate encounters that can be time consuming; there is no economic benefit to discarding skate.

Simulations performed in Section 7.5.2.2 indicate that this Skate Wing Possession Limit alternative would have reduced TAL in both 2011 and 2012 to a level approximately 12.1% below the preferred TAL proposed in this action, and well below the No Action TAL. If TAL is set at or near the optimum harvest point, any action that constrains harvest significantly below TAL represents an economic loss to the fishery.

8.11.1.4.2.3 Option 3: Revised Skate Wing Possession Limit

This alternative would eliminate the seasonal trip limits and replace them with a constant skate wing possession limit of 5,000 lbs (11,350 live lbs). The economic benefit of an increase in trip possession limits depends upon the corresponding skate wing TAL. To estimate the likelihood of exceeding a proposed TAL, a counterfactual trip landing was generated for every trip in FY2011 and FY2012. Based on the counterfactual, in both FY2011 and FY2012, the TAL would likely have been exceeded. FY2011 represented a peak year for skate landings; in the FY2011 counterfactual, AMs would have been triggered in October, and TAL would have been exceeded as early as November. Counterfactual catch in FY2011 would have exceeded TAL by 4,229 mt (live weight).

FY2011 counterfactual landings suggest that the skate wing fishery triggered AMs in November of FY2011 under the proposed trip possession limits and under Preferred Alternative Option 2: Revised ACL Specification. When a TAL is likely to be binding before the end of the fishing year, an incentive for derby-style fishing exists where individual permit-holders intensify skate landings prior to the triggering of AMs. In FY2011, the recent peak of skate wing landings, 550 unique permits landed skates. Of these, 208 (37.8%) landed skates in December or later and would be affected by an early closure. These are landings that would not be possible under Option 3 due to the triggering of AMs in October and the exceeding of TAL by November. However, some number of these permit-holders would be capable of shifting skate landings to earlier in the fishing year. To be negatively impacted by the triggering of AMs and the exceeding of TAL, a permit-holder would have to disproportionately rely on skate wing landings from December to April. Option 3 does not result in higher overall TAL, but would result in distributional shifts of benefits from late-season harvesters to summer harvesters. Option 1 reaches the same overall TAL with less severe shifts of landings between seasons.

8.11.1.4.3 Bait Possession Limit Alternatives

A detailed description of this alternative can be found in Section 4.3 of this document.

8.11.1.4.3.1 Option 1 No Action (Preferred Alternative)

This action would keep the skate bait possession limit constant at 25,000 lbs. In FY2011, zero trips landed within 1,000 lbs of the possession limit. In 2012, 18 out of the 1,478 (1.2%) federally-reported skate bait landings came within 1,000 lbs of the 25,000 lbs trip limit. No measurable economic impacts would results from this alternative, and it is unlikely that the skate bait fishery, under this option, would trigger AMs at any proposed TAL.

8.11.1.4.3.2 Option 2: Revised Skate Bait Possession Limit

This action would lower the skate bait possession limit to 20,000 lbs. In FY2011, one trip out of 1,733 (.05%) landed greater than the proposed possession limit. In FY2012, 115 out of 1,478 (7.8%) trips landed greater than the proposed possession limit. In FY2011 and FY2012, a total of 256,840 lbs of skate bait were landed in excess of the proposed possession limits. This amount represents only1.2% of all FY2011-FY2012 landings. Although vessels who reach the lower proposed possession limit can shift additional catch to other trips to offset potential losses, the impact of this proposed possession limit would have an upper-bound economic loss of 128,420 lbs of skate bait per year, assuming that TAL is not exceeded under either possession limit. No future benefits are gained through a reduction in catch and the proposed constraining possession limit constitutes an un-necessary economic loss for the skate fishery.

8.11.1.4.4 Skate VTR and Dealer Reporting Codes

A detailed description of this alternative can be found in Section 4.4 of this document.

8.11.1.4.4.1 Option 1: No Action

This alternative would not result in recordkeeping changes and would not present additional measurable costs to the fishery. Therefore, this alternative would not result in any economic impact.

8.11.1.4.4.2 Option 2: Revised Skate VTR and Dealer Reporting (Preferred Alternative)

Option 2: Revised Skate VTR and Dealer Reporting Codes would eliminate a frequently-used classification for skates ("Unclassifiable Skates"), however, the "Little/Winter Skate" classification would remain available. Little and Winter Skates are not easily discerned from other skates, however, under all proposed alternatives, the little/winter classification would provide sufficient coverage for easy dockside classification. This alternative would result only in recordkeeping changes and would not present additional measurable costs to the fishery. Therefore, the proposed alternative would not result in any economic impact.

8.11.1.5 Determination of Significance

The analysis included in this document shows that this action is not a "significant regulatory action" because it will not affect in a material way the economy or a sector of the economy. The preferred Update to Annual Catch Limits Alternative would adopt the TAL consistent with optimal yield in the long-run, maximizing economic benefits of the fishery. The preferred Skate Wing Possession Limit Alternative, though it would result in more frequent triggering of accountability measures (AMs), would reach the TAL associated with the optimum yield, maximizing long-run benefits. The preferred Bait Possession Limit Alternative (Option 1: No Action) would be most likely to harvest TAL without exceeding it, and would thus represent the long-run economic benefit-maximizing option. Skate VTR and Dealer Reporting Code Alternatives, including the preferred alternative, would have negligible economic impacts.

8.11.2 Initial Regulatory Flexibility Analysis (IRFA) – Determination of Significance

8.11.2.1 Introduction

The IRFA requires agencies to assess the impacts of their proposed regulations on small entities. The Regulatory Flexibility Act Analysis (RFAA) determines whether the proposed action would have a significant economic impact on a substantial number of small entities. The Small Business Administration (SBA) size standards define whether a business entity is small and, thus, eligible for Government programs and preferences reserved for "small business" concerns. Size standards have been established for all for-profit economic activities or industries in the North American Industry Classification System (NAICS). The SBA defines a small business in the finfish fishing sector (NAICS code 114111) as a firm or affiliate group with gross revenue of $19.0 million; and the shellfish fishing sector (NAICS code 114112) as a firm or affiliate group with gross revenue of $5.0 million or more.

This section provides an assessment and discussion of the potential economic impacts of the proposed action, as required of the RFA. The objective of the RFA is to require consideration of the capacity of those affected by regulations to bear the direct and indirect costs of regulation. The Final Regulatory Flexibility Analysis (FRFA) must identify the number and types of businesses that would be regulated, indicate how many of these entities are small businesses, explain the expected economic impact of the regulation on small businesses, and describe any feasible alternatives that would minimize the economic impacts.

8.11.2.2 Description of the Reasons Why Action by Agency is Being Considered

The need and purpose of the actions are set forth in Section 3.2 of this document and are incorporated herein by reference.

8.11.2.3 Statement of the Objectives and Legal Basis for the Proposed Action

The goals and objectives of Framework Adjustment 2 are the same as those detailed in Amendment 3 and original Northeast Skate Complex FMP. In general, FW 2 is intended to modify catch limits and management measures to ensure that overfishing does not occur, while at the same time achieving optimal yield (OY).

8.11.2.4 Description and Estimate of the Number of Small Entities to which the Proposed Rule will apply

The proposed decrease in the Skate ACL and TALs would impact vessels that hold Federal open access commercial skate permits that participate in the skate fishery or affiliated groups that hold multiple open access commercial skate permits that participate in the skate fishery. Within the skate fishery, the majority of affiliate groups consist of a single permit-holder. However, 68 affiliate groups hold two or more permits, and one affiliate group holds greater than 4 permits.

According to the FW1 final rule and Final Regulatory Flexibility Analysis (76 FR 28328), as of December 31, 2012, the maximum number of small fishing entities (as defined by the Small Business Administration (SBA)) that may be affected by this action is 2,043 entities. However, during fishing year 2012, only 526 affiliate groups landed any amount of skate. At the permit level, every skate landing permit is defined as a small business according to SBA standards. At the affiliate group level. Of these 526 entities, 7 (1.3%) are defined as large businesses based on 2011-2012 landings. As can be seen from Table 27 below, average revenue from skate or all species taken together is much lower than $19 million.

Table 27 - Skate fishery summary data for 2011-2012 fishing years (Source: NMFS VTR/Dealer data)

Number of vessels	616
Total annual revenue from Skate	$ 6,645,435
Average revenue from Skate	$ 10,788
Total revenue from all trips of the vessels landing any Skate	$229 million
Average revenue from all trips of the vessels landing any Skate	$371,816

8.11.2.5 Reporting, Recordkeeping and Other Compliance Requirements

This action does not introduce any introduce any new reporting, recordkeeping, or other compliance requirements. This action does alter currently available reporting codes but does not create any additional reporting, record-keeping or other compliance requirements. This proposed action does not duplicate, overlap, or conflict with other Federal rules.

8.11.2.6 Description of Steps the Agency Has Taken to Minimize the Significant Economic Impact on Small Entities Consistent with the Stated Objectives of Applicable Statutes

During the development of FW2, NMFS and the Council considered ways to reduce the regulatory burden on and provide flexibility to the regulated community. The measures implemented by the FW2 final rule minimize the long-term economic impacts on small entities to the extent practicable. The proposed action decreases the total allowable landings (TAL), however, the wing and bait possession limits are maintained in an effort to allow the fisheries to achieve the full available TAL. This is expected to allow the fishery to land the TAL with a moderate possibility of triggering the incidental trip limit. Based on FY2011 data, a small number of entities would see a decline in total landings revenue. Overall, long term impacts of FW2 rule, as well as the related actions of the Skate FMP, are minimized by ensuring that management measures and catch levels are sustainable and contribute to rebuilding stocks and, therefore, maximizing yield, as well as providing additional flexibility for fishing operations in the short term.

8.11.2.7 Economic Impacts on Small Entities Resulting from Proposed Action

The economic impact resulting from this action on these small entities is associated with the possession limit; the preferred alternative may be more likely to trigger the incidental trip limit under the lower ACL. Based on recent landing information the fishery is more likely to land close to the full amount of skates allowable under the quotas. The Preferred Alternative is almost certain to result in greater revenue from skate landings when compared to the other wing possession limit options that would lower possession limit or increase it to a level that was highly likely to trigger an AM. Changes in revenue are assumed to proxy for changes in profit within the fishery. Under 2012 fishing conditions, no changes would have occurred in the skate fishery under the preferred alternative. Based on 2011 data and assuming no mitigating shifts in seasonal effort (a worst-case scenario), the preferred alternatives are expected to result in a reduction of more than 10 percent of total landings revenue for 10 affiliate groups, more than 15 percent for 5 affiliate groups and over 30 percent for 1 affiliate group. All 10 affiliate groups are considered “small”; however, impacts are not disproportionate as only 1.3% of all affiliate-level entities in the skate fishery are considered “large.” 2011 data is representative of a recent high-landings skate year, while 2012 is representative of an average-landings skate year.

Although all 10 affiliate groups are considered “small,” these 10 affiliate groups do not constitute a “substantial number.” Furthermore, the impact is not disproportionately borne by small entities; the impact from regulation would only occur in seasons where the AMs are triggered; the impact from regulation could be mitigated by individual entities by shifting effort earlier into the season; and a greater impact would likely result from the selection of any other alternative. No economic impact is expected from the preferred Bait Possession Limits alternative or the preferred Skate VTR and Dealer Reporting Codes alternative. Therefore, the preferred suite of alternatives may be certified as having no significant impact on a substantial number of small entities.

9.0 Glossary

ABC – “Acceptable biological catch” means a level of a stock or stock complex’s annual catch that accounts for the scientific uncertainty in the estimate of OFL.

ACL – “Annual catch limit” is the level of annual catch of a stock or stock complex that serves as the basis for invoking accountability measures (AMs).

ACT – “Annual catch target” is an amount of annual catch of a stock or stock complex that is the management target of the fishery.

Adult stage – One of several marked phases or periods in the development and growth of many animals. In vertebrates, the life history stage where the animal is capable of reproducing, as opposed to the juvenile stage.

Adverse effect – Any impact that reduces quality and/or quantity of EFH. May include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include sites-specific of habitat wide impacts, including individual, cumulative, or synergistic consequences of actions.

Aggregation – A group of animals or plants occurring together in a particular location or region.

AMs – “Accountability measures” are management controls that prevents ACLs or sector ACLs from being exceeded, where possible, and correct or mitigate overages if they occur.

Amendment – a formal change to a fishery management plan (FMP). The Council prepares amendments and submits them to the Secretary of Commerce for review and approval. The Council may also change FMPs through a "framework adjustment procedure".

Availability – refers to the distribution of fish of different ages or sizes relative to that taken in the fishery.

Benthic community – Benthic means the bottom habitat of the ocean, and can mean anything as shallow as a salt marsh or the intertidal zone, to areas of the bottom that are several miles deep in the ocean. Benthic community refers to those organisms that live in and on the bottom.

Biological Reference Points – specific values for the variables that describe the state of a fishery system which are used to evaluate its status. Reference points are most often specified in terms of fishing mortality rate and/or spawning stock biomass.

Biomass – The total mass of living matter in a given unit area or the weight of a fish stock or portion thereof. Biomass can be listed for beginning of year (Jan-1), Mid-Year, or mean (average during the entire year). In addition, biomass can be listed by age group (numbers at age * average weight at age) or summarized by groupings (e.g., age 1+, ages 4+ 5, etc). See also spawning stock biomass, exploitable biomass, and mean biomass.

Biota – All the plant and animal life of a particular region.

Bivalve – A class of mollusks having a soft body with platelike gills enclosed within two shells hinged together; e.g., clams, mussels.

Bottom tending mobile gear – All fishing gear that operates on or near the ocean bottom that is actively worked in order to capture fish or other marine species. Some examples of bottom tending mobile gear are otter trawls and dredges.

Bottom tending static gear – All fishing gear that operates on or near the ocean bottom that is not actively worked; instead, the effectiveness of this gear depends on species moving to the gear which is set in a particular manner by a vessel, and later retrieved. Some examples of bottom tending static gear are gillnets, traps, and pots.

B_{MSY} – the stock biomass that would produce maximum sustainable yield (MSY) when fished at a level equal to F_{MSY}. For most stocks, B_{MSY} is about ½ of the carrying capacity.

B_{target} – A desirable biomass to maintain fishery stocks. This is usually synonymous with BMSY or its proxy, and was set in the original Monkfish FMP as the median of the 3-yr. running average of the 1965-1981 autumn trawl survey biomass index.

$B_{threshold}$ – 1) A limit reference point for biomass that defines an unacceptably low biomass i.e., puts a stock at high risk (recruitment failure, depensation, collapse, reduced long term yields, etc). 2) A biomass threshold that the SFA requires for defining when a stock is overfished. A stock is overfished if its biomass is below Bthreshold. A determination of overfished triggers the SFA requirement for a rebuilding plan to achieve Btarget as soon as possible, usually not to exceed 10 years except certain requirements are met. For monkfish, Bthreshold was specified in Framework 2 as 1/2BTarget (see below).

Bycatch – (v.) the capture of nontarget species in directed fisheries which occurs because fishing gear and methods are not selective enough to catch only target species; (n.) fish which are harvested in a fishery but are not sold or kept for personal use, including economic discards and regulatory discards but not fish released alive under a recreational catch and release fishery management program.

Capacity – the level of output a fishing fleet is able to produce given specified conditions and constraints. Maximum fishing capacity results when all fishing capital is applied over the maximum amount of available (or permitted) fishing time, assuming that all variable inputs are utilized efficiently.

Catch – The sum total of fish killed in a fishery in a given period. Catch is given in either weight or number of fish and may include landings, unreported landings, discards, and incidental deaths.

Coarse sediment – Sediment generally of the sand and gravel classes; not sediment composed primarily of mud; but the meaning depends on the context, e.g. within the mud class, silt is coarser than clay.

Continental shelf waters – The waters overlying the continental shelf, which extends seaward from the shoreline and deepens gradually to the point where the sea floor begins a slightly steeper descent to the deep ocean floor; the depth of the shelf edge varies, but is approximately 200 meters in many regions.

Council – New England Fishery Management Council (NEFMC).

CPUE – Catch per unit effort. This measure includes landings and discards (live and dead), often expressed per hour of fishing time, per day fished, or per day-at-sea.

DAS – A day-at-sea is an allocation of time that a vessel may be at-sea on a fishing trip. For vessels with VMS equipment, it is the cumulative time that a vessel is seaward of the VMS demarcation line. For vessels without VMS equipment, it is the cumulative time between when a fisherman calls in to leave port to the time that the fisherman calls in to report that the vessel has returned to port.

Days absent – an estimate by port agents of trip length. This data was collected as part of the NMFS weighout system prior to May 1, 1994.

Demersal species – Most often refers to fish that live on or near the ocean bottom. They are often called benthic fish, groundfish, or bottom fish.

Discards – animals returned to sea after being caught; see Bycatch (n.)

Environmental Impact Statement (EIS) – an analysis of the expected impacts of a fishery management plan (or some other proposed federal action) on the environment and on people, initially prepared as a "Draft" (DEIS) for public comment. The Final EIS is referred to as the Final Environmental Impact Statement (FEIS).

Essential Fish Habitat (EFH) – Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The EFH designation for most managed species in this region is based on a legal text definition and geographical area that are described in the Habitat Omnibus Amendment (1998).

Exclusive Economic Zone (EEZ) – for the purposes of the Magnuson-Stevens Fishery Conservation and Management Act, the area from the seaward boundary of each of the coastal states to 200 nautical miles from the baseline.

Exempted fisheries – Any fishery determined by the Regional Director to have less than 5 percent regulated species as a bycatch (by weight) of total catch according to 50 CFR 648.80(a)(7).

Exploitation Rate – the percentage of catchable fish killed by fishing every year. If a fish stock has 1,000,000 fish large enough to be caught by fishing gear and 550,000 are killed by fishing during the year, the annual exploitation rate is 55%.

Fathom – A measure of length, containing six feet; the space to which a man can extend his arms; used chiefly in measuring cables, cordage, and the depth of navigable water by soundings.

Fishing effort – the amount of time and fishing power used to harvest fish. Fishing power is a function of gear size, boat size and horsepower.

Fishing Mortality (F) – (see also exploitation rate) a measurement of the rate of removal of fish from a population by fishing. F is that rate at which fish are harvested at any given point in time. ("Exploitation rate" is an annual rate of removal, "F" is an instantaneous rate.)

$F_{0.1}$ – F at which the increase in yield-per-recruit in weight for an increase in a unit-of effort is only 10% of that produced in an unexploited stock; usually considered a conservative target fishing mortality rate.

F_{MSY} – a fishing mortality rate that would produce the maximum sustainable yield from a stock when the stock biomass is at a level capable of producing MSY on a continuing basis.

F_{MAX} – the fishing mortality rate that produces the maximum level of yield per recruit. This is the point beyond which growth overfishing begins.

F_{target} – the fishing mortality that management measures are designed to achieve.

FMP (Fishery Management Plan) – a document that describes a fishery and establishes measures to manage it. This document forms the basis for federal regulations for fisheries managed under the regional Fishery Management Councils. The New England Fishery Management Council prepares FMPs and submits them to the Secretary of Commerce for approval and implementation.

Framework adjustments: adjustments within a range of measures previously specified in a fishery management plan (FMP). A change usually can be made more quickly and easily by a framework adjustment than through an amendment. For plans developed by the New England Council, the procedure requires at least two Council meetings including at least one public hearing and an evaluation of environmental impacts not already analyzed as part of the FMP.

$F_{threshold}$ – 1) The maximum fishing mortality rate allowed on a stock and used to define overfishing for status determination. 2) The maximum fishing mortality rate allowed for a given biomass as defined by a control rule.

Growth Overfishing – the situation existing when the rate of fishing mortality is above F_{MAX} and then the loss in fish weight due to mortality exceeds the gain in fish weight due to growth.

ICL – Interim catch limit is the maximum amount of skate catch, including landings and dead discards, that has been chosen to promote skate rebuilding. This limit has been calculated as the product of the median catch/biomass index for the time series and the latest 3 year moving average of the applicable survey biomass (spring survey for little skate; fall survey for all other managed skates).

Individual Fishing Quota (IFQ) – A Federal permit under a limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by an individual person or entity

Landings – The portion of the catch that is harvested for personal use or sold.

Larvae (or Larval) stage – One of several marked phases or periods in the development and growth of many animals. The first stage of development after hatching from the egg for many fish and invertebrates. This life stage looks fundamentally different than the juvenile and adult stages, and is incapable of reproduction; it must undergo metamorphosis into the juvenile or adult shape or form.

Limited Access – a management system that limits the number of participants in a fishery. Usually, qualification for this system is based on historic participation, and the participants remain constant over time (with the exception of attrition).

Limited-access permit – A permit issued to vessels that met certain qualification criteria by a specified date (the "control date").

LPUE – Landings per unit effort. This measure is the same as CPUE, but excludes discards.

Maximum Sustainable Yield (MSY) – the largest average catch that can be taken from a stock under existing environmental conditions.

Mesh selectivity (ogive) – A mathematical model used to describe the selectivity of a mesh size (proportion of fish at a specific length retained by mesh) for the entire population. L25 is the length where 25% of the fish encountered are retained by the mesh. L50 is the length where 50% of the fish encountered are retained by the mesh.

Meter – A measure of length, equal to 39.37 English inches, the standard of linear measure in the metric system of weights and measures. It was intended to be, and is very nearly, the ten millionth part of the distance from the equator to the north pole, as ascertained by actual measurement of an arc of a meridian.

Metric ton – A unit of weight equal to a thousand kilograms (1kgs = 2.2 lbs.). A metric ton is equivalent to 2,204.6 lbs. A thousand metric tons is equivalent to 2.204 million lbs.

Minimum Biomass Level – the minimum stock size (or biomass) below which there is a significantly lower chance that the stock will produce enough new fish to sustain itself over the long-term.

Mortality – Noun, either referring to fishing mortality (F) or total mortality (Z).

Multispecies – the group of species managed under the Northeast Multispecies Fishery Management Plan. This group includes whiting, red hake and ocean pout plus the regulated species (cod, haddock, pollock, yellowtail flounder, winter flounder, witch flounder, American plaice, windowpane flounder, white hake and redfish).

Natural Mortality (M) – a measurement of the rate of fish deaths from all causes other than fishing such as predation, cannibalism, disease, starvation, and pollution; the rate of natural mortality may vary from species to species

Northeast Shelf Ecosystem – The Northeast U.S. Shelf Ecosystem has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream.

Observer – Any person required or authorized to be carried on a vessel for conservation and management purposes by regulations or permits under this Act

OFL – "Overfishing limit" means the annual amount of catch that corresponds to the estimate of the maximum fishing mortality threshold applied to a stock or stock complex's abundance and is expressed in terms of numbers or weight of fish.

Open access – Describes a fishery or permit for which there is no qualification criteria to participate. Open-access permits may be issued with restrictions on fishing (for example, the type of gear that may be used or the amount of fish that may be caught).

Optimum Yield (OY) – the amount of fish which-
(a) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems;
(b) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and
(c) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.

Overfished – A conditioned defined when stock biomass is below minimum biomass threshold and the probability of successful spawning production is low.

Overfishing – A level or rate of fishing mortality that jeopardizes the long-term capacity of a stock or stock complex to produce MSY on a continuing basis.

PDT (Plan Development Team) – a group of technical experts responsible for developing and analyzing management measures under the direction of the Council; the Council has a Skate PDT that meets to discuss the development of this FMP.

Proposed Rule – a federal regulation is often published in the Federal Register as a proposed rule with a time period for public comment. After the comment period closes, the proposed regulation may be changed or withdrawn before it is published as a final rule, along with its date of implementation and response to comments.

Rebuilding Plan – a plan designed to increase stock biomass to the B_{MSY} level within no more than ten years (or 10 years plus one mean generation period) when a stock has been declared overfished.

Recruitment overfishing – fishing at an exploitation rate that reduces the population biomass to a point where recruitment is substantially reduced.

Recruitment – the amount of fish added to the fishery each year due to growth and/or migration into the fishing area. For example, the number of fish that grow to become vulnerable to fishing gear in one year would be the recruitment to the fishery. "Recruitment" also refers to new year classes entering the population (prior to recruiting to the fishery).

Regulated groundfish species – cod, haddock, pollock, yellowtail flounder, winter flounder, witch flounder, American plaice, windowpane flounder, white hake and redfish. These species are usually targeted with large-mesh net gear.

Relative exploitation – an index of exploitation derived by dividing landings by trawl survey biomass. This variable does not provide an estimate of the proportion of removals from the stock due to fishing, but allows for general statements about trends in exploitation.

Sediment – Material deposited by water, wind, or glaciers.

Spawning stock biomass (SSB) – the total weight of fish in a stock that sexually mature, i.e., are old enough to reproduce.

Status Determination Criteria – objective and measurable criteria used to determine if overfishing is occurring or if a stock is in an overfished condition according to the National Standard Guidelines.

Stock assessment – An analysis for determining the number (abundance/biomass) and status (life-history characteristics, including age distribution, natural mortality rate, age at maturity, fecundity as a function of age) of individuals in a stock

Stock – A grouping of fish usually based on genetic relationship, geographic distribution and movement patterns. A region may have more than one stock of a species (for example, Gulf of Maine cod and Georges Bank cod). A species, subspecies, geographical grouping, or other category of fish capable of management as a unit.

Surplus production models – A family of analytical models used to describe stock dynamics based on catch in weight and CPUE time series (fishery dependent or survey) to construct stock biomass history. These models do not require catch at age information. Model outputs may include trends in stock biomass, biomass weighted fishing mortality rates, MSY, FMSY, BMSY, K, (maximum population biomass where stock growth and natural deaths are balanced) and r (intrinsic rate of increase).

Surplus production – Production of new stock biomass defined by recruitment plus somatic growth minus biomass loss due to natural deaths. The rate of surplus production is directly proportional to stock biomass and its relative distance from the maximum stock size at carrying capacity (K). BMSY is often defined as the biomass that maximizes surplus production rate.

Survival rate (S) – Rate of survival expressed as the fraction of a cohort surviving the a period compared to number alive at the beginning of the period (# survivors at the end of the year / numbers alive at the beginning of the year). Pessimists convert survival rates into annual total mortality rate using the relationship A=1-S.

Survival ratio (R/SSB) – an index of the survivability from egg to age-of-recruitment. Declining ratios suggest that the survival rate from egg to age-of-recruitment is declining.

TAC – Total allowable catch is equivalent to the ICL.

TAL – Total allowable landings, which for skate management is equivalent to 75% of the TAC minus the dead discard rate.

Ten-minute- "squares" of latitude and longitude (TMS) – A measure of geographic space. The actual size of a ten-minute-square varies depending on where it is on the surface of the earth, but in general each square is approximately 70-80 square nautical miles at 40° of latitude. This is the spatial area that EFH designations, biomass data, and some of the effort data have been classified or grouped for analysis.

Total mortality – The rate of mortality from all sources (fishing, natural, pollution) Total mortality can be expressed as an instantaneous rate (called Z and equal to F + M) or Annual rate (called A and calculated as the ratio of total deaths in a year divided by number alive at the beginning of the year)

Yearclass (or cohort) – Fish that were spawned in the same year. By convention, the "birth date" is set to January 1st and a fish must experience a summer before turning 1. For example, winter flounder that were spawned in February-April 1997 are all part of the 1997 cohort (or year-class). They would be considered age 0 in 1997, age 1 in 1998, etc. A summer flounder spawned in October 1997 would have its birth date set to the following January 1 and would be considered age 0 in 1998, age 1 in 1999, etc.

Yield-per-recruit (YPR) – the expected yield (weight) of individual fish calculated for a given fishing mortality rate and exploitation pattern and incorporating the growth characteristics and natural mortality.

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