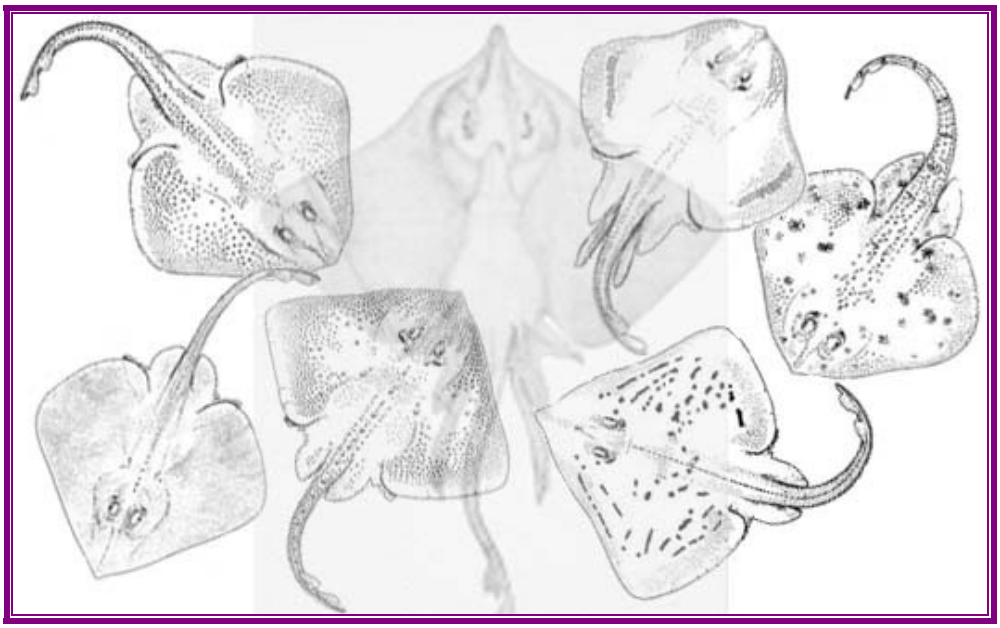
DRAFT FRAMEWORK ADJUSTMENT 1 TO THE FISHERY MANAGEMENT PLAN (FMP) FOR THE NORTHEAST SKATE COMPLEX And ENVIRONMENTAL ASSESSMENT (EA)



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

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1.0 EXECUTIVE SUMMARY

This document serves as Framework Adjustment 1 to the Skate FMP, with an Environmental Assessment to supplement the original FEIS for the skate fishery in Amendment 3 (NEFMC 2009) (available at http://www.nefmc.org/skates/planamen/amend3/final/Skate Amendment 3 FEIS.pdf). The purpose of the framework adjustment is to propose and consider modifications of existing management measures or new skate fishery management measures to address the following issues:

- Slowing the rate of skate wing landings, so that the available Total Allowable Landings limit (TAL) is taken by the fishery over a longer duration in the fishing year than occurred in 2010.
- Allowing vessels that process skate wings at sea to also land skate carcasses for sale into the bait market, without counting the carcass landings against the TAL (skate wings are already converted to live weight for monitoring).

1.1 DOCUMENT ORGANIZATION

This is an integrated document that complies with the requirements of the Magnuson-Stevens Act, the National Environmental Policy Act, and the FMP. The document also includes relevant updates to thee Affected Environment section of the Amendment 3 FEIS. This section describes the Biological Environment (Section 6.2 including a description of the biology and population dynamics of the seven managed skate species), the Physical Environment (Section 6.1), and the Socio-economic Environment (Section 6.5).

The document also includes a discussion of the Management Background (Section 3.2), the Purpose and Need for action (Section 3.1), a description of Proposed Alternatives (Section 4.0) and Considered And Rejected Alternatives (Section 4.3), an analysis of Environmental Consequences of the proposed alternatives (Sections 7.3 to 7.7), and a Cumulative Effects analysis (Section 7.1; including an evaluation of past, present, and reasonably foreseeable future actions). The Environmental Consequences evaluation includes an analysis of the direct and indirect impacts on skates and the skate fishery (Section 7.3), on protected species (Section 7.5.4), on habitat, including essential fish habitat (EFH; Section 7.5.5), on the economy (Section 7.6), and on social and community factors (Section 7.7).

1.2 ALTERNATIVES

Two sets of alternatives are presented for review in this framework adjustment. Alternatives in each set may be chosen independently and the effects of a chosen alternative in one set do not affect the choice or effects of the alternative in the other set.

The first set of alternatives include reductions to the skate wing possession limit, ranging from 2,600 lbs. of skate wings (5,902 lbs. whole) to 4,100 lbs. of skate wings (9,307 lbs. whole), plus the status quo (5,000 lbs. of skate wings, 11,370 lbs. whole). If the Council takes no action, the skate wing possession limit will be automatically restored on May 1, 2011 to 5,000 lbs., until or unless an accountability measure is triggered when landings reach 80% of the 2011 TAL.

The Council intent is that the skate wing possession limit should be chosen based on a balance between a limit that is high enough to allow the fishery to land its allocation, while low enough to prevent the fishery from closing early so that discards increase while markets and shoreside economic activity suffers. Re-specification of the ABC and TALs using new survey and calibration data will have some bearing on the appropriate skate wing possession limit.

These alternatives were derived from four that were analyzed by the Skate Plan Development Team in May 2010 and presented to the Council in June 2010. At that time, a detailed analysis of the effects was conducted using 2009 trip data for trips where skate wings were landed. No new trip data are available to update that analysis, but a new analysis using daily landings rates in the 2010 fishing year augments that earlier possession limit model analysis with new results that may reflect differing conditions (e.g. skate price, operational costs, other fishery regulations, sector participation) that prevailed in 2010.

A second set of alternatives includes a technical change to the regulations which would allow the common (but somewhat infrequent) practice of vessels to process skate wings at sea and land the skate carcasses for sale into the bait market. Most vessels process skate wings at sea, discarding the carcasses, but a fraction of vessels either land whole skates which are processed on shore for the wing market or land skate wings and carcasses separately (sometimes to different dealers). Since the landings of skate wings are converted to whole weight for TAL monitoring, the landings of skate carcasses for the bait market should be allowed but not added to landings for the purposes of monitoring. The proposed alternative would allow this practice, but convert the weight of carcasses to whole weight using a conversion factor of zero (i.e. the landings of carcasses would have zero live weight since the live weight will have been taken into account already by the conversion of wings to live weight).

Table 1. Synopsis of proposed alternative in Section 4.0.

Skate wing possession limit alternatives	Proposed measure	Rationale
1 Status quo (Section 4.1.1)	Skate Wing Possession Limit to Remain at 5,000 Pounds (11,350 lbs. whole weight)	A high skate wing possession limit would counteract the effect of the possession limit reduction triggered at the 80% TAL trigger, it would have a higher likelihood of achieving 100% of the TAL, and would not cause as large an increase in regulatory discarding (as other alternatives), until the AM is triggered to reduce the skate landings limit to 500 lbs. of skate wings.
2 (Section 4.1.2)	Reduce Skate Wing Possession Limit to 4,100 Pounds (9,307 lbs. whole weight)	This possession limit alternative would allow the fishery landings to reach 100% of the TAL, without accounting for the additional discard mortality caused by the lower possession limit.
3 (Section 4.1.3)	Reduce Skate Wing Possession Limit to 3,200 Pounds (7,264 lbs. whole weight)	This possession limit would have a “low” risk of exceeding the ACL and accounted for additional discards from the lower possession limit. And since it already accounted for the expected increase in skate discards, a more conservative

		approach in future years would not be needed.
4 (Section 4.1.4)	Reduce Skate Wing Possession Limit to 2,600 Pounds (5,902 lbs. whole weight)	This possession limit would have a "very low" risk if exceeding the ACL and was estimated to achieve a 31.1% reduction in skate mortality relative to the 2009 fishery, after accounting for the additional skate discards associated with the low skate wing possession limit.
Skate landings monitoring alternatives	Proposed measure	Rationale
1 Status quo monitoring (Section 4.2.1)	Possession and landing of skate carcasses on trips landings skate wings would continue to be prohibited	Promoting on shore processing, would maximize employment and prevent job loss from at sea processing. Discarded skate carcasses liberate energy into the ecosystem, supplying a food source for crustaceans and scavenging species.
2 (Section 4.2.2)	Monitoring adjustments to allow vessels to process wings at sea and land skate carcasses for the bait market, while accurately accounting for landings in whole weight	To help promote more complete and efficient utilization of skate resources.

1.3 PROPOSED ACTION

The proposed action will be chosen by the Council at the final framework meeting. ???

1.4 CONCLUSION

Conclusions will be written after Oversight Committee discussion and Council approval. ???

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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
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 PURPOSE AND NEED FOR THE ACTION (EA, RFA)

The skate wing fishery landings approached the 2010 TAL trigger (80% of the annual wing landings limit TAL) very early in the fishing year (which ends on April 30), it appeared that the TAL would be exceeded by the end of the fishing year, and as a result the Regional Administrator reduced the skate wing possession limit to 500 lbs. on September 3. This action to implement the FMP's new accountability measures had significant ramifications for industry (101210 skate fishing limits draw new fire.doc???) and markets that rely on landing large amounts of a relatively low priced product. Most skate wings are sold overseas and therefore require reliable transportation to foreign markets, a market infrastructure that could be damaged by an extended fishery closure. This framework adjustment is intended to reduce the length of a market disruption and amount of associated economic and community effects by reducing the skate wing possession limit from 5,000 lbs. This action is intended to reduce daily skate wing landings and cause the skate wing fishery to reach the TAL later in the fishing year than it did in 2010.

Although part of the problem was caused by delayed implementation (July 16) of the 5,000 lb. skate wing possession limit and landings nearly doubled from 2009 while the former 20,000 lb. skate wing possession limit was in effect, analysis of 2009 trip data and 2010 daily landings indicate that the 5,000 lb. possession limit would trigger a reduction to the 500 lbs. incidental skate limit early during the fishing year. Using 2009 trip data (complete 2010 data is not yet available for analysis), it is estimated that total skate wing landings would exceed the TAL by 4-9%. But daily landings in 2010 increased relative to 2009 and the daily landings which occurred while the 5,000 lb. limit was in effect only declined by 19% compared to the same May – November period in 2009, a smaller decline in landings that expected by the Amendment 3 analysis. Analysis of the 2010 daily skate wing landings indicates that without taking action, the skate wing fishery would exceed the 2010-2011 skate wing TAL by 45%, triggering a directed skate wing fishery closure (allowing landings of only incidental amounts) for a significant part of the fishing year, if no action is taken and the TALs remain at 2010 levels.

3.2 MANAGEMENT BACKGROUND (EA, RFA)

3.2.1 Skate Fishery Management Plan

Table 2 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 2. Species description for skates in the management unit

SPECIES COMMON NAME	SPECIES SCIENTIFIC NAME	GENERAL DISTRIBUTION	SIZE AT MATURITY	OTHER COMMON NAMES
Winter Skate	*Leucoraja ocellata*	Inshore and offshore GB and SNE with lesser amounts in GOM or MA	Large (> 100 cm)	• **Big Skate** • **Spotted Skate** • **Eyed Skate**
Barndoor Skate	*Dipturus laevis*	Offshore GOM (Canadian waters), offshore GB and SNE	Large (> 100 cm)	

		(very few inshore or in MA region)		
Thorny Skate	*Amblyraja radiata*	Inshore and offshore GOM, along the 100 fm edge of GB (very few in SNE or MA)	Large (> 100 cm)	• **Mud Skate** • **Starry Skate** • **Spanish Skate**
Smooth Skate	*Malacoraja senta*	Inshore and offshore GOM, along the 100 fm edge of GB (very few in SNE or MA)	Small (< 100 cm)	• **Smooth-tailed Skate** • **Prickly Skate**
Little Skate	*Leucoraja erinacea*	Inshore and offshore GB, SNE, and MA (lower abundance in GOM)	Small (< 100 cm)	• **Common Skate** • **Summer Skate** • **Hedgehog Skate** • **Tobacco Box Skate**
Clearnose Skate	*Raja eglanteria*	Inshore and offshore MA	Small (< 100 cm)	• **Brier Skate**
Rosette Skate	*Leucoraja garmani*	Offshore MA	Small (< 100 cm)	• **Leopard Skate**

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

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). In the Northeast Region, the center of distribution for the little and winter skates is Georges Bank and Southern New England. The barndoor skate is most common in the Gulf of Maine, on Georges Bank, and in Southern New England. The thorny and smooth skates are commonly found in the Gulf of Maine. The clearnose and rosette skates have a more southern distribution, and are found primarily in Southern New England and the Chesapeake Bight. 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 the 2008 SAFE Report, Section 7.0 of Amendment 3 (NEFMC 2009).

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 are 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 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. A complete description of available information about these fisheries can be found in Section 6.5.1.

On January 15, 1999, NMFS requested information from the public on barndoor skate for possible inclusion on the list of candidate species under the Endangered Species Act (ESA). On March 4, 1999, NMFS received a petition from GreenWorld to list barndoor skate as endangered or threatened and to designate Georges Bank and other appropriate areas as critical habitat. The petitioners also requested that barndoor skate be listed immediately, as an emergency matter. On April 2, 1999, NMFS received a petition from the Center for Marine Conservation (now the Ocean Conservancy) to list barndoor skate as an endangered species. The second petition was considered by NMFS as a comment on the first petition submitted by GreenWorld. Both the petition and comment referenced a paper in the journal *Science*, which presents data on the decline of barndoor skates (Casey and Myers, 1998). These petitions provided the impetus to complete a benchmark stock assessment for the entire skate complex.

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 has continued to update the status determinations for the skate species based on the biomass reference points used during SAW 30. At the time of the fall 2001 survey, only two species remain in an overfished condition: barndoor and thorny skates. The overfished status of these two species required the Council to develop management measures to end overfishing and rebuild these resources in accordance with the Magnuson-Stevens Fishery Conservation and Management Act.

On September 27, 2002, NMFS published its findings relative to the petitions to list barndoor skate as an endangered species. NMFS determined, after review of the best available scientific and commercial information that listing the barndoor skate was not warranted. The following factors all indicate a positive trend for barndoor skate populations: recent increases in abundance of barndoor skate observed during trawl surveys; the expansion of known areas where barndoor skate have been encountered; increases in size range; and the increase in the number of small barndoor skate that have been collected. These trends are not consistent with a species that is in danger of extinction throughout all or a significant portion of its range or likely to become endangered within the foreseeable future throughout all or a significant portion of its range. NMFS retained the species on its candidate species list, however.

Very little information is available about the individual skate species and the fisheries of which they are a component. Because skates have not been managed through a federal FMP until then, very little accurate and complete fishery data were available (for example, landings and discards by species, amount of skate bait sold directly to lobster vessels, etc.). Without this information, uncertainty will continue to constrain the ability of the Council to take appropriate management actions to conserve these resources as necessary. As an example, while developing the measures proposed in the 2002 FMP, the Council wrestled with difficult issues related to overfishing definition reference points and appropriate management measures to address individual skate species in need of rebuilding. Much of the difficulties arose due to the lack of information and data to support management action that the Council were required by law. Moreover, effective plan monitoring and appropriate recommendations for management adjustments, especially for fisheries in which skates are caught incidentally, hinged on the availability of more comprehensive information about skates.

NMFS approved the Final Skate FMP and implemented regulations on September 18, 2003 which established a fishing year that coincides with the May 1 to April 30 groundfish fishing year, established an open access skate permit and associated reporting requirements, established essential fish habitat (EFH) designations and overfishing definitions for all seven species, established a rebuilding program for barndoor skate and thorny skate, prohibited landings of barndoor, thorny, and smooth skates, set a 10,000 lbs./day or 20,000 lbs./trip skate possession limit, established a letter of authorization for vessels to fish for small skates to supply the bait market with an allowance to exceed the skate possession limit, and established seven baseline management measures to evaluate how related fishery regulations would affect skate catches.

Since FMP implementation, a considerable number of amendments and framework adjustments in the Multispecies, Monkfish, and Scallop FMPs have been approved. Many of these actions have changed the effect that baseline measures had on skate catches and are less relevant now. During this time skate wing landings have increased, skate bait landings have varied without trend, estimated discards have substantially declined, and total skate catch has declined, although the species composition of the catch likely changed somewhat.

Most notably, Multispecies FMP Amendment 13 was implemented in May 20041. This action included a package of measures that reduced groundfish fishing mortality, with a focus on depleted groundfish stocks. Later in 2004, the Council passed Framework Adjustments 40A and 40B, which altered the multispecies DAS program and established some special access programs (SAPs). In particular, Framework Adjustment 40A established a Category B DAS program which vessels could use to target 'healthy stocks of groundfish'. Certain types of vessels were allowed to use these DAS to fish for skates, because it was thought that doing so would not adversely affect depleted groundfish stocks. In 2006, the Council approved and NMFS implemented Framework 42, which among other changes significantly reduced the amount of A DAS that vessels could use to target groundfish and other species. Early indications are that trawl vessels began using more A DAS and gillnet vessels began using more B DAS to fish for skate wings. Framework Adjustment 42 also initiated differential DAS accounting in certain areas, which probably had an effect on the amount and distribution of fishing effort that targeted or discarded skates. The effect of Framework Adjustment 42 on skate discards has not been estimated, but skate discards have substantially declined since Amendment 13 was implemented. Also, the final rule on the Standard Bycatch Reporting Methodology Omnibus Amendment2 was implemented on February 27, 2008.

In the Scallop FMP3, Amendment 10 was implemented in June 2004 and changed the DAS program by including a comprehensive program of area rotation and specific allocation of DAS by management area. It also included measures to reduce and minimize bycatch, as well as measures to minimize the adverse effects of fishing on EFH. Thus, the DAS allocations no longer had the same meaning they once did as a measure of the effect of the scallop fishery on skate catches, limiting its utility as a skate baseline measure. Just as important, the effects on skates also were a result of the spatial allocation of days or trips which were an outcome of scallop area rotation management. These allocations were further modified by Framework Adjustments 16 (2004) and 18 (2006).

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1 Changes in the Multispecies FMP are important because the multispecies fishery has significant amounts of skates that are either discarded or landed as incidental catch. Some vessels with multispecies permits also target skates on either an A or B DAS.

2 Amendment 15 to the Multispecies FMP, Amendment 12 to the Scallop FMP, Amendment 3 to the Monkfish FMP, and Amendment 1 to the Skate FMP.

3 Changes in the Scallop FMP are important because limited access and general category scallop vessels using dredges and trawls often catch and discard skates.

During this period, the scallop fishery also saw a rapid increase in fishing by vessels with open access general category permits. These permits were available to any vessel to fish in exempted areas, allowing the vessel to land up to 400 lbs. of scallop meats on an unlimited number of trips. While skate discard estimates for the general category scallop fleet do not exist and some of this increasing effort occurred in the Mid-Atlantic region, a significant scallop fishery occurred in the Great South Channel area, SE of Cape Cod, MA. Skate discard estimates for this fleet are unavailable, but given the distribution of skates, these vessels likely had significant amounts of little and winter skate discards. Amendment 11 to the Scallop FMP was implemented on April 14, 2008 and included measures to control the capacity and scallop mortality in the general category scallop fishery.

The most notable changes in the Monkfish FMP regulations as they relate to skate catches were Amendment 2 (implemented in 2006) and Framework Adjustment 3 (implemented in November 2006). Amendment 2 made extensive changes in how monkfish DAS could be used, removed a seasonal 20-day block out requirement, and made changes in allowable gear configurations. Again, it is unclear what the effects on skate discards were and discard estimates specifically for the monkfish fishing fleet are unavailable. Framework Adjustment 3 prohibited targeting monkfish on a Multispecies B-regular DAS. While this action may have made more B DAS available for vessels to target skates, it also reduce the DAS available to use to target monkfish and skates in a mixed fishery. It is unclear what effect this action had on skate landings or discards.

Since 2003, the three year moving averages for skate biomass increased for barndoor skate and rosette skate, and despite declining catch the survey biomass declined for the other five skate species (**Error! Reference source not found.**). Barndoor skate is no longer overfished, but biomass has not yet rebuilt to the 1.62 kg/tow target. Thorny skate remained overfished and as of the 2007 survey is experiencing overfishing4.

As a result of these trends in the survey that changed the status of several skate species, NMFS notified the NEFMC on February 20, 2007 that winter skate had become overfished (Document 1 in Appendix I). At the time, the Magnuson-Stevens Act required the Council to develop a plan amendment to address the overfished condition and initiate rebuilding. In addition, the Skate PDT noted that smooth skate was approaching an overfished condition and that little skate biomass could decline enough that overfishing would be occurring.

The Council began developing this amendment in April 2007 and held scoping hearings on May 22-24, 2007. During 2007, the Council developed a framework of measures and alternatives to reduce skate catch and landings, particularly for the wing fishery which catches and lands predominantly winter skate. Poor data quality, however, has been a hindrance for developing management measures and predicting their effects throughout the existence of the Skate FMP. In addition to frequently unclassified species composition of landings and discards, the population dynamics of skates were poorly understood. Recently acquired life history information about fecundity, survival, and growth allowed the PDT to estimate maximum rebuilding potential and mean generation times for smooth, thorny, and winter skates.

These rebuilding potential estimates were presented to the Council's Science and Statistical Committee (SSC) in November 2007, but while the SSC approved of the analysis, they advised the Council that these estimates could not be applied to current conditions to forecast rebuilding and set catch limits

4 NMFS updated these survey results and status determinations with 2008 spring and fall survey data as the Council approved the final alternative and submitted the final amendment document. The new survey results and the updated biological reference points from the Data Poor Assessment Workship changed the status determinations for smooth and winter skates. See Section **Error! Reference source not found.** for a detailed explanation.

accordingly. It was unclear to the SSC whether current rates of exploitation were above or below F_{MSY}, much less whether a particular catch rate would cause rebuilding to occur. The SSC advised the Council that an MSY-based analytical assessment should be attempted, but the Council found that insufficient resources or time were available to begin a new assessment.

In response, the Council prepared a heuristic analysis of changes in skate biomass in response to historic exploitation rates to estimate probabilities of rebuilding biomass based on past history for all seven species. Positive relationships (i.e. increases in biomass with low exploitation rates) were found for smooth, thorny, and winter skates. This approach, developed by the Skate PDT, was approved by the SSC in April 2008 and forms the basis for catch limits proposed by Amendment 3.

While Amendment 3 analysis was occurring, the 2007 survey results became available and NMFS evaluated the status of skates with respect to each species overfishing definition. Biomass of smooth skate declined from 0.19 kg/tow to 0.14 kg/tow, below the minimum biomass threshold of 0.16 kg/tow. Biomass of thorny skate declined from 0.55 kg/tow to 0.42 kg/tow, which is more than the maximum 20% decline that defines overfishing. Based on this new information, NMFS informed the Council on July 21, 2008 that smooth skate is now considered to be overfished and that thorny skate was experiencing overfishing. Little skate biomass had also declined and was very close to the overfishing threshold (a 20% decline in the three year moving average for survey biomass), but preliminary spring trawl survey biomass had substantially increased (5.04 kg/tow) and overfishing is likely not occurring.

In summary, discards have remained stable to a slight increase and skate wing landings have increased since plan implementation in 2003. During this time skate biomass has declined for five of the seven skate species. Smooth and winter skates were classified as overfished because their biomass declined below the minimum biomass threshold. Thorny skate remains overfished and is now experiencing overfishing. And while little skate came very close to overfishing being declared, the preliminary 2008 data indicates that a change in little skate status may have been averted.

3.2.2 Amendment 3

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 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.

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 ABC, 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. This allocation is shown in the figure below???.

3.2.2.1 Fishery and Management Actions in 2010

This framework document was developed in the middle of the 2010 fishing year, so any data from the fishery since Amendment 3 was implemented is incomplete. Estimates of skate discards in 2010 are therefore unavailable at this time, but will become available in time for developing a 2012-2013 specifications package. Daily landings are however monitored and the most up to date reports, which are used to monitor the fishery are included in Section ???.

Landings and discards for 2009 were however updated and included in this document in Section ???. The daily landings of skate wings and skate bait are monitored and these data are analyzed in Section ???. 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 2, 2010, compared to the same time period in 2009. Once the 500 lbs. incidental skate limit became effective on September 3, 2010 the daily skate landings dropped to an average of ??? lbs. and it appears that the skate wing TAL will be exceeded by a small amount, despite the skate wing possession limit reduction. 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.

At this time, it appears that skate bait landings have remained in check, slightly higher than occurred in 2009, but not high enough to trigger a reduction in the skate possession limit for vessels with bait letters of authorization. Some vessels that target skates for the wing market may have applied for a bait letter of authorization to target skates, but the landings are limited only to skates less than 23 cm, generally too small to use to market as wings. This protects the larger skates, such as winter, thorny, and smooth, as Amendment 3 intended.

3.2.2.2 Allowable Biological Catch and Total Allowable Landings in 2011

Since the Council submitted Amendment 3, the Scientific and Statistical Committee reviewed updated information about the skate resource, including the 2008 fall biomass index and 2009 fishery performance. Discards were estimated for 2008 and the discard rate was updated to include 2006-2008 data, instead of 2005-2007 data. Preliminary 2009 discard estimates were provided and considered, but not used in the formal specifications due to incomplete data. The survey data could not be updated through 2009 at this time, because the data had been collected by the FSV Bigelow with new gear and calibration analyses for skates are not yet fully available.

As a result of this re-analysis and update of skate fishery and resource characteristics, the Council approved new specifications for the 2010 and 2011 fishing years, shown in the table below. NMFS is considering these new specifications as part of the final rulemaking. Publication of a final rule for Amendment 3 with the new specifications is expected in June 2010.

Table 3. **Revised skate specifications for 2010 and 2011 fishing years.**

ABC	41,080 mt	Wing fishery possession limit	5,000 lbs. skate wings (11,350 lbs. whole weight)

ACT (75% of ABC)	30,810 mt	Wing fishery TAL trigger	80% of wing fishery TAL
TAL (assuming 53.7% discard rate)	14,277 mt	Bait fishery possession limit with a Letter of Authorization	20,000 lbs. whole weight
State waters catch	391 mt	Bait fishery TAL trigger	90% of bait fishery TAL
Wing fishery TAL	9,209 mt	Bait fishery quotas	
Bait fishery TAL	4,639 mt	May 1 – Jul 31	1,429 mt
		Aug 1 – Oct 31	1,721 mt
		Nov 1 – Apr 30	1,489 mt + any remaining from periods 1 & 2

3.2.3 Protected Species Actions

Many of the factors that serve to mitigate the impacts of the skate fishery on protected species are currently being implemented in the Northeast Region under either the Atlantic Large Whale Take Reduction Plan (ALWTRP) or the Harbor Porpoise Take Reduction Plan (HPTRP). NMFS conducted a Section 7 consultation under the Endangered Species for the proposed skate fishery management plan, and signed a Biological Opinion on July 24, 2003, available on the Regional Office website at: http://www.nero.noaa.gov/prot_res/section7/NMFS-signedBOs/Skate2003signedBO.pdf. The Agency concluded at that time that the skate fishery is not likely to jeopardize the continued existence of any listed marine mammals or sea turtles. The focus of the 2003 consultation was on the directed skate fishery, since the effects of the incidental fishery were considered during the consultation on those other directed fisheries (where the skate is an incidental catch, regardless of whether the skates are landed or discarded). Since 2003, a number of relevant factors have changed, including the status of some skate species, the pattern of effort in the skate fishery (gear, amount and distribution of effort, etc.), the status of ESA-listed species, and agency guidance on how consultations are to be conducted. NMFS has reinitiated the consultation on the skate fishery in response to new information on the anticipated takes of loggerhead turtles in the bottom trawl gear such as that used in the skate fishery (see Murray 2008). The new consultation is on-going. Sections **Error! Reference source not found.** and **Error! Reference source not found.** provide more details on recent takes that initiated a new consultation phase.

In addition, the Northeast Multispecies FMP has undergone repeated consultations pursuant to Section 7 of the Endangered Species Act (ESA), with the most recent Biological Opinion dated June 14, 2001. In that Opinion, NMFS concluded that the continued authorization of the Northeast multispecies FMP would jeopardize the continued existence of ESA-listed right whales as a result of entanglement in gillnet gear. A Reasonable and Prudent Alternative (RPA) was provided to remove the likelihood of jeopardy, and the RPA measures were implemented, in part, through the ALWTRP. On April 2, 2008, NMFS reinitiated section 7 consultation on the continued authorization of the Northeast Multispecies FMP for two reasons: (1) new information on the number of loggerhead sea turtles captured in bottom otter trawl gear used in the fishery, and (2) changes to the ALWTRP that will result in the elimination of measures that were incorporated as a result of the RPA for the June 14, 2001, Opinion on the continued authorization of the Northeast Multispecies FMP. The new consultation is on-going.

3.2.3.1 Harbor Porpoise Take Reduction Plan

NMFS published the rule implementing the Harbor Porpoise Take Reduction Plan on December 1, 1998. The HPTRP includes measures for gear modifications and area closures, based on area, time of year, and

gillnet mesh size. In general, the Gulf of Maine component of the HPTRP includes time and area closures, some of which are complete closures; others are closures to gillnet fishing unless pingers (acoustic deterrent devices) are used in the prescribed manner. The Mid-Atlantic component includes time and area closures in which gillnet fishing is prohibited regardless of the gear specifications. Based on an increase in harbor porpoise takes in the overall sink gillnet fishery in recent years, the Harbor Porpoise Take Reduction Team is currently developing options to reduce takes.

3.2.3.2 Atlantic Large Whale Take Reduction Plan

The ALWTRP contains a series of regulatory measures designed to reduce the likelihood of fishing gear entanglements of right, humpback, fin, and minke whales in the North Atlantic. The main tools of the plan include a combination of broad gear modifications and time/area closures (which are being supplemented by progressive gear research), expanded disentanglement efforts, extensive outreach efforts in key areas, and an expanded right whale surveillance program to supplement the Mandatory Ship Reporting System.

Key regulatory changes implemented in 2002 included: 1) new gear modifications; 2) implementation of a Dynamic Area Management system (DAM) of short-term closures to protect unexpected concentrations of right whales in the Gulf of Maine; and 3) establishment of a Seasonal Area Management system (SAM) of additional gear modifications to protect known seasonal concentrations of right whales in the southern Gulf of Maine and Georges Bank.

On June 21, 2005, NMFS published a proposed rule (70 *Federal Register* 35894) for changes to the ALWTRP, and published a final rule on October 5, 2007 (72 *Federal Register* 57104). The new ALWTRP measures expand the gear mitigation measures by: (a) including additional trap/pot and net fisheries (*i.e.*, gillnet, driftnet) to those already regulated by the ALWTRP, (b) redefining the areas and seasons within which the measures would apply, (c) changing the buoy line requirements, (d) expanding and modifying the weak link requirements for trap/pot and net gear, and (e) requiring (within a specified timeframe) the use of sinking and/or neutrally buoyant groundline in place of floating line for all fisheries regulated by the ALWTRP on a year-round or seasonal basis.

3.2.3.3 Atlantic Trawl Gear Take Reduction Team

The first meeting of the Atlantic Trawl Gear Take Reduction Team (ATGTRT) was held in September 2006. The ATGTRT was convened by NMFS as part of a settlement agreement between the Center for Biological Diversity and NMFS to address the incidental mortality and serious injury of long-finned pilot whales, short-finned pilot whales, common dolphins, and white-sided dolphins in several trawl gear fisheries operating in the Atlantic Ocean. Incidental takes of pilot whales, common dolphins and white-sided dolphins have occurred in fisheries operating under the Atlantic Mackerel, Squid, and Butterfish FMP, as well as in mid-water and bottom trawl fisheries in the Northeast Multispecies and the Atlantic Herring FMPs.

3.3 Maximum Sustainable Yield (MSY)

Principally due to intractable 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 which 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).

The estimated catch when skates are at the biomass target and landings of all skates are allowed is 60,527 mt (Table 4). This value should be considered as a provisional estimate of MSY and is probably conservative due to the historic underreporting of skate landings for data that were used to estimate the median exploitation ratio.

Using the 2005-2007 average fall biomass for barndoor, clearnose, rosette, smooth, thorny, and winter skates and the 2006-2008 average spring biomass for little skate, the current yield that does not exceed the median exploitation ratio is 30,643 mt and was approved by the Council's SSC as the allowable biological catch, or ABC.

Table 4. Exploitation ratios and survey values for managed skates, with estimates of annual catch limits, catch targets, and allowable landings that take into account the 2005-2007 discard rate using DPWS catch data using the selectivity ogive method to assign species to catch5.

	Catch/biomass index (thousand mt catch/kg per tow)		Stratified mean survey weight (kg/tow)			
Species	Median	75% of median	2004-2006	2005-2007	Old MSY Target	New MSY target
Barndoor	3.23	2.42	1.17	1.00	1.62	1.62
Clearnose	2.44	1.83	0.59	0.63	0.56	0.77
Little	2.39	1.79	4.59	5.04	6.54	7.03
Rosette	2.19	1.65	0.06	0.06	0.03	0.05
Smooth	1.69	1.27	0.19	0.14	0.31	0.29
Thorny	3.14	2.36	0.55	0.42	4.41	4.12
Winter	4.12	3.09	3.04	2.93	6.46	5.60
Annual catch limit (ACL/ABC)			30,898	30,643	63,240	60,527
Annual catch target (ACT)			23,162	22,982	47,462	45,388
Total allowable landings (TAL)			9,501	9,427	19,469	18,618

3.4 Optimum Yield (OY)

For the reasons that 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."

While developing Amendment 3, the Council chose to set a catch targets that are 75% of the ABC/ACL value, taking into account all sources of uncertainty and considering unspecified factors. Thus, as a provisional estimate of optimum yield and also defining effective management as achieving the biomass targets, a suitable estimate of optimum yield is 75% of MSY, or 45,388 mt (Table 5). Accounting for the discard rate in 2006-2008, a landed yield of 21,774 mt can be considered as a suitable amount of skate landings to achieve optimum yield when skate biomass is at the target.

5 The survey biomass value for little skate is the arithmetic average of the 2006-2008 spring surveys.

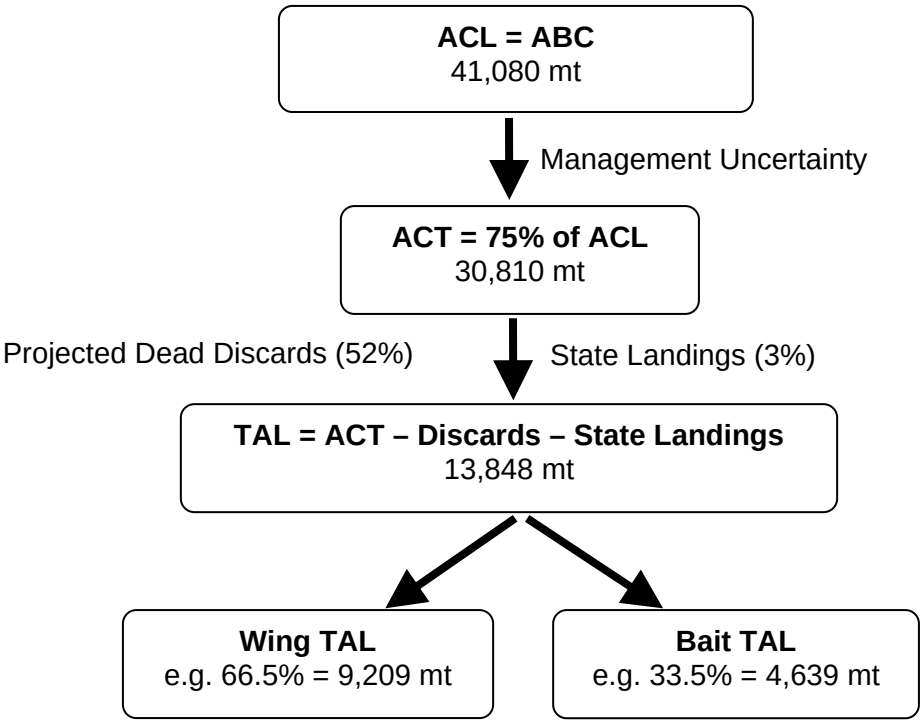
Table 5. **Exploitation ratios and survey values for managed skates, with estimates of annual catch limits, catch targets, and allowable landings that take into account the 2007-2009 discard rate, compared to MSY values when skate biomass is at the target.**

	Catch/biomass index (thousand mt catch/kg per tow)		Stratified mean survey weight (kg/tow)	
Species	**Median**	**75% of median**	**2005-2007**	**MSY target**
Barndoor	3.23	2.42	1.00	1.62
Clearnose	2.44	1.83	0.63	0.77
Little	2.39	1.79	5.04	7.03
Rosette	2.19	1.65	0.06	0.05
Smooth	1.69	1.27	0.14	0.29
Thorny	3.14	2.36	0.42	4.12
Winter	4.12	3.09	2.93	5.60
Annual catch limit (ACL/ABC)			41,080	60,517
Annual catch target (ACT)			30,810	45,388
Total allowable landings (TAL)			14,780	21,774

3.4.1 ABC and ACL specifications

At current skate biomass (2006-2008), the 2010-2011 ACT was set by the Council in Amendment 3 at 30,810 mt, allowing a 25% buffer to account for scientific and management uncertainty. Some measure of scientific uncertainty is inherent in the OFL at the catch/biomass median value (exploitation ratio), since catches which are less than this ratio are more frequently than not (i.e. > 50% of the time) followed by an increase in skate biomass in the historic time series.

Deducting the 2006-2008 discard rate to account for bycatch and a 3% allowance for skate landings taken by state-permitted vessels yields an aggregate TAL ot 13,848 mt, which was allocated to the skate wing and skate bait fisheries, according to historic proportions chosen by the Council in Amendment 3. The figure below describes the specifications approved by the Council in Amendment 3 for the 2010 and 2011 fishing years.



3.5 Overfishing

Since skate fishing mortality could not be reliably estimated and catch reporting was thought to be incomplete, the FMP overfishing definitions rely on estimates of skate biomass, indexed by the appropriate NEFSC trawl survey. Direct estimates of absolute biomass and the relationship between the survey index values and B_{MSY} are unavailable. As a proxy until MSY-based estimates could be developed using better data and methods, the Council chose a value based on the statistical distribution of the annual stratified mean weight per tow. Except for barndoor skate6, the chosen target biomass value was the 75th percentile for the survey time series for each species7. Following the advice in the National Standard 1 guidelines, the Council set the minimum biomass threshold that defined when a species would be considered overfished as ½ of the target value (not the 37.5th percentile).

The survey biomass indices were similarly used to define overfishing, as a rate of exploitation that led to declining biomass. The variation in the annual mean biomass index for each species was used to choose a maximum rate of biomass decline to signify overfishing. This value ranged from a 20% decline in the three year moving average of biomass for little, thorny, and winter skates to a 60% decline in the three year moving average of biomass for rosette skate.

The existing skate overfishing definitions are listed below and the values for making a status determination are listed in **Error! Reference source not found.**.

6 The average 1963-1966 mean weight per tow was chosen as the barndoor skate biomass target.
7 All skates except little skate use the fall survey biomass index, but the time series for each species varies due to changes in which survey strata were sampled.

Winter skate is in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the autumn trawl survey from the selected reference time series. Overfishing occurs when the three-year moving average of the autumn survey mean weight per tow declines ***20% or more, or when the autumn survey mean weight per tow declines for three consecutive years****. The reference points and selected time series may be re-specified through a peer-reviewed process and/or as updated stock assessments are completed.*

Little skate is in an overfished condition when the three-year moving average of the spring survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the spring trawl survey from the selected reference time series. Overfishing occurs when the three-year moving average of the spring survey mean weight per tow declines ***20% or more, or when the spring survey mean weight per tow declines for three consecutive years****. The reference points and selected time series may be re-specified through a peer-reviewed process and/or as updated stock assessments are completed.*

Barndoor skate is in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the mean weight per tow observed in the autumn trawl survey from 1963-1966 (currently 0.81 kg/tow). Overfishing occurs when the three-year moving average of the autumn survey mean weight per tow declines **30% or more, or when the autumn survey mean weight per tow declines for three consecutive years**. The reference points and selected time series may be re-specified through a peer-reviewed process and/or as updated stock assessments are completed.

Thorny skate is in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the autumn trawl survey from the selected reference time series. Overfishing occurs when the three-year moving average of the autumn survey mean weight per tow declines ***20% or more, or when the autumn survey mean weight per tow declines for three consecutive years****. The reference points and selected time series may be re-specified through a peer-reviewed process and/or as updated stock assessments are completed.*

Smooth skate is in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the autumn trawl survey from the selected reference time series. Overfishing occurs when the three-year moving average of the autumn survey mean weight per tow declines ***30% or more, or when the autumn survey mean weight per tow declines for three consecutive years****. The reference points and selected time series may be re-specified through a peer-reviewed process and/or as updated stock assessments are completed.*

Clearnose skate is in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the autumn trawl survey from the selected reference time series. Overfishing occurs when the three-year moving average of the autumn survey mean weight per tow declines ***30% or more, or when the autumn survey mean weight per tow declines for three consecutive years****. The reference points and selected time series may be re-specified through a peer-reviewed process and/or as updated stock assessments are completed.*

Rosette skate is in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the autumn trawl survey from the selected reference time series. Overfishing occurs when the three-year moving average of the autumn survey mean weight per tow declines ***60% or more, or when the autumn***

survey mean weight per tow declines for three consecutive years. *The reference points and selected time series may be re-specified through a peer-reviewed process and/or as updated stock assessments are completed.*

3.5.1.1 Updated stock status using 2008 survey data

At the April 2009 Council meeting, when the Council approved the final alternative and authorized the staff to submit the final amendment document for NMFS review and approval, NMFS warned the Council that the 2008 survey data had been audited and the new data indicated that smooth skate had become overfished (see Document 19 in Appendix I). It was also reported that winter skate would not be classified as overfished, but that thorny skate was both overfished and experiencing overfishing as had been the case using the 2007 survey data. Document 19 was not available at the Council meeting.

Since Amendment 3 had originally been developed to address the overfished condition of smooth and thorny skate, as well as rebuild winter skate to MSY conditions, NMFS advised that no further change in proposed management measures were needed, but that the Amendment 3 needed to clearly state that it addressed the condition of smooth and thorny skates. A brief chronology of Amendment 3 viz. the recent skate status determination for species that are or were overfished was given in Table 5 of Final Amendment 3.

Through aggregate skate catch limits as well as existing and planned changes in other FMPs that govern fisheries that have incidental skate landings or discards, this amendment is intended to rebuild smooth and thorny skates as well as increase skate biomass to produce MSY. The smooth skate rebuilding period is 10 years from implementation of Amendment 3 and the thorny skate rebuilding period is 25 years from the FMP implementation in 2003.

The current status of skates based on data through the 2008 fall survey is shown in Table 9. Preliminary estimates of the calibrated Bigelow biomass index are also listed, but may change pending peer review.

Survey biomass of barndoor skate rose from the late 1990s until 2004 and then stabilized just above 1 kg/tow, between a rebuilt and overfished status. Biomass of clearnose skate has fluctuated around the target since 1998. The high 1.73 kg/tow value in 2008 may be an aberration and contributes to the 3 year moving average presently being above the target. Biomass of little skate has risen from low values in 2005-2007, but generally has bounced back and forth from threshold to target levels throughout the 1982-2009 time series. Little skate overfishing was occurring in 2007, mainly from a biomass decline from 7.22 kg/tow in 2004 to 3.24 and 3.32 kg/tow in 2005 and 2006.

Rosette skate is infrequently caught by the NMFS fall survey, but an overall positive trend is discernable and probably real. Most rosette skates are caught along the shelf edge, on the outer side of the survey coverage, in the Mid-Atlantic to Southern New England and Georges Bank. Current biomass has stabilized around the target since 1994.

Smooth skate occurs mainly in the deeper water of the Gulf of Maine. Biomass values were higher in the 1960s and 1970s, but have since stabilized around the minimum biomass threshold since 1983. Currently, smooth fish is classified as overfished since the three year moving average is below the threshold.

Thorny skate also occurs primarily in the Gulf of Maine. Survey biomass has been in a downward trend almost throughout the 1963-present time series, reaching a record low value of 0.21 kg/tow in 2008. Preliminary converted 2009 data indicate a slight improvement (probably within the bounds of normal

sampling error), but the three year moving average declined from 0.42 to 0.26 kg/tow, due partly from dropping the 2006 biomass index (0.73 kg/tow) from the average. As a result, it appears that thorny skate will be classified as experiencing overfishing and being overfished. Although other calibration methods may be adopted, it is unlikely that the preliminary status of thorny skate in 2009 will change.

Winter skate biomass varied between the threshold and target from 1991 to 2007, following the passage of an influx of winter skate in the 1980s. Biomass in 2008 and 2009 has shot upward and the three year moving average is well above the target. In March 2010, the Skate PDT examined this increase seen in the 2008 and 2009 data, and seeing that most of the increase was attributable to medium size skates with no apparent concentration by stratum, thought that the increase could be related to another migratory event from outside US waters, as occurred in the early 1980s (Frisk et al. 19???).

Table 6. **Survey biomass trends and skate status determinations as of 2008 with preliminary conversions to Albatross survey units in 2009. Green cells indicate biomass is above the target and red cells represent either biomass below the minimum biomass threshold (overfished) or overfishing is occurring.**

	BARNDOOR	CLEARNOSE	LITTLE	ROSETTE	SMOOTH	THORNY	WINTER
Survey (kg/tow) Time series basis Strata Set	**Autumn 1963 – 1966 Offshore 1 – 30, 33-40**	**Autumn 1975-1998 Offshore 61-76, Inshore 15-44**	**Spring 1982-1999 Offshore 1-30, 33-40, 61-76, Inshore 1-66**	**Autumn 1967-1998 Offshore 61-76**	**Autumn 1963-1998 Offshore 1-30, 33-40**	**Autumn 1963-1998 Offshore 1-30, 33-40**	**Autumn 1967-1998 Offshore 1-30, 33-40, 61-76**
1999	0.30	1.05	9.98	0.07	0.07	0.48	5.09
2000	0.29	1.03	8.60	0.03	0.15	0.83	4.38
2001	0.54	1.61	6.84	0.12	0.29	0.33	3.89
2002	0.78	0.89	6.44	0.05	0.11	0.44	5.60
2003	0.55	0.66	6.49	0.03	0.19	0.74	3.39
2004	1.30	0.71	7.22	0.05	0.21	0.71	4.03
2005	1.04	0.52	3.24	0.07	0.13	0.22	2.62
2006	1.17	0.53	3.32	0.06	0.21	0.73	2.48
2007	0.80	0.85	4.46	0.07	0.09	0.32	3.71
2008	1.09	1.73	7.34	0.03	0.10	0.21	9.50
2009 prelim	1.13	0.89	6.55	0.06	0.21	0.25	11.33
2004-2006 3-year average	1.17	0.59	4.59	0.06	0.19	0.55	3.04
2005-2007 3-year average	1.00	0.64	3.67	0.06	0.14	0.42	2.93
2006-2008 3-year average	1.02	1.04	5.04	0.05	0.13	0.42	5.23
2007-2009, prelim. 3-year average	1.01	1.16	6.12	0.05	0.13	0.26	8.18
Percent change 2005-2007 compared to 2004-2006	-14	8	-20	13	-22	-24	-4
Percent change 2006-2008 compared to 2005-2007	2	63	37	-19	-8	-1	78
Percent change 2007-2009 compared to 2006-2008, prelim.	-1	12	21	4	-1	-38	56
Percent change for overfishing status determination in FMP	-30	-30	-20	-60	-30	-20	-20
Biomass Target	1.620	0.770	7.030	0.048	0.290	4.120	5.600
Biomass Threshold	0.810	0.385	3.515	0.024	0.145	2.060	2.800
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	Overfished Overfishing is Not Occurring	Overfished Overfishing is Not Occurring	Not Overfished Overfishing is Not Occurring

3.6 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 amendment 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 DESCRIPTION OF MANAGEMENT ALTERNATIVES AND RATIONALE (EA, RFA)

4.1 CHANGES TO THE SKATE WING POSSESSION LIMIT

4.1.1 Alternative 1: Status Quo – Skate Wing Possession Limit to Remain at 5,000 Pounds (11,350 lbs. whole weight)

Beginning on May 1, 2011 until 80% of the skate wing TAL is landed, the skate wing possession limit will be restored automatically to 5,000 lbs of skate wings, or 11,350 lbs. when landed whole for the skate wing market. Amendment 3 sets this specification for the 2011 fishing year and no action would therefore be needed.

Rationale: Although the Wing TAL trigger was met on September 3, 2010, daily skate wing landings occurred at a much higher rate (+67%) as occurred in 2009, while the 20,000 lbs. skate wing possession limit remained in effect until Amendment 3 implementation on July 16, 2010. By the time, the fishing year's skate wing landings had reached 60% of the TAL.

If the 5,000 lb. skate wing possession limit had been in place from the start of the fishing year, this high rate of landings was expected to decline and the skate wing possession limit would not have been reduced to the incidental 500 lb. incidental skate wing limit until much later in the fishing year. But in actuality, the 5,000 lb. possession limit did not reduce the rate of landings at all, relative to 2009. Between July 16 and September 2, 2010, the daily skate wing landings were almost exactly the than they had been during July 16 to September 2 in FY 2009 under a 20,000 lb. skate wing possession limit.

Based on fitted daily landings rates in the 2010 fishing year, a 5,000 lbs. skate wing possession limit would have averaged 80,859 lbs./day (35,620 lbs. wing weight), or 29.5 million lbs. annually (13,387 mt), which is 45% above the current skate wing TAL of 9,209 mt.

On the other hand, a high skate wing possession limit would counteract the effect of the possession limit reduction triggered at the 80% TAL trigger, it would have a higher likelihood of achieving 100% of the TAL, and would not cause as large an increase in regulatory discarding (as other alternatives), until the AM is triggered to reduce the skate landings limit to 500 lbs. of skate wings (1137 lbs. whole). As it turned out, the AM was triggered early in the fishing year on September 3rd, and discards on trips targeting other species increased, while skate discards on trips that otherwise would have targeted skates probably offset this discard increase.

More importantly, when new data about the trawl survey calibrations for the skate biomass indices, the 2010 skate discard rate, and new data about skate discard mortality are peer reviewed and can be applied to the new specifications, the TAL could be much higher when one or more of these factors are taken into account, according to preliminary data.

The 2009 survey biomass for winter and little skates is likely to be considerably higher than the 2006 biomass indices that would be replaced in a three year average. Although there are indications that length based calibrations are needed and should be peer reviewed, the preliminary indications are that biomass of little and winter skates increased from 2006 to 2009.

Winter skate biomass increased substantially in 2008 and preliminary indications are that it remained at the higher level in 2009, 11.33 kg/tow according to preliminary estimates, up from 2.48 kg/tow in 2006 (which would be dropped from the three year average used to calculate the ABC). Skate discard to kept all ratios for sector vessels also appear to be lower in 2010 than they were for vessels in 2009 that later enrolled in the 2010 sector program. At face value, the decline in the discard to kept ratio would reduce total estimated discards, but by how much cannot be determined until the observed discard ratio can be properly merged with the landings for the same gear, area, and season – for all vessels and gear types. Lastly, preliminary research in the Gulf of Maine, indicates that the assumed 50% discard rate (based on literature) may be too high for some skate species, gears, and circumstances. A lower discard mortality rate could allow the TAL to be higher because a greater portion of total catch would be attributable to landings. On the other hand, reducing the assumed discard mortality rate would also lower the median exploitation ratio that is the basis for the overfishing level (OFL) and acceptable biological catch (ABC).

All of the above three considerations require analysis of complete data and peer review, some or all of which might be completed in some form before the Council sets specifications for the 2012-2013 fishing year. If the results allow a higher TAL to have been applied for the 2011 fishing year, then a reduction in the skate wing possession limit below 5,000 lbs. might be unnecessary.

4.1.2 Alternative 2: Reduce Skate Wing Possession Limit to 4,100 Pounds (9,307 lbs. whole weight)

This alternative would allow vessels landing skates for the wing market to land up to 4,100 lbs. of skate wings, beginning on May 1, 2011 (or as soon as a final rule for this framework adjustment is published). It would remain in effect until the skate wing landings reached 80% of the TAL and it appeared that not taking action would cause the fishery to exceed the annual landings limit (TAL). At that time, the skate possession limit would be reduced by Notice Action to 500 lbs. of skate wings (1137 lbs. whole) until the end of the fishing year.

Rationale: This possession limit alternative was calculated to allow the fishery landings to reach 100% of the TAL based on the possession limit analysis of 2009 trips, without accounting for the additional discard mortality caused by the lower possession limit (reduced from 20,000 lbs.). And as such, "the additional discards resulting from the possession limit should [sic] be captured in future discard estimates and appropriately applied to TALs." A higher possession limit than the other alternatives "would create fewer discards and result in better utilization of the resource (i.e. more of the TAL is likely to be landed)."

However, this alternative also carried "grater risk in exceeding the ABC due to unaccounted discards and would be "more likely to cause the in-season 80% TAL trigger to be met, reducing the skate possession limit to 500 lbs. of wings, potentially causing discards to increase depending on when the AM was tripped." And not directly accounting for the anticipated increased discarding, the alternative would forego the opportunity to be proactive in the 2010 fishing year.

Based on fitted daily landings rates in the 2010 fishing year, a 4,100 lbs. skate wing possession limit would have averaged 73,609 lbs./day (32,427 lbs. wing weight), or 26.9 million lbs. annually (12,187 mt), which is 32% above the current skate wing TAL of 9,209 mt.

4.1.3 Alternative 3: Reduce Skate Wing Possession Limit to 3,200 Pounds (7,264 lbs. whole weight)

This alternative would allow vessels landing skates for the wing market to land up to 3,200 lbs. of skate wings, beginning on May 1, 2011 (or as soon as a final rule for this framework adjustment is published). It would remain in effect until the skate wing landings reached 80% of the TAL and it appeared that not taking action would cause the fishery to exceed the annual landings limit (TAL). At that time, the skate possession limit would be reduced by Notice Action to 500 lbs. of skate wings (1137 lbs. whole) until the end of the fishing year.

Rationale: This possession limit alternative was expected based on 2009 individual trip data to reduce the TAL to achieve the needed skate mortality reduction and account for the expected increase in discards. It was estimated to reduce skate mortality by 27.5% relative to 2009, had a "low" risk of exceeding the ACL and accounted for additional discards in setting the possession limit. And since it already accounted for the expected increase in skate discards, a more conservative approach in future years would not be needed. It is also more consistent with the SSC approval of using the most recent three years to estimate a discard rate and apply it to the ACT to derive appropriate TALs. Based on 2009 trip data, it was estimated that the possession limit reduction would allow the fishery to land about 89% of the TAL.

Based on fitted daily landings rates in the 2010 fishing year, a 3,200 lbs. skate wing possession limit would have averaged 65,462 lbs./day (26,139 lbs. wing weight), or 23.9 million lbs. annually (10,838 mt), which is 18% above the current skate wing TAL of 9,209 mt.

4.1.4 Alternative 4: Reduce Skate Wing Possession Limit to 2,600 Pounds (5,902 lbs. whole weight)

This alternative would allow vessels landing skates for the wing market to land up to 2,600 lbs. of skate wings, beginning on May 1, 2011 (or as soon as a final rule for this framework adjustment is published). It would remain in effect until the skate wing landings reached 80% of the TAL and it appeared that not taking action would cause the fishery to exceed the annual landings limit (TAL). At that time, the skate possession limit would be reduced by Notice Action to 500 lbs. of skate wings (1137 lbs. whole) until the end of the fishing year.

Rationale: This alternative was deemed by the PDT to have a "very low" risk if exceeding the ACL and was estimated to achieve a 31.1% reduction in skate mortality relative to the 2009 fishery, after accounting for the additional skate discards associated with the low skate wing possession limit. The PDT chose this value as an option "to achieve 80% of the TAL trigger and account for additional discard mortality within the 20% TAL buffer." As such, the alternative would be "more likely to achieve the intended mortality reduction" and provide an "additional buffer against exceeding the TAL." Conversely the alternative would be less likely to allow the fishery to "achieve the TAL and would increase discards due to the low possession limit."

Based on fitted daily landings rates in the 2010 fishing year, a 2,600 lbs. skate wing possession limit would have averaged 59,335 lbs./day (26,139 lbs. wing weight), or 21.7 million lbs. annually (9,824 mt), which is 7% above the current skate wing TAL of 9,209 mt.

4.2 TECHNICAL CORRECTIONS

4.2.1 Status quo monitoring

Under the No Action alternative, possession and landing of skate carcasses on trips landings skate wings would continue to be prohibited. Skate could only be landed as wings or in whole

form. If a vessel wanted to sell skate wings to the food market and carcasses to the bait market, those skates would have to be landed in whole form and processed onshore.

Rationale: The status quo would promote on shore processing, maximizing employment and preventing job loss from at sea processing. Discarded skate carcasses, while having some economic value, liberate energy into the ecosystem, supplying a food source for crustaceans and scavenging species.

4.2.2 Adjustments to allow vessels to process wings at sea and land skate carcasses for the bait market

Skates could be possessed or landed either as wings only, wings with associated carcasses possessed separately, or in whole form, or any combination of the three, provided that the weight of skate carcasses does not exceed 1.27 times the weight of skate wings on board. When any combination of wings, carcasses, and whole skates are possessed, the possession limit would be based on the equivalent whole weight limit where wing weight is converted to whole weight using the wing to whole weight conversion factor of 2.27. For example, 100 lb of skate wings x 2.27 = 227 lb of whole skates. If wings and carcasses were possessed separately in this case, the vessel could possess 100 lb of skate wings and 100 x 1.27 = 127 lb of carcasses. The sum of the two products must not exceed the whole weight possession limit. This action is not intended to allow the landing of skate carcasses without skate wings.

In the seafood dealer database used for quota monitoring, landings reported as wings would be converted to whole weight and deducted from the Skate Wing TAL. Similarly, the weights of skates landed in whole form and sold as "food" would be deducted from the Skate Wing TAL. This is how monitoring is currently carried out. Landed carcass weights, however, would receive a conversion factor of zero, ensuring that carcass weights would not also be deducted from the Skate Wing or Bait TALs. The rest of the quota monitoring program implemented under Amendment 3 would remain unchanged, and would continue to appropriately allocate landings to the TALs.

Rationale:

This measure would help promote more complete and efficient utilization of skate resources. It would also provide some additional revenue to vessels in the skate wing fishery, by allowing them to land additional product for the bait market. While only a small fraction of skate fishing vessels are presently engaged in selling skate wings and carcasses to separate markets, this action would adjust the regulations so that this activity is not inhibited.

In the skate wing fishery, skates typically have their wings removed at sea, and the remaining carcasses are discarded. However, some vessels have begun landing whole large skates, removing the wings onshore, and selling the wings to the wing market and the carcasses for use as bait to receive additional revenue (approximately 3.6% of landings in FY 2010). Some additional fishermen have indicated that they would prefer to cut wings at sea, but also retain the carcasses separately for sale as bait. Under the current possession limit regulations implemented under Amendment 3 (50 CFR 648.322(b)(1)), skates may only be possessed as wings or in whole form, but not as wings and carcasses separately before landing (i.e., once the wings are cut at sea, the remaining carcasses must be discarded). Therefore, the purpose of the regulatory correction

is to change the possession limit language to allow skate wings and their associated carcasses to be possessed separately at sea and landed.

Under the proposed revision to the regulations, skates could be possessed or landed either as wings only, wings with associated carcasses possessed separately, or in whole form, or any combination of the three, provided that the weight of skate carcasses does not exceed 1.27 times the weight of skate wings on board. This ratio, based upon established weight conversion factors for skates, would help assure that the only carcasses being possessed correspond to skates which had their wings removed.

4.3 CONSIDERED AND REJECTED ALTERNATIVES

4.3.1 Alternative 4: Increase the Skate Wing Possession Limit to 20,000 Pounds, With a 10,000 Lbs. Possession Limit for Trips Less Than 24 Hours in Duration

This alternative would restore the skate wing possession limit to pre-Amendment 3 levels.

Rationale for rejection: The effect would be inconsistent with the purpose of this framework adjustment, to maximize the length of the season before landings reached the 80% TAL trigger. With current specifications, it would shorten the season further and have more negative economic effects. The Council will be reassessing the skate wing possession limit as part of the 2012-2013 specifications process, when it updates the ABC and TALs so that the skate wing possession limit has the intended effect with the new TALs.

4.3.2 Other Measures

Other alternatives, such as establishing seasonal limits or limiting vessel participation were considered but rejected as part of this framework adjustment.

Rationale for rejection: This framework adjustment quickly addresses a short term problem. Other measures such as those listed above would take longer to develop and would not be available at or near the beginning of the 2011 fishing year.

5.0 COMPLIANCE WITH NATIONAL STANDARDS AND REQUIRED PROVISIONS OF THE MAGNUSON ACT

5.1 Consistency with National Standards

Section 301 of the Magnuson-Stevens Act requires that regulations implementing any fishery management plan or amendment be consistent with the ten national standards listed below.

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

The measures in this action are primarily intended to bring the FMP in conformity with this national standard, reducing skate catch to a sustainable level while preventing overfishing and promoting

rebuilding of thorny skate. The amendment also establishes an acceptable biological catch (ABC) control rule and accountability measures (AM) to achieve National Standard 1 objectives.

After the 2007 bottom trawl survey, NMFS declared smooth and winter skates to be overfished based on the survey results. The biomass for both declined to a value less than the minimum biomass threshold. In addition, thorny skate, which was overfished, declined faster than the maximum fishing mortality threshold allow and was therefore experiencing overfishing. The Northeast Fisehries Science Center held a Data Poor Assessment Workshop (DPWS) which developed new catch data sets, updated data used in assessments, and attempted analytical stock assessments. While the analytical stock assessments were deemed unreliable for management at this time, the DPWS recommended updating the survey time series that had been used to calculate the skate biological reference points. As a result, the current biomass of smooth and winter skates is above the minimum biomass threshold, and as such would not be classified as overfished. Nonetheless, the Council's SSC was concerned about the status of these species and recommended using the median catch/biomass exploitation ratio to limit catches to prevent these species from becoming overfished.

MSY is defined by the FMP as a level of catch that causes biomass declines of more than acceptable limits, which vary by skate species. OY is also defined by the plan in a way that is consistent with plan objectives, but there are differences for species in a rebuilding program (barndoor, smooth, and thorny) in which OY is defined as zero. For the other four skate species, OY is generally defined as "the amount of skates that are harvested legally under the provisions of this FMP and the yield that results from the management measures in other fisheries to the extent that these measures further impact (and likely reduce) the harvest." This definition of OY is consistent with and recognizes the role of skates as a non-targets species in the multispecies, monkfish, and scallop fisheries, all controlled by limits on DAS and other measures to limit fishing activity.

This amendment proposes a new ABC control rule which is consistent with new National Standard 1 guidelines (FR vol. 74, No. 11, pages 3178-3213). Using new catch data developed by the Data Poor Assessment Workshop, the PDT analyzed the observed effect that the catch/biomass exploitation ratio had on changes in survey biomass. Out of several options put forth by the PDT, the Council's Scientific and Statistical Committee (SSC) approved an ABC that will reduce the potential for overfishing (see Appendix I, Documents 16 and 17), and the limit is likely to increase biomass for species that are overfished, rebuilding, or near the minimum biomass threshold. Although uncertainty could not be quantified, the ABC inherently accounts for scientific uncertainty because it incorporates the variability the effect that catch has on skate biomass. The Council furthermore approved a target (or ACT) that is 75 percent of the ABC. Triggers are also included in the proposed action to curtail skate fishing before the TALs8 are reached. The proposed action includes AMs that modify the ABC control rule if scientific and management uncertainty are higher than expected and observed catch exceeds the ABC and reported landings exceed the TALs.

The stocks in the skate fishery include the seven managed skate species. Due to the way the fishery is prosecuted, the catch on non-target species is thought to be low, but skates are often caught in association with multispecies (particularly flounders), monkfish, and scallops. These species are however managed under their own FMPs. Nothing in the Skate FMP prevents those plans from meeting their objectives. Other than the above managed species, no other species caught in the skate fishery have been identified as an ecosystem component.

8 TAL is the amount of landings allowed after the expected discards are deducted from the ACT.

5.1.2 National Standard 2: Conservation and management measures shall be based on the best scientific information available.

The measures in this action are based on analysis of the fishery which are presented in the 2007 SAFE Report and on data developed during the Data Poor Workshop held by the Northeast Fisheries Science Center in December 2008 (DPWS reports available at: http://www.nefsc.noaa.gov/nefsc/saw/datapoor/Data Poor - Review Panel Report Final-1-20-09.pdf and http://www.nefsc.noaa.gov/publications/crd/crd0902/). The skate possession limit and two-bin models were derived from a frequently used and well reviewed model applied to the multispecies fishery, both reviewed by the Council's SSC (technical reports available at http://www.nefmc.org/skates/tech docs/Possession limit model results.pdf and http://www.nefmc.org/skates/tech docs/Two Bin Model results.pdf). Although the model currently being used to predict the effectiveness of the management measures to reduce mortality from commercial fishing has evolved into the Closed Area Model (CAM), this model has not been developed for the skate fishery and is therefore not available for use in estimating the effects on skate fishing. The SSC has reviewed the methods that were used and found them to be an appropriate substitute.

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

All skate stocks are managed as a unit throughout their range. There are some differential measures that apply to skate fisheries, but these are meant to focus conservation on skate stocks that need more attention. Since the skate wing fishery targets and lands predominantly winter skate, the measures that apply to that fishery are more conservative than those that apply to the bait fishery.

5.1.4 National Standard 4: Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The proposed measures are applied to all vessels regardless of the state of residence of the owner or operator of the vessels. Some measures apply to specific areas, and vessels that fish only in those areas are affected by these measures more than vessels that fish in other areas. This is necessary in order to reduce mortality on specific stocks of fish in the most effective manner while allowing opportunities to fish for other stocks of fish. While some argue that any fishing mortality control (including possession limits and quotas) results in the allocation of resources, the measures adopted by this action are reasonably expected to promote conservation by reducing skate fishing mortality.

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

The DAS limits in related FMPs which limit the amount of fishing effort targeting skates coupled with skate possession limits reduce the efficiency of fishing vessels. These measures are necessary because they help control the catch by reducing or limiting the catch and/or catch rates of individual fishing vessels. The measures are considered practicable because they prevent the ACLs and quotas from inducing derby-style fishing behavior and market reactions which would otherwise undermine the profitability of vessels that target skates or land them as incidental catch while targeting other species. None of the measures in this action have economic allocation as their sole purpose – all are designed to contribute to the control of fishing mortality.

5.1.6 National Standard 6: Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Although this amendment would create limits on total catch and lower skate possession limits to reduce the incentive to fish for skates, the primary effort control measure is the limit on DAS which are controlled by related FMPs (i.e. multispecies, monkfish, and scallop). This flexibility is important, because it allows for each vessel operator to fish when and how it best suits his or her business, and also decide whether to target skates or other species managed by the NEFMC. By coupling the skate mortality control to the DAS programs, it allows fishermen to respond to changes in relative availability of the various bottom fish, respond to changing prices, and respond to changing regulations that affect the profitability of his/her vessel in various ways. Vessels can make short or long trips, and can fish in any open area at any time of the year. The management plan also allows vessels to use trawls or gillnets, with few constraints on configuration of that gear with the exception of minimum mesh sizes that are designed to limit the harvest of undersized fish.

5.1.7 National Standard 7: Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

While some of the measures used in the management plan, and proposed by this action, tend to increase costs, those measures are necessary for achieving the plan's objectives. As an example, measures that reduce the efficiency of fishing vessels (such as possession limits or minimum mesh size) tend to increase the costs of fishing vessels since for a given amount of time fishing catches are reduced. These measures accomplish other goals, however, reducing the catch of undersized fish in the case of minimum mesh sizes and keeping an even and constant supply of fish in the marketplace.

For the most part, measures are not duplicative. In particular, the reliance of this plan on measures in other related FMPs allows the Council to achieve its mortality objectives while minimizing the amount of rules that vessels must follow while fishing for a mix of species (including skates). Moreover, the proposed action would also rely on existing reporting requirements to monitor the catch to ensure it does not exceed the ABC. Several alternatives in the draft amendment included new trip declaration requirements to determine when a vessel was on a skate trip, and whether it would be fishing to supply the wing or bait market. The trip's landings would be attributed to the appropriate TAL based on this trip declaration. To minimize costs and avoid unnecessary duplication, the proposed alternative will instead rely on a combination of product form (whole or wings) and market (wings or bait) both currently reported by the dealer to determine how to count the skate landings.

5.1.8 National Standard 8: Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into

account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse impacts on such communities.

In order to meet the requirement to end overfishing and rebuild overfished stocks, in the short term fishing catches and revenues will be reduced by the proposed action. The proposed action is expected to foster increases in skate biomass to levels consistent with MSY and thus provide for the long-term sustained participation of all port groups in the fishery.

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

While the adoption of lower skate possession limits is expected of increase the ratio of discarded to kept catch in some cases, many vessels that target and land large amounts of skates do not catch sufficient amounts of other species to continue fishing (and discard the excess skates). It is expected that these vessels will curtail fishing effort, which will also have a beneficial effect of reducing the discard amounts of undersized (or oversized in the case of the skate bait fishery) skates. The impacts of the alternatives, and in particular skate possession limits, on discards is evaluated in Sections 7.3.1.1 and **Error! Reference source not found.** of this amendment.

The reduced skate catch limits (TALs) will also reduce discards in the fishery, unless vessels with unused DAS can re-direct effort onto other species which may have a higher bycatch rate than if the vessel were to continue fishing for skates. Based on public comment and advice of the Advisory Panel, the proposed action includes a higher incidental skate possession limit (1135 vs. 500 lbs of whole skates) than had been proposed in the draft alternatives. This change was made to minimize the effect of the incidental skate possession limit on skate discards.

5.1.10 National Standard 10: Conservation and management measures shall, to the extent practicable, promote safety of human life at sea.

Although possession limits and quotas can have a negative impact on vessel safety, the Council does not anticipate that they will cause vessels to remain at sea for excessively long periods or fish during periods that are adverse to safety. The vessels would not be forced to remain at sea to run out their DAS clocks to account for their catch, or to take their skate trips and use their DAS during a particular part of the year. Some fishermen may however fish during adverse periods to maximize their revenue as seasonal prices rise. Due in part to spot pricing of fish, such has been the characteristic of deep sea fisheries for many years. Seasonal quotas do, however, change the motivation to fish, possibly in adverse conditions however. The purpose of three seasonal, rather than one annual, quota is intended to minimize the duration of potential closures. In addition, the Council added a 20,000 lb. skate possession limit for the bait fishery to reduce the incentive to land large volumes of skates before a closure, largely as a safety measure.

5.2 Other M-SFCMA requirements

Section 303 (a) of FCMA contains 14 required provisions for FMPs. These are discussed below. It should be emphasized that the requirement is imposed on the FMP. In some cases noted below, the M-S

Act requirements are met by information in the Skate FMP, as amended. Any fishery management plan that is prepared by any Council, or by the Secretary, with respect to any fishery, shall—

5.2.1 Conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States which are consistent with the Magnuson Stevens Fishery Conservation and Management Act

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

Foreign fishing is not allowed under this management plan or this action, so specific measures are not included that specify and control allowable foreign catch. The measures in this management plan and in the proposed action are designed to prevent overfishing and rebuild overfished stocks. There are not international agreements or recommendations by international organizations that are germane to multispecies management.

5.2.2 Description of the fishery

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

The Skate FMP and the 1999 SAFE Report included a thorough description of the skate fishery through 2002, including the gears used, number of vessels, landings and revenues, and effort used in the fishery. The 2008 SAFE Report (Section **Error! Reference source not found.**) updates this information, including new information on skate biology and life history characteristics (Section **Error! Reference source not found.**), the commercial skate fishery (Section 6.5.1), recreational fishing interests (Section 6.5.1.6), and the skate marketing/processing sector (Sections 6.5.2 and 6.5.3). There is no foreign fishing interest in skate fishing within the US EEZ and there are no Indian treaty fishing rights associated with this fishery.

5.2.3 Maximum sustainable yield and optimum yield

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

The present biological status of the fishery is described in Section **Error! Reference source not found.**, but are updated in the DPWS reports (DPWS reports available at:

http://www.nefsc.noaa.gov/nefsc/saw/datapoor/Data Poor - Review Panel Report Final-1-20-09.pdf and http://www.nefsc.noaa.gov/publications/crd/crd0902/). Future conditions of the resource are impossible to quantify due to poor information with which to derive these estimates. However, the intent of the proposed action is to increase biomass to a level that is consistent with MSY. The maximum sustainable yield and optimum yield for the fishery are described in the Skate FMP in Section 4.3.3, and are not changed by this action.

5.2.4 Capacity

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

U.S. fishing vessels are capable of, and expected to, harvest the optimum yield from this fishery as specified in the Skate FMP in Section 4.3.3. U.S. processors are also expected to process the harvest of U.S. fishing vessels. None of the optimum yield from this fishery can be made available to foreign fishing.

5.2.5 Specify pertinent data

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

Current reporting requirements for this fishery have been in effect since 2003, and since 1994 for many fisheries that catch skates while targeting other species. The requirements include Vessel Trip Reports (VTRs) that are submitted by each fishing vessel. Dealers are also required to submit reports on the purchases of regulated skates from permitted vessels. Current reporting requirements are detailed in 50 CFR 648.7.

5.2.6 Consider and provide for temporary adjustments

> *Consider and provide for temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fishery; except that the adjustment shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery;*

Relying on the measures in place for the multispecies, monkfish, and scallop fisheries, the proposed action continues to allow the carry-over of a small number of DAS from one fishing year to the next. If a

fisherman is unable to use all of his DAS because of weather or other conditions, this measure allows his available fishing time to be used in the subsequent fishing year. This practice does not require consultation with the Coast Guard.

5.2.7 Describe and identify essential fish habita

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

Essential fish habitat was defined in an earlier action. This action does not change those designations. The Council may review those designations in an omnibus EFH amendment that is currently in development.

5.2.8 Assess and specify the nature and extent of scientific data

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

Scientific needs are continuously reviewed and revised by the Council's Research Steering Committee who consult with NMFS and the various PDTs to set priorities, and are not revised by this action.

5.2.9 Assess, specify, and describe the likely effects, if any, of the conservation and management measures

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

Impacts of this amendment on fishing communities directly affected by this action can be found in Sections **Error! Reference source not found.**.

5.2.10 Specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished

Specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or the Secretary has determined is

approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery;

Objective and measurable criteria for determining when the fishery is overfished, including an analysis of how the criteria were determined, can be found in the FMP in Section 4.4 and in the DPWS document available at http://www.nefsc.noaa.gov/publications/crd/crd0902/. This amendment updates the survey time series and recalculates the overfishing definition biological reference points using the 75th percentile of the survey biomass time series, which are found in Section **Error! Reference source not found.**. Both fishing mortality and stock biomass are measured using an annual bottom trawl survey (spring survey for little skate, fall survey for the other six managed species). A stock is classified as overfished when the three year biomass moving average is below ½ of the 75th percentile of the selected time series[9] for a stock. A stock is classified as overfished when the three year biomass moving average declines more than a specified threshold value[10] for the stock. Both criteria can be determined annually when the final survey data become available for analysis.

5.2.11 Establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery

Establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority-- (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided;

The U.S. District Court of Washington, DC, found in the case of *Conservation Law Foundation et al v. Evans* that Amendment 13 did not meet the requirement to describe a standardized bycatch reporting methodology for the multispecies fishery. The Council and the NMFS developed a Standardized Bycatch Reporting Methodology Omnibus Amendment (Amendment 1 to the Skate FMP) for all of the Council's FMPs to *assess the amount and type of bycatch occurring in the fishery*. Relying on management measures that specify gear restrictions for vessels using Multispecies, Monkfish, and Scallop DAS, the Skate FMP minimizes discards to the extent practicable.

In Sections 7.3.1.1 and **Error! Reference source not found.**, Amendment 3 also analyzes the effect that the proposed skate possession limits will have on discards. The Council balanced the achievement of the mortality objectives with the effect on skate and other discards to specify wing and bait fishery possession limits. In addition, the Council raised the incidental skate possession limit (Section **Error! Reference source not found.**) from 500 lbs. (an alternative in the DEIS) to 1135 lbs. (whole weight equivalent) to minimize discards on trips that target species other than skates.

5.2.12 Assess the type and amount of fish caught and released alive during recreational fishing

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

9 The selected time series varies by species due to changes in survey coverage.
10 This threshold ranges from 20 to 60%, depending on the skate species because the normal variation survey biomass varies for each species.

This management plan does not include a catch and release recreational fishery management program and thus does not address this requirement. The recreational fishery catch (including live and dead discards) is analyzed and discussed in Section 6.5.1.6.

5.2.13 Include a description of the commercial, recreational, and charter fishing sectors

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

As noted above, the description of the commercial and recreational, fishing sectors was updated in the 2008 SAFE Report and is described in Section 6.5 of this document.

5.2.14 Allocate any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors

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

Proposed management measures restrict harvest for all sectors of the fishery. Preventing overfishing and the anticipated increases in biomass is expected to benefit both the wing and bait skate fishery participants. Recovery benefits will be allocated equitably and benefit fishermen who have DAS allocations. In addition, since the skate bait fishery is conducted by a well defined group of vessels, the Council is contemplating setting a control data for the skate bait fishery which may be used to restrict future access to this fishery. It is anticipated that increases in skate biomass, particularly for little skate, will benefit vessels that participate in the bait fishery and who would be likely to qualify for future limited access using the control date as a qualification criterion.

5.2.15 EFH provisions

The EFH provisions of the SFA (50 CFR Part 600.815) require the inclusion of the following components of FMPs. The Council has fully met these obligations as detailed below each mandatory component.

(A) Identify and description of EFH

(B) Fishing activities that adversely affect EFH

(i) Evaluation of potential adverse effects

(ii) Minimizing adverse effects

(C) Identification of non-Magnuson-Stevens Act fishing activities that may adversely affect EFH

(D) Identification of non-fishing related activities that may adversely effect EFH.

(E) Cumulative impacts analysis

(F) Identification of conservation and enhancement actions.

(G) List the major prey species and discussion the location of the prey species' habitat
(H) Identification of habitat areas of particular concern
(I) Recommendations for research and information needs
(J) Review and revision of EFH components of FMPs.

(A) Identify and description of EFH

(B) Fishing activities that adversely affect EFH

(i) Evaluation of potential adverse effects

The EFH Final Rule (50 CFR Part 600) provides guidance to the Regional Fishery Management Councils for identifying fishing activities that adversely impact essential fish habitat (EFH). In addition to the EFH Final Rule, guidance provided by the Habitat Conservation Division (HCD) headquarters office in the form of a memo dated October 2002. This evaluation should primarily include the impacts of activities associated with the fishery that is the subject of the management action, as well as other federally-managed and state-managed fishing activities. Based on the guidance provided by the EFH Final Rule and the HCD office, this determination focuses on the effects of fishing activities in the New England multi-species fishery on groundfish EFH. It also includes information on the effects of other federally-managed fishing activities on groundfish EFH, and identifies gears used in state-managed fisheries that could affect groundfish EFH.

In Phase I, the Council identified EFH for its managed species and fishing activities that adversely impact EFH. The Essential Fish Habitat Omnibus Amendment for phase I was Amendment 13 to the NE Multispecies FMP, Amendment 10 to the Atlantic Sea Scallop FMP, and Amendment 2 to the Monkfish FMP. Since these related plans manage fisheries which often catch skates as bycatch, or as a non-target catch, the analysis for the skate fishery is found in these documents, particularly in more detail in previous sub-sections of Section 9.3.1 of Amendment 13 to the NE Multispecies FMP.

Section 9.3.1.2 of Amendment 13 to the NE Multispecies FMP describes commercial fishing gears used in the Northeast region of the U.S. and the geographic distribution and use of the principal bottom-tending gears in three broadly-defined habitat types. It also evaluates the effects of bottom trawls and dredges on benthic marine habitats in the region. The information in this section serves as the basis for evaluating which gear types, if any, are most likely to have an adverse impact on essential fish habitat for federally-managed species in the NE region.

Section 9.3.1.3 of Amendment 13 to the NE Multispecies FMP evaluates the vulnerability of all 37 federally-managed species to gear types found to have potential adverse impacts on EFH. Vulnerability was evaluated according to four broad categories: none (0); low (L); moderate (M); and high (H), based upon a matrix analysis of habitat function, habitat sensitivity and gear use. Results are summarized by species and life stage.

Section 9.3.1.8 of Amendment 13 to the NE Multispecies FMP summarizes the results and findings of this section, identifying the potential adverse impacts of the three principal mobile, bottom-tending gears on three principal bottom types in the region. These results serve as the basis for analyzing proposed alternatives to minimize the adverse impacts of these gears on EFH.

(ii) Minimizing adverse effects

The EFH Final Rule stipulates "each FMP must minimize to the extent practicable the adverse effects of fishing on EFH that is designated under other federal FMPs". Federally-managed species that could be affected by the New England groundfish fishery are listed in Section 9.3.1.7 of Amendment 13 to the NE Multispecies FMP.

In order to minimize and mitigate the adverse effects of the fishery on EFH the Council implemented effort reductions, gear restrictions and habitat closed areas for bottom tending mobile gear. The Council has determined that the combination of these measures minimizes, to the extent practicable, the adverse effects of fishing on EFH. This includes the adverse effects of the groundfish and skate fisheries on all federally-designated EFH as well as the adverse effects of other federally-managed fisheries on groundfish EFH. No measures in Amendment 3 would have an adverse or mitigating effect on the measures in Amendment 13 to the Multispecies FMP, or in the Scallop or Monkfish FMPs.

(C) Identification of non-Magnuson-Stevens Act fishing activities that may adversely affect EFH

This section will be thoroughly updated in the upcoming omnibus habitat amendment (to be Amendment 2 to the Skate FMP).

(D) Identification of non-fishing related activities that may adversely effect EFH.

The Essential Fish Habitat Omnibus Amendment for Phase I addresses the requirements of this component. This section will be thoroughly updated in the upcoming omnibus habitat amendment (to be Amendment 2 to the Skate FMP).

(E) Cumulative impacts analysis

Section 7.1 of this amendment addresses the requirement of this component.

(F) Identification of conservation and enhancement actions.

This section will be thoroughly updated in the upcoming omnibus habitat amendment (to be Amendment 2 to the Skate FMP).

(G) List the major prey species and discussion the location of the prey species' habitat

This section will be thoroughly updated in the upcoming omnibus habitat amendment (to be Amendment 2 to the Skate FMP).

(H) Identification of habitat areas of particular concern

This section will be thoroughly updated in the upcoming omnibus habitat amendment (to be Amendment 2 to the Skate FMP).

(I) Recommendations for research and information needs

This section will be thoroughly updated in the upcoming omnibus habitat amendment (to be Amendment 2 to the Skate FMP).

(J) Review and revision of EFH components of FMPs.

This section will be thoroughly updated in the upcoming omnibus habitat amendment (to be Amendment 2 to the Skate FMP).

6.0 AFFECTED ENVIRONMENT (EA)

Since the Council prepared an Affected Environment description and submitted Amendment 3 for approval, only a small amount of new data or information has become available. The data and information at that time included detailed description of the fishery through 2007, discards through 2008, and survey data through 2008.

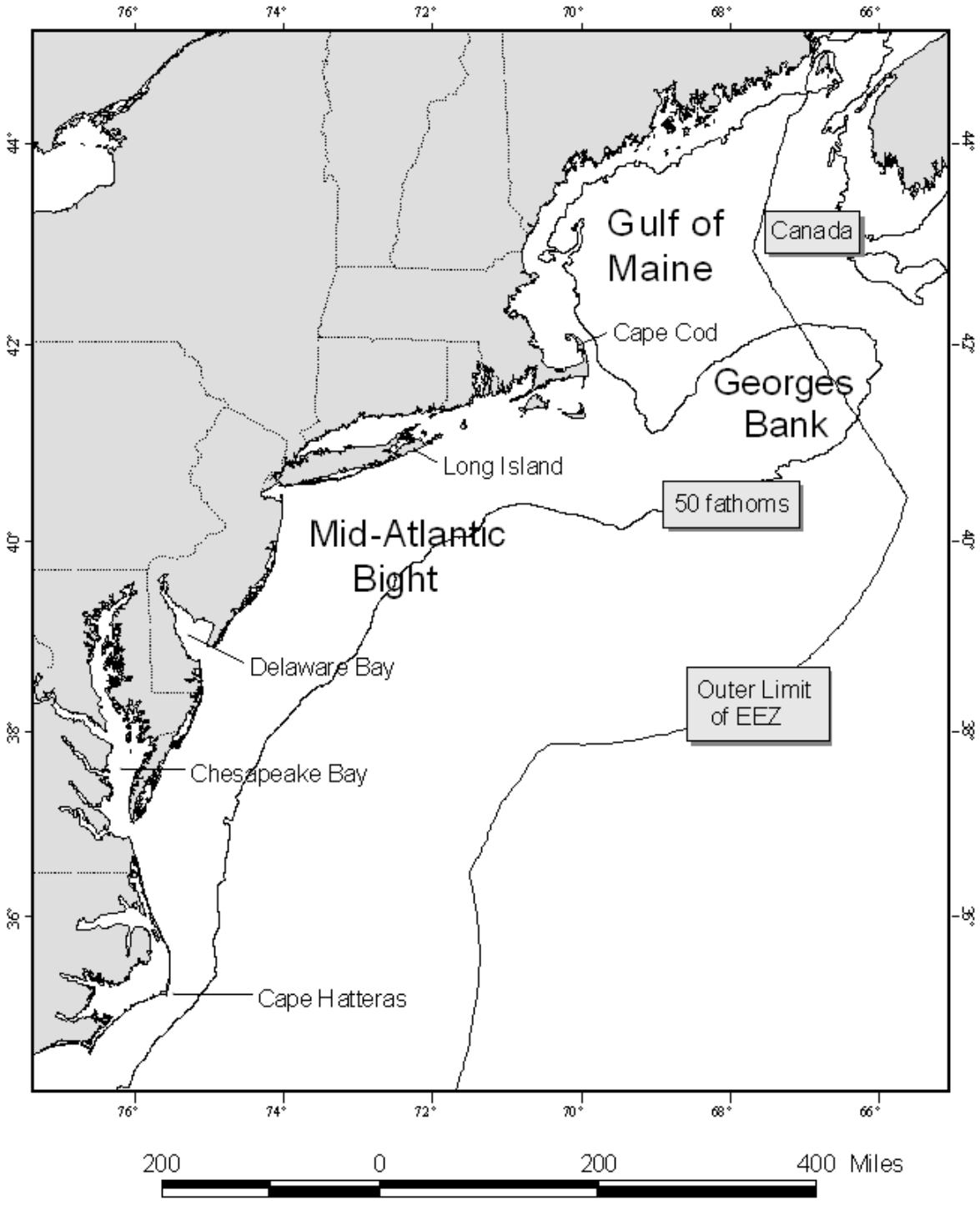
In this document, landings summary tables have been updated through 2009 but they have not appreciably changed since 2007. Skate landings were affected in 2010 by the implementation of Skate Amendment 3 and by groundfish sector management which Multispecies Amendment 16 established in May 2010.

6.1 PHYSICAL ENVIRONMENT

The Northeast U.S. Shelf Ecosystem (Map 1) 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 (Sherman *et al.* 1996). 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. Occasionally another sub-region, Southern New England, is described; however, we incorporated discussions of any distinctive features of this area into the sections describing Georges Bank and the Mid-Atlantic Bight.

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 and biological characteristics of each of these sub-regions are described in this section, along with a short description of the physical features of coastal environments. Inshore, offshore, and continental slope lobster habitats are described in Section 7.4 of the 2008 SAFE Report included as Section 7.4 of Amendment 3 (NEFMC 2009). Information on the affected physical and biological environments included in this amendment was extracted from Stevenson et al. (2004). The primary source references used by Stevenson et al. are not cited in the text of Section 3.1. They are: Backus 1987; Schmitz *et al*. 1987; Tucholke 1987; Wiebe *et al*. 1987; Cook 1988; Reid and Steimle 1988; Stumpf and Biggs 1988; Abernathy 1989; Townsend 1992; Mountain 1994; Beardsley *et al*. 1996; Brooks 1996; Sherman *et al*. 1996; Dorsey 1998; Kelley 1998; NEFMC 1998; Steimle *et al*. 1999. References used to describe the biological features of the affected environment and to describe lobster habitats are cited in the text.



Map 1. Northeast U.S Shelf Ecosystem.

6.2 BIOLOGICAL ENVIRONMENT

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. These technical documents are available at http://www.nefsc.noaa.gov/nefsc/habitat/efh/ and include biological information about skates including:

- 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

Table 7 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.

Table 7. Skate Species Identification for Northeast Complex

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

SPECIES COMMON NAME	SPECIES SCIENTIFIC NAME	GENERAL DISTRIBUTION	SIZE AT MATURITY cm (TL)	OTHER COMMON NAMES
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.

6.2.1 2008 stock assessment

Using this new information and reacting to the overfished status of smooth, thorny, and winter skates, the Council developed a Draft Amendment 3 document. The document included four alternatives described in Section **Error! Reference source not found.** of this document. Some alternatives had A and B options, which applied a Hard TAC and Target TAC approach to the ACL framework, respectively. The Hard TAC A option would monitor landings and discards, prohibiting skate landings when the catch reached a high fraction (e.g. 80-100%) of the ACL, with a payback provision to take overages off of future ACLs. The Target TAC B option would monitor landings and reduce the skate possession limit to an incidental amount when landings reached a high fraction of the TAL. Alternative 1 included skate time/area closures which would apply to trips retaining more than the incidental limit of skates. This alternative allowed for higher skate possession limits on skate trips, since some of the mortality reduction would be achieved through the closures. Alternative 2 would use the time/area closures only as an in-

season AM to curtail skate fishing trips when the catch was approaching the ACL. Alternative 3 would rely only on possession limits to achieve the landings reducing in the skate wing and skate bait fisheries. And Alternative 4 would use time/area closures and skate possession limits for the wing fishery, combined with seasonal quotas and no skate possession limit for the bait fishery.

The Council held public hearings from October 27-30, 2008 and accepted public comment during the 45 day comment period. Most of the public comment supported Alternative 3B for the wing fishery and Alternative 4 for the bait fishery. A summary of comments and responses to comments can be found in Section **Error! Reference source not found.** of this document.

After the Council had completed the DEIS and held public hearings, the Northeast Fisheries Science Center convened a Data Poor Assessment Working Group (DPWS 2009a and 2009b) to evaluate novel approaches to assessing data poor and model resistant stocks, including skates. Skates were included on the agenda to address and correct the uncertain species identification in landings and discards, and to develop analytical (i.e. model based) assessments. Although the analytical assessments were deemed to be exploratory, but unreliable for management at this time, significant progress was made to assign species to landings and discards using the survey data for exploitable size skates in seasons and areas where fishing occurred. Although it was shown that the errors in the PDT method (Appendix I, Document 4) were small, both of these methods corrected for a technical inconsistency between the survey statistical design and the way that the exploitable skate species allocations were associated with commercial catch reported by three-digit statistical area. Both new methods calculate a stratified mean exploitable weight per tow, which is consistent with the stratified random bottom trawl survey. The primary difference between the two methods is that one method ("maturity ogive") estimates the species proportions by calculating stratified mean weights within a three-digit statistical area and sums the landings over areas. The other method ("length composition") calculates stratified mean weights by region (Gulf of Maine, Georges Bank, Southern New England, Mid-Atlantic) and applies them to total commercial catch in each region. A second difference between the two methods is in the way that the commercial size selectivity was determined, hence the difference in methodology names.

More importantly, skate discards were re-estimated using more sea sampling data, including observed discard/kept ratios for special access trips to Georges Bank and trips by scallop fishing vessels within the scallop access areas (including some observed trips which had been omitted from the previous PDT and SAW44 discard estimates). The new discard estimates were higher than those calculated in SAW 44 and by the PDT, particularly for estimated discards since 2004. The overall trend from 1989 to 2004 was the same as previously estimated and at about the same level. But instead of a 62% decline in skate discards since the Skate FMP took effect in 2003, the new catch estimates suggest that discards did not decline, and may have even increased. These new estimates had a meaningful effect on the DEIS specifications for the wing and bait fishery total allowable landings (TAL) as described below.

Both sets of new data, including hind-cast estimates of discards for years before sea sampling began in 1989, were incorporated in the PDT analysis of rebuilding potential (see Appendix I, Document 16) for the seven managed skate stocks. Some of the relationships between changes in biomass at various levels of catch rates were different than previous analyses had suggested and this expected relationship (high catch rates causing biomass to decline, and vice versa) was generally weaker than it had been estimated (see Appendix I, Document 4) in the DEIS. Although not statistically significant, biomass more frequently increased when catches were below the median exploitation ratio and declined when the exploitation rate was high. Some of this apparent negative correlation arises from including biomass on both sides of the relationship, however. A randomization test was included in the new analyses that the PDT presented to the SSC in February 2009, which included the new DPWS catch estimates. Using these new results, the PDT offered five alternatives for the SSC approval (including other levels of the exploitation ratio and a constant median catch similar to Tier 6 used for some US West Coast groundfish

stocks), with no strong support for any one in particular. The PDT generally favored a more flexible approach, such as applying the catch ratio to recent survey biomass, because it would be responsive to changes in stock condition.

The SSC reviewed the supporting information provided by the PDT and approved an ABC based on the median exploitation ratio (total catch divided by survey biomass), as a risk averse strategy to prevent overfishing and to prevent skates from becoming overfished. Although with new biological reference points, smooth and winter skate would no longer be classified as overfished (see discussion below), the SSC was concerned that these stocks were at low biomass, nonetheless, and the FMP should attempt to achieve conditions that would produce MSY.

In addition to re-estimating catch and attempting analytical assessments, the DPWS also re-evaluated the overfishing definition reference points. If the analytical assessments had been more reliable, they could have suggested new MSY-based reference points, rather than relying on an MSY proxy using survey time series values. Since the DPWS deemed the attempted analytical analyses as being unreliable for management advice, the DPWS recommended updating the MSY proxy reference points to include 1998-2007 data (through the 2008 spring survey for little skate). This update was thought to be consistent with the original concept or theory behind the existing reference points, that the 75th percentile of the survey time series was an acceptable approximation of B_{MSY}. And furthermore, there was no apparent reason to exclude the more recent survey data from that time series (DPWS 2009a).

The Council's SSC approved this recommendation and thus the final alternative includes a change to the selected reference time series for the reference points for six of the seven skate stocks. Barndoor skate was not updated because in the FMP only a portion of the early survey time series was considered appropriate as an approximation of MSY conditions. Using the new reference points proposed by Amendment 3, smooth and winter skate would not have been classified as overfished in 2006 or 2007. Thorny skate would remain overfished, however, and in 2007, overfishing had been occurring but did not continue to occur in 2008.

6.2.2 Updated stock status using 2008 survey data

At the April 2009 Council meeting, when the Council approved the final alternative and authorized the staff to submit the final amendment document for NMFS review and approval, NMFS warned the Council that the 2008 survey data had been audited and the new data indicated that smooth skate had become overfished (see Document 19 in Appendix I). It was also reported that winter skate would not be classified as overfished, but that thorny skate was both overfished and experiencing overfishing as had been the case using the 2007 survey data. Document 19 was not available at the Council meeting.

Since Amendment 3 had originally been developed to address the overfished condition of smooth and thorny skate, as well as rebuild winter skate to MSY conditions, NMFS advised that no further change in proposed management measures were needed, but that the Amendment 3 needed to clearly state that it addressed the condition of smooth and thorny skates. A brief chronology of Amendment 3 viz. the recent skate status determination for species that are or were overfished is given in Table 8.

Through aggregate skate catch limits as well as existing and planned changes in other FMPs that govern fisheries that have incidental skate landings or discards, this amendment is intended to rebuild smooth and thorny skates as well as increase skate biomass to produce MSY. The smooth skate rebuilding period is 10 years from implementation of Amendment 3 and the thorny skate rebuilding period is 25 years from the FMP implementation in 2003.

The current status of skates is shown in Table 9. Survey biomass for barndoor and thorny skates remained nearly the same as it was in 2007. Barndoor skate was still rebuilding to the MSY target and thorny skate was still overfished. Smooth skate was slightly above the minimum biomass threshold in 2007, but declined by 7.6%, below the minimum biomass threshold and is once again considered overfished.

Rosette skate biomass declined by 18.9%, but is above the biomass target. Little skate biomass increased to 5.04 kg/tow and winter skate biomass increased by 78.2% to 5.23 kg/tow, the latter being 93% of the biomass target. Although promising, the increase in little and winter skate biomass are largely driven by one year of survey data. It is unlikely, however, that the status of little and winter skates could become overfished for three years until the 2008 biomass values drop from the three year moving averages.

6.2.3 Updated stock status using 2009 and 2010 survey data

NMFS began using a new vessel and new trawl gear in spring and fall finfish surveys in the New England and Mid-Atlantic regions. As of fall 2009, the new vessel and gear completely replaced the survey conducted with the FRV Albatross. And particularly because the new gear catches differing amounts of various species, NMFS conducted paired calibration sampling during 2008. The data for about 30 finfish species were analyzed and standard calibration methods were peer reviewed and adopted, which specified how aggregate calibrations of abundance and biomass were to be done and how many positive paired tows were required to make reliable estimates. These methods were published in (NEFMC ???). Calibration coefficients using more data for more species were later published (Miller ???), but peer review of how these calibrations were applied were left to individual SAW assessments.

For some, it is apparent that catch efficiency varies between the two survey gears by size of fish (and possibly bottom type). Skates have not yet been assessed by the SAW since the calibration peer review was completed, so an analysis and peer review of the application of calibration methods to the skate biomass indices and their application for setting specifications is planned for the spring of 2010.

Nonetheless, using the aggregate calibration data for six of the seven managed skates (there is insufficient calibration data for rosette skate) indicates that the OFL and ABC could be considerably higher (< 50%) than existing specifications that use the FRV Albatross data only, through 2008. And using discard estimates for 2007-2009, the TALs could increase by a similar amount. Discard estimates for 2010 and the 2010 fall survey data will become available later in 2011 and will be applied to set 2012-2013 specifications, after the application of the calibration coefficients are peer reviewed by the Council's SSC in April 2011.

Table 8. **Synopsis of barndoor, smooth, thorny, and winter status determinations during the development of Skate Amendment 3.**

Timeline Survey data used Action trigger	Amendment 3 development	Status determination **Barndoor** OFD < 0.81 kg/tow OF 3YMA > 30% decline	**Smooth** Old OFD < 0.16 kg/tow New OFD < 0.14 kg/tow OF 3YMA > 30% decline	**Thorny** Old OFD < 2.2 kg/tow New OFD < 2.06 kg/tow OF 3YMA > 20% decline	**Winter** Old OFD < 3.43 kg/tow New OFD < 2.80 kg/tow OF 3YMA > 20% decline
FMP implementation to 2006 2002 survey data Barndoor and thorny skates overfished	FMP submitted in 2002 and implemented in 2003 to address barndoor and thorny skate status	**Overfished** (34% below threshold) No overfishing	Not overfished (19% above threshold) No overfishing	**Overfished** (76% below threshold) No overfishing	Not overfished (4.62 kg/tow; 72% of MSY) Overfishing occurred ONLY in 2005
April 2007 2006 survey data Winter skate became overfished	Initiated scoping to address overfishing of thorny and winter skates	Not overfished, but not rebuilt (72% of MSY) No overfishing	Not overfished (20% above threshold) No overfishing	**Overfished** (75% below threshold) No overfishing	**Overfished** (3.04 kg/tow; 6% below threshold) No overfishing
April 2008 2007 survey data Smooth skate became overfished and thorny skate overfishing occurring	Council develops DEIS to address overfished status of thorny, winter, and smooth skates	Not overfished, but not rebuilt (62% of MSY) No overfishing	**Overfished** (7% below threshold) No overfishing	**Overfished** (81% below threshold) Overfishing occurring	**Overfished** (2.93 kg/tow; 9% below threshold) No overfishing
December 2008 2007 survey data, new reference points Only thorny skate overfished and overfishing occurring	DPWS biomass reference point update; approved by SSC in February; Final alternative developed and approved	Not overfished, but not rebuilt (62% of MSY) No overfishing	**Overfished** (1% below new threshold) No overfishing	**Overfished** (79% below new threshold) Overfishing occurring	Not overfished (2.93 kg/tow; 5% above new threshold) No overfishing
April 2009 2008 survey data Smooth skate overfished, no overfishing of thorny skate	Council approved FEIS addressing overfished status of thorny and smooth skates; ABC/ACL not changed using new data	Not overfished, but not rebuilt (63% of MSY) No overfishing	**Overfished** (8% below new threshold) No overfishing	**Overfished** (80% below new threshold) No overfishing	Not overfished (5.23 kg/tow; 93% of MSY!!!) No overfishing

Table 9. **Survey biomass trends and skate status determinations as of 2008.**

	BARNDOOR	CLEARNOSE	LITTLE	ROSETTE	SMOOTH	THORNY	WINTER
Survey (kg/tow) Time series basis Strata Set	**Autumn 1963 – 1966 Offshore 1 – 30, 33-40**	**Autumn 1975-1998 Offshore 61-76, Inshore 15-44**	**Spring 1982-1999 Offshore 1-30, 33-40, 61-76, Inshore 1-66**	**Autumn 1967-1998 Offshore 61-76**	**Autumn 1963-1998 Offshore 1-30, 33-40**	**Autumn 1963-1998 Offshore 1-30, 33-40**	**Autumn 1967-1998 Offshore 1-30, 33-40, 61-76**
1997	0.11	0.61	2.71	0.01	0.23	0.85	2.46
1998	0.09	1.12	7.47	0.05	0.03	0.65	3.75
1999	0.30	1.05	9.98	0.07	0.07	0.48	5.09
2000	0.29	1.03	8.60	0.03	0.15	0.83	4.38
2001	0.54	1.61	6.84	0.12	0.29	0.33	3.89
2002	0.78	0.89	6.44	0.05	0.11	0.44	5.60
2003	0.55	0.66	6.49	0.03	0.19	0.74	3.39
2004	1.30	0.71	7.22	0.05	0.21	0.71	4.03
2005	1.04	0.52	3.24	0.07	0.13	0.22	2.62
2006	1.17	0.53	3.32	0.06	0.21	0.73	2.48
2007	0.80	0.85	4.46	0.07	0.09	0.32	3.71
2008	1.09	1.73	7.34	0.03	0.10	0.21	9.50
2002-2004 3-year average	0.88	0.75	6.72	0.04	0.17	0.63	4.34
2003-2005 3-year average	0.96	0.63	5.65	0.05	0.18	0.56	3.34
2004-2006 3-year average	1.17	0.59	4.59	0.06	0.19	0.55	3.04
2005-2007 3-year average	1.00	0.64	3.67	0.06	0.14	0.42	2.93
2006-2008 3-year average	1.02	1.04	5.04	0.05	0.13	0.42	5.23
Percent change 2006-2008 compared to 2005-2007	1.9	62.9	37.2	-18.9	-7.6	-1.2	78.2
Percent change for overfishing status determination in FMP	-30	-30	-20	-60	-30	-20	-20
Biomass Target	1.62	0.77	7.03	0.048	0.29	4.12	5.6
Biomass Threshold	0.81	0.385	3.515	0.024	0.145	2.06	2.8
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	Overfished Overfishing is Not Occurring	Overfished Overfishing is Not Occurring	Not Overfished Overfishing is Not Occurring

6.3 ESSENTIAL FISH HABITAT

Amendment 13 to the Northeast Multispecies FMP (NEFMC 2003) describes the general effects of bottom trawls and dredges on benthic marine habitats. The primary source document used for this analysis was an advisory report prepared for the International Council for the Exploration of the Seas (ICES 2000) that identified a number of possible effects of beam trawls and bottom otter trawls on benthic habitats. This report is based on scientific findings summarized in Lindeboom and de Groot (1998), which were peer-reviewed by an ICES working group. The focus of the report is the Irish Sea and North Sea, but it also includes assessments of effects in other areas. Two general conclusions were: 1) low-energy environments are more affected by bottom trawling; and 2) bottom trawling can affect the potential for habitat recovery (*i.e.*, after trawling ceases, benthic communities and habitats may not always return to their original pre-impacted state). Regarding direct habitat effects, the report also concluded that:

- Loss or dispersal of physical features such as peat banks or boulder reefs (changes are always permanent and lead to an overall change in habitat diversity, which can in turn lead to the local loss of species and species assemblages dependant on such features);

- Loss of structure-forming organisms such as bryozoans, tube-dwelling polychaetes, hydroids, seapens, sponges, mussel beds, and oyster beds (changes may be permanent and can lead to an overall change in habitat diversity which can in turn lead to the local loss of species and species assemblages dependant on such biogenic features);

- Reduction in complexity caused by redistributing and mixing of surface sediments and the degradation of habitat and biogenic features, leading to a decease in the physical patchiness of the sea floor (changes are not likely to be permanent);

- Alteration of the detailed physical features of the sea floor by reshaping seabed features such as sand ripples and damaging burrows and associated structures which provide important habitats for smaller animals and can be used by fish to reduce their energy requirements (changes are not likely to be permanent).

A more recent evaluation of the habitat effects of trawling and dredging was prepared by the Committee on Ecosystem Effects of Fishing for the National Research Council's Ocean Studies Board (NRC 2002). Trawl gear evaluated by the Committee included bottom otter trawls and beam trawls. Dredge gear included hydraulic clam dredges, non-hydraulic oyster, conch, and crab dredges, and scallop dredges with and without teeth. This report identified four general conclusions regarding the types of habitat modifications caused by trawls and dredges.

- Trawling and dredging reduce habitat complexity
- Repeated trawling and dredging result in discernable changes in benthic communities
- Bottom trawling reduces the productivity of benthic habitats
- Fauna that live in low natural disturbance regimes are generally more vulnerable to fishing gear disturbance

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

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

The contents of a second expert panel report, produced by the Pew Charitable Trusts and entitled "Shifting Gears: Addressing the Collateral Impacts of Fishing Methods in U.S. Waters" (Morgan and Chuenpagdee 2003), was also summarized in Amendment 13. This group evaluated the habitat effects of ten different commercial fishing gears used in U.S. waters. The report concluded that bottom trawls and dredges have very high habitat impacts, bottom gillnets and pots and traps have low to medium impacts, and bottom longlines have low impacts. As in the ICES and NRC reports, individual types of trawls and dredges were not evaluated. The impacts of bottom gill nets, traps, and longlines were limited to warm or shallow-water environments with rooted aquatic vegetation or "live bottom" environments (*e.g.*, coral reefs).

Results of a review of 44 gear effect studies published through the summer of 2002 that were relevant (same gears and habitats) to the NE region of the U.S. (see Stevenson et al. 2004) are

also summarized in Amendment 13. Based on these studies, positive and negative effects of bottom otter trawls, New Bedford-style scallop dredges, and hydraulic clam dredges are summarized by substrate type in Amendment 13, along with recovery times (when known). Whenever possible, only statistically significant results were reported. In general, these studies confirm the previous determinations of potential adverse impacts of trawls and dredges found in the ICES (2000), NRC (2002), NEFSC (2002), and Morgan and Chuenpagdee (2003) reports. The results of these 44 studies are summarized below for each gear/habitat type combination. Studies of the effects of multiple gear types are not included. Physical and biological effects for each gear-substrate category are summarized in separate paragraphs. When necessary, biological effects are summarized separately for single disturbance and repeated disturbance experimental studies, and for non-experimental studies. For more detailed information, including the identification of each study, see Stevenson et al. (2004). 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.

A more detailed discussion of habitat types, as well as biological and physical effects of fishing by various gears in the skate fishery are provided in the 2008 SAFE Report, or Section 7.4.6 of Skate Amendment 3 (NEFMC 2009).

6.4 ENDANGERED AND OTHER PROTECTED SPECIES

The following protected species 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 are available on the NEFSC website at http://www.nefsc.noaa.gov/femad/fishsamp/fsb/.

Cetaceans	***Status***
Northern right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Pilot whale (*Globicephala* spp.)	Protected
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*)	Threatened

Fish

Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)	Endangered

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

Although salmon belonging to the Gulf of Maine distinct population segment (DPS) of Atlantic salmon occur within the general geographical area covered by the Northeast Multispecies FMP, they are unlikely to occur in the area where the fishery is prosecuted given their numbers and distribution. Therefore, the DPS is not likely to be affected by the skate fishery.

It is expected that all of the remaining species identified 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, and sea turtles 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 and sea turtle species that occur in the area can be found in a number of published documents. These include sea turtle status reviews and biological reports (NMFS and USFWS 2007; Hirth 1997; USFWS 1997; Marine Turtle Expert Working Group (TEWG) 1998 & 2000), recovery plans for Endangered Species Act-listed sea turtles and marine mammals (NMFS 1991; NMFS and USFWS 1991a; NMFS and USFWS 1991b; NMFS and USFWS 1992; NMFS 1998; USFWS and NMFS 1992; NMFS 2005), the marine mammal stock assessment reports (*e.g.*, Waring *et al*. 2006,2007 and 2008), 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). Additionally, the Center for Biological Diversity and the Turtle Island Restoration Network has recently filed a petition to reclassify loggerhead turtles in the North Pacific Ocean as a distinct population segment (DPS) with endangered status and designate critical habitat under the ESA (72 *Federal Register* 64585; November 16, 2007). While this petition is geared toward the North Pacific, the possibility exists that it could affect status in other areas. NMFS has found that the petition presents substantial scientific information that the petition action may be warranted, and has published a notice and request for comments, available at: http://www.nmfs.noaa.gov/pr/pdfs/fr/fr72-64585.pdf.

More details about the distribution and vulnerability to the skate fishery of sea turtles, large cetaceans, small cetaceans, and pinnipeds is presented in the 2008 SAFE Report, Section 7.3.7 of Skate Amendment 3 (NEFMC 2009). In general, although these species have some interactions with trawls and gillnets which are used in the skate fishery, no special interactions that are peculiar to the skate fishery were known.

6.5 Economic Environment

The purpose of this section is to describe and characterize the various fisheries in which skates are caught. It is meant to supplement and update sections of the 2008 Stock Assessment and Fishery Evaluation (SAFE) Report for the Northeast Skate Complex (NEFMC 2001), completed as part of the FEIS for the Skate FMP Amendment 3 (NEFMC 2009). Descriptive information on the fisheries is included, and where possible, quantitative commercial fishery and economic information is presented. The 2008 SAFE Report incorporated skate fishery data through 2007, so this report will generally summarize available data since 2002. Detailed historical aspects of skate fisheries are also documented in the 2000 SAFE Report (NEFMC 2003).

Where possible, the fisheries data have been updated through calendar year 2009. Thus the data do not yet encompass any period when Amendment 3 was in effect, nor any period since groundfish sectors were implemented in May 2010 by Multispecies Amendment 16. The Council plans to update these data for the specifications package or framework adjustment that is planned for approval in September or November 2010. These updates will include data from calendar year 2010 when they are complete and available for analysis later in 2011. Preliminary data for weekly landings rates have been used in Section 7.6.2.2, however, to analyze the potential effectiveness of the skate wing possession limit alternatives. And this section also includes relevant weekly landings reports for the skate wing and bait fisheries during the 2010 fishing year.

6.5.1 Description of Directed Skate Fisheries

6.5.1.1 The Skate Bait Fishery

One of the primary markets for skate products in the northeast U.S. is for bait. Small, whole skates are among the preferred baits for the regional American lobster (*Homarus americanus*) fishery. Most of the skate bait fishery occurs in southern New England waters, and is largely comprised of little skate (>90%), with a smaller percentage of winter skate occurring seasonally. The following sections describe the major ports and other aspects of the skate bait fishery.

6.5.1.1.1 Rhode Island Bait Fishery

Skates have been targeted commercially in Rhode Island for decades for utilization primarily as lobster bait. The majority of bait skates landed in Rhode Island are little skates, with a small percentage of winter skates. 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. In terms of the directed lobster bait fishery, it is estimated that between 20 - 30 Rhode Island otter trawl vessels ranging from 50 – 70 feet dominate the bait market. Approximately eight of those vessels from RI have identified directed skate bait fishing as their sole source of income between June – October annually, with less than 5% of their trip revenues from other species during that time.

Dayboat vessels (<24 hours) directing on skates land between 5,000 – 20,000 pounds of skates per trip, while trip boats fishing (>24 hours) generally 2 days, land approximately 40,000 – 50,000 pounds per trip. Incidental catches of skates from vessels targeting either groundfish or the southern New England mixed trawl fishery (squids, scup, fluke, whiting, mackerel, monkfish, etc.) are estimated at 500 – 2,000 pounds and are often sold directly to a lobster vessel (rather than through a dealer). Otherwise, many vessels indicate they do not bother to keep skates caught incidentally due to low market value or deck/hold capacity.

As the number of vessels targeting lobsters has decreased so has the demand for skates. Trap reductions in both the inshore and offshore fisheries as well as the collapse of the LI sound fishery have contributed to the decreased demand. Vessels that used to fish 3,500 traps now fish approximately 1,800. Skates are the preferred bait for the southern New England inshore and offshore lobster pot fishermen, as the skate meat is tough and holds up longer in the pot than other soft bait choices. Herring, mackerel, and menhaden are also used for bait, usually on trips of shorter duration, in colder water temperatures, or when skates are in short supply. Although there is an overall decrease in demand maintaining a supply is still very difficult for a variety of reasons. As DAS are adjusted via the Multispecies FMP, fewer days or hours can be allocated to fishing for low value species such as skates. These DAS will be reserved for groundfish or leased to other vessels. Many vessels run out of DAS by December also limiting supply and multispecies vessels are forced to take a 20 day block between March and May, prohibiting the use of a DAS which is a requirement of the directed skate fishery. More recently, high fuel prices are causing vessels to work on more profitable species. Rather than fishing an area where it is known to be largely skate, vessels now need to land a mixed trip (skate & groundfish) in order to justify the DAS usage.

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. There has also been a tremendous increase in crabbing during these winter months (avg. $0.65/lb). 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. Ex-vessel skate prices remain relatively stable at an average of about $0.08 - $0.10 per pound. 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.

In Rhode Island, there are two major dealers involved in the skate bait market. One reports supplying skates to 100 lobster businesses located in Point Judith, Wickford, Newport, Westerly, and Jamestown, RI, along with businesses scattered throughout Connecticut and Massachusetts. The company buys from 12- 15 vessels throughout the year, and ten employees are charged with offloading, salting, and stringing bait for inshore and offshore lobster vessels. The lobster businesses supplied by the company employ between 2 - 4 crewmembers per vessel. The other major skate dealer in Rhode Island supplies local Newport, Sakonnet, and New Bedford vessels and numerous offshore lobster vessels fishing in the Gulf of Maine. Skates are supplied to this dealer from draggers working out of Newport and Tiverton, RI and New Bedford, MA.

Approximately eighty percent of the skates landed for bait are sold as strung bait, at about $1.04 for a string of three skates, usually 120 strings (of three) per barrel for $121.00. Under current lobster pot limitations, the minimum bait costs for inshore areas limited to 800 pots is estimated at $832 per trip and $2,000 per trip for offshore lobster vessels limited to 1800 pots. Offshore vessels reported carrying between 15 – 30 barrels of bait per trip, which could reflect different baiting patterns. Skates are also sold by the barrel unsalted and unstrung ($50 - $60) or by the barrel unstrung and salted ($65). A tremendous volume of salt is used in the bait operations, up to 130,000 pounds weekly during the peak of lobster season. Barrels of skates may weigh between 400 – 500 pounds. Menhaden bait (pogies) prices vary between $50 – $70 per barrel ($56 per 30gl barrel), depending upon the port and the weight.

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.

6.5.1.1.2 Other Bait Fishery Ports

Vessels from other ports (New Bedford and Martha's Vineyard, MA; Block Island, Long Island, Stonington, CT, and, to a lesser degree, Chatham and Provincetown, MA) have been identified as participating in the directed skate bait fishery to some extent. Suppliers indicate that some of these vessels have independent contracts with lobster vessels and supply them directly with skates on a seasonal basis. Refer to Section 6.5.1.3.5 for a description of skate bait landings by port.

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.

6.5.1.1.3 The Southern New England Sink Gillnet Fishery

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.

6.5.1.1.4 Regulatory Issues for the Bait Fishery

Two existing and significant regulatory limitations on the directed bait skate fishery include lobster regulations which mandate a decrease in pot limits and groundfish DAS requirements. A majority of directed skate fishermen fish in federal waters, possess multispecies permits, and fish for skates with gear capable of catching multispecies. This, in turn, means that they must use a DAS when fishing for skates unless fishing in an exempted fishery. There are currently two exempted skate fisheries in the Southern New England Exemption Area; one gillnet fishery and one deepwater trawl fishery (see **Error! Reference source not found.** for a map of these areas).

Effort in the skate fishery is reduced during the winter months because it becomes more difficult to budget DAS usage, especially for vessels that fish for groundfish either seasonally or year-round (in addition to directing on skates). Due to effort reductions in the multispecies fishery (e.g., Amendment 13, Framework 42), the majority of full-time skate vessels are presently limited to less than 50 DAS per fishing year.

Since the implementation of the Skate FMP in 2003, vessels fishing in the skate bait fishery that wish to be exempt from the skate possession limits (see Section **Error! Reference source not found.**) must acquire a Letter of Authorization (LOA) from the Regional Administrator. A number of vessels remain under the mistaken impression that this LOA also exempts them from DAS requirements. However, these vessels must still be fishing in an exempted fishery to be exempt from DAS.

6.5.1.1.5 Skate Bait Landings and 2010 TAL monitoring

Skate landings for the bait market were capped with three seasonal quotas in fishing year 2010. The first season occurs from May 1 to ??? and the second season from ??? to ???. Both seasons have been completed and skate bait landings have not reached the Amendment 3 AM trigger (90% of the seasonal quota) which would have prevented vessels from targeting skates for bait. Deviations from the seasonal quotas are applied to the next season, including the current third 2010 season which occurs from ??? to April 30.

Figure 1. Weekly skate bait landings report for Season I, May 1, 2010 to July 31, 2010.

Northeast Skate Complex Bait Fishery Weekly Report

For week ending: July 31, 2010
For data reported through: August 5, 2010
Quota Period: Season I
Quota Period Dates: 05/01/10 to 07/31/10

Previously Reported Landings (Pounds)	Previous Weeks' Updates (Pounds)	Current Week's Landings (Pounds)	Cumulative Landings (Pounds)	Quota (Pounds)	Percent of Quota (%)
2,390,382	76,476	202,295	2,669,153	3,149,990	85
2,390,382	*76,476*	*202,295*	*2,669,153*	*3,149,990*	*85*

Notice

The quotas identified above were specified for FY 2010 in the final rule implementing Amendment 3 to the Northeast Skate Complex Fishery Management Plan. These quotas take effect July 16, 2010. All skate landings that accrue from May 1, 2010, until this date of effectiveness will count against the respective skate quotas for 2010.

National Oceanic and Atmospheric Administration

These data are the best available to NOAA Fisheries Service when this report was compiled. Data are supplied to NOAA Fisheries Service by dealers via Dealer Electronic Reporting to the Standard Atlantic Fisheries Information System (SAFIS) and/or by state agencies and may be preliminary. Discrepancies with data from previous Weekly Landings Reports are due to corrections made to the database.

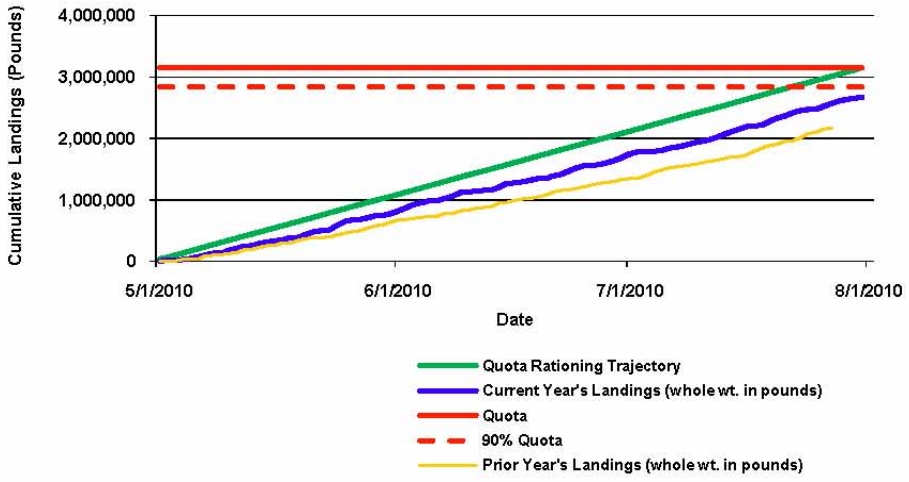


Figure 2. Weekly skate bait landings report for Season II, August 1, 2010 to October 31, 2010.

Northeast Skate Complex Bait Fishery Weekly Report

For week ending:	October 30, 2010
For data reported through:	November 4, 2010
Quota Period:	Season II
Quota Period Dates:	08/01/10 to 10/31/10

Previously Reported Landings (Pounds)	Previous Weeks' Updates (Pounds)	Current Week's Landings (Pounds)	Cumulative Landings (Pounds)	Quota (Pounds)	Percent of Quota (%)
3,254,030	13,407	219,900	3,487,337	3,794,306	92
3,254,030	***13,407***	***219,900***	***3,487,337***	***3,794,306***	***92***

National Oceanic and Atmospheric Administration

These data are the best available to NOAA Fisheries Service when this report was compiled. Data are supplied to NOAA Fisheries Service by dealers via Dealer Electronic Reporting to the Standard Atlantic Fisheries Information System (SAFIS) and/or by state agencies and may be preliminary. Discrepancies with data from previous Weekly Landings Reports are due to corrections made to the database.

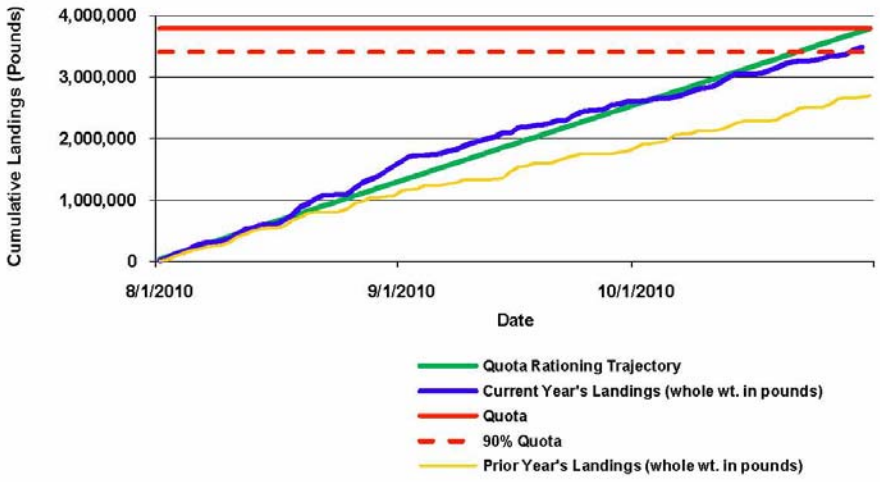


Figure 3. Weekly skate bait landings report for Season III, November 1, 2010 thru January 1, 2011.

Northeast Skate Complex Bait Fishery Weekly Report

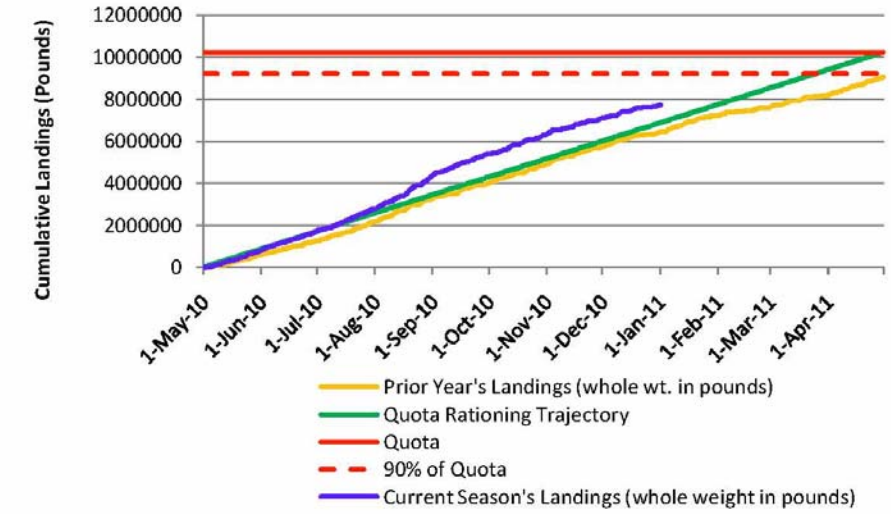
For week ending:	January 1, 2011
For data reported through:	January 6, 2011
Quota Period:	Annual
Quota Period Dates:	05/01/10 to 04/30/11

Previously Reported Landings (Pounds)	Previous Weeks' Updates (Pounds)	Current Week's Landings (Pounds)	Cumulative Landings (Pounds)	Quota (Pounds)	Percent of Quota (%)
7,594,536	45,866	63,589	7,703,991	10,227,224	75
7,594,536	*45,866*	*63,589*	*7,703,991*	*10,227,224*	*75*

The possession limit for the skate bait fishery will be reduced when 90% of the entire coastwide annual quota is harvested. The possession limit will be reduced to the whole weight equivalent of the prevailing skate wing possession limit.

National Oceanic and Atmospheric Administration

These data are the best available to NOAA Fisheries Service when this report was compiled. Data are supplied to NOAA Fisheries Service by dealers via Dealer Electronic Reporting to the Standard Atlantic Fisheries Information System (SAFIS) and/or by state agencies and may be preliminary. Discrepancies with data from previous Weekly Landings Reports are due to corrections made to the database.



6.5.1.2 The Skate Wing Fishery

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. 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 (Table 10).

Table 10. Preliminary skate wing fishery species composition (% total) in sampled landings by state (2006-2007). Source: Experimental skate wing dockside sampling process, NMFS Fisheries Statistics Office.

Species	ME	MA	RI	NJ
Winter	95.4	93.3	95.8	61.7
Thorny	3.0	6.7	0.2	0.0
Barndoor	1.6	0.0	0.1	0.0
Little*	0.0	0.0	4.0	14.9
Clearnose	0.0	0.0	0.0	23.4
Smooth	0.0	0.0	0.0	0.0
Rosette	0.0	0.0	0.0	0.0
N wings sampled	3,931	11,360	3,761	2,049

*likely misidentified winter skate

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. Refer to Section 6.5.1.3.5 for a description of skate wing landings by port.

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).

6.5.1.2.1 Skate wing landings and 2010 TAL monitoring

Figure 4. Weekly skate wing landings report, January 1, 2011.

Northeast Skate Complex Wing Fishery Weekly Report

For week ending:	January 1, 2011
For data reported through:	January 6, 2011
Quota Period:	2010
Quota Period Dates:	05/01/10 to 04/30/11

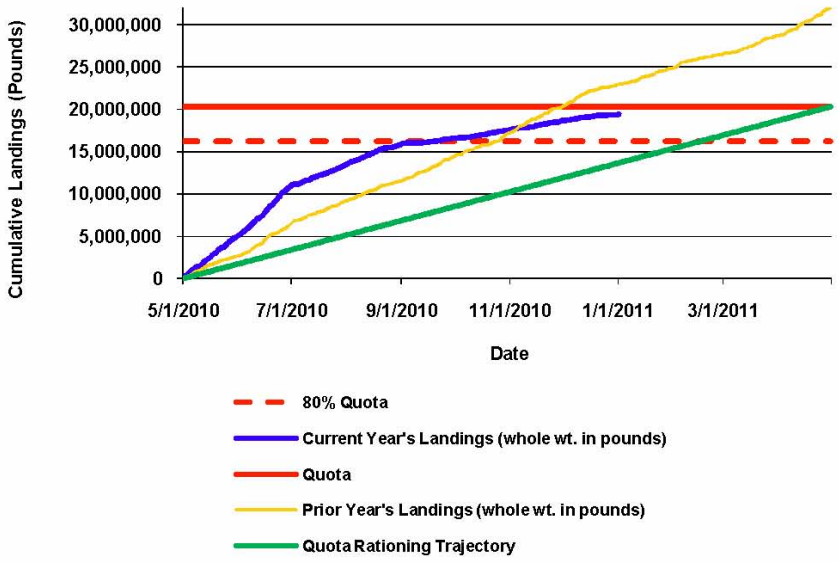
Previously Reported Landings (Whole Pounds)	Previous Weeks' Updates (Whole Pounds)	Current Week's Landings (Whole Pounds)	Cumulative Landings (Whole Pounds)	Quota (Whole Pounds)	Percent of Quota (%)
19,254,341	58,668	76,155	19,389,164	20,302,370	96
19,254,341	***58,668***	***76,155***	***19,389,164***	***20,302,370***	***96***

Notice

Effective 0001 hours on September 3, 2010, fishing vessels issued a Federal open access skate permit may not possess or land more than the incidental limit of 500 lb of skate wings (1,135 lb whole weight) per trip for the remainder of the 2010 fishing year (through April 30, 2011).

National Oceanic and Atmospheric Administration

These data are the best available to NOAA Fisheries Service when this report was compiled. Data are supplied to NOAA Fisheries Service by dealers via Dealer Electronic Reporting to the Standard Atlantic Fisheries Information System (SAFIS) and/or by state agencies and may be preliminary. Discrepancies with data from previous Weekly Landings Reports are due to corrections made to the database.



6.5.1.3 Commercial Fishery Landings

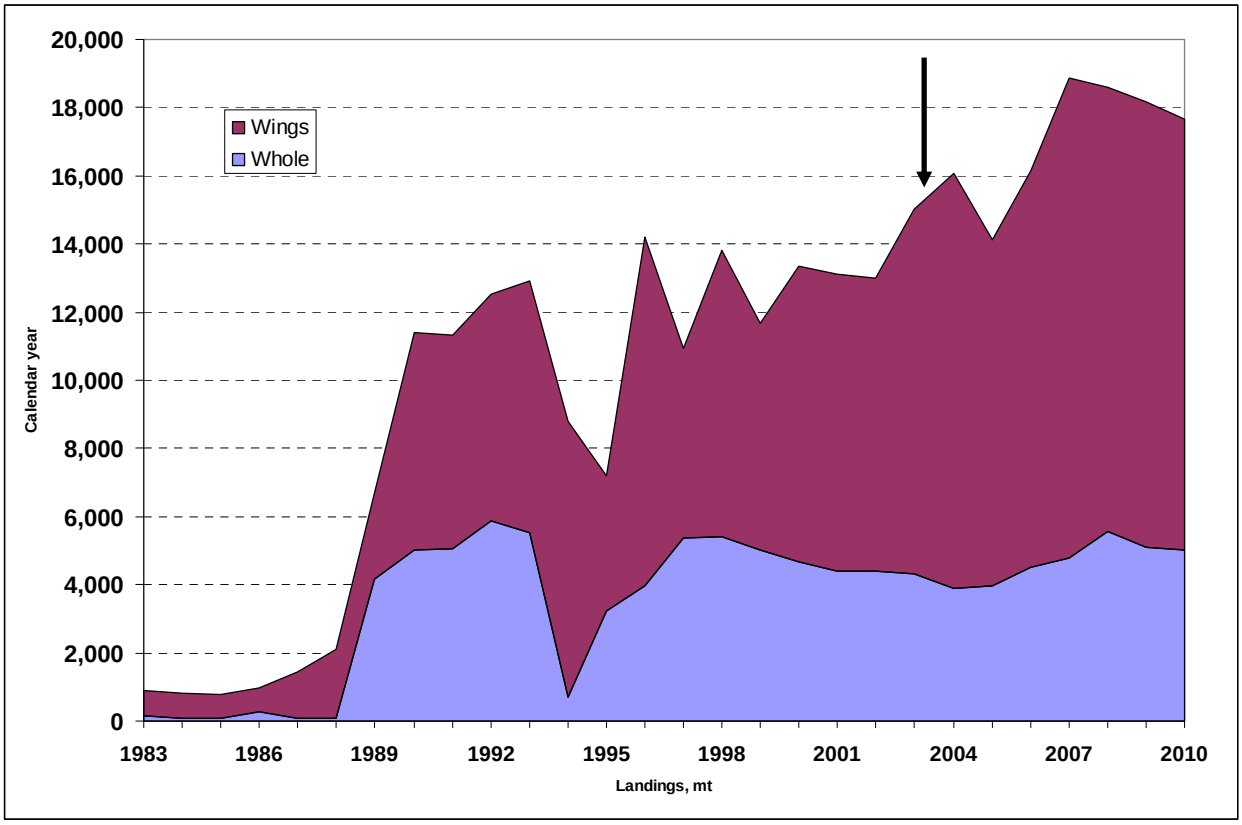
This section presents available commercial landings information for the northeast region skate complex from 2000-2007. This includes total annual landings; landings by market category; landings by state, gear type, port, and area fished; Canadian skate landings; and recreational skate landings. For data previous to 2000, refer to the 2000 SAFE Report (NEFMC 2001).

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).

6.5.1.3.1 Total Commercial Landings

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. Skate landings reached 9,500 mt in 1969, but declined quickly during the 1970s, falling to 800 mt in 1981 (Figure 5). Landings have since increased substantially, partially in response to increased demand for lobster bait and the increased export market for skate wings. In 2007, skate landings were the highest ever recorded, 18,855 mt. The increased demand for skate products since the mid-1980s has concurrently resulted in declining discard rates for skates (Figure 5). Since 2007, skate bait landings have held relatively steady, while skate wing landings have gradually declined. Total landings in 2009 were 18,153 mt and preliminary landings in 2010 were 17,665 mt.

Figure 5. Total Annual U.S. Landings (mt) of Atlantic Skate bait (whole) and wings, 1982 – 2010. The arrow indicates the year that the Skate FMP was implemented (2003).



6.5.1.3.2 Landings by State

Table 11 presents commercial landings of skates by individual states from 2002 – 2009. Massachusetts and Rhode Island continue to dominate the skate fishery, averaging about 10 – 30 million lb annually across the time series. Skate landings from Massachusetts and Rhode Island comprised 87-94% of the total reported annual skate landings during this period. Rhode Island landings have remained fairly consistent, while Massachusetts landings have increased significantly since 2000, declining slightly in 2008 and 2009. New Jersey, New York, Connecticut, Maine, New Hampshire, and Virginia land relatively small amounts of skates. Reported skate landings from Maine and New Hampshire have decreased in recent years. Very few skates are landed in Maryland and North Carolina, and Delaware reported minimal skate landings for the time series.

Table 11. U.S. Landings of Skates (thousands lbs) by State, 2000-2007.
Source: NMFS Fisheries Statistics Office

STATEABB	2002	2003	2004	2005	2006	2007	2008	2009
MA	13,966.1	17,852.8	22,213.2	19,816.7	24,542.9	29,991.0	27,041.6	25,437.8
RI	11,087.4	12,161.8	10,760.5	9,301.3	8,931.9	9,522.5	10,594.6	9,915.6
NJ	1,283.8	989.2	825.1	738.0	995.6	1,155.5	1,635.8	1,999.9
CT	810.3	956.0	973.7	779.0	572.3	565.0	643.6	917.7
NY	1,020.5	778.9	491.0	347.2	505.5	719.2	905.0	1,193.9
VA	27.9	78.7	100.6	66.8	12.2	111.4	119.5	375.3
ME	302.4	168.4	29.3	23.9	3.3	65.8	16.8	0.9
MD	114.6	59.3	13.6	18.5	32.2	20.3	62.5	69.5
NH	54.0	32.8	23.3	20.7	24.7	12.3	8.8	19.0
NC	0.6	1.7	1.1	1.2	0.3	0.6	0.0	11.4
DE			0.0					
Grand Total	28,667.7	33,079.5	35,431.5	31,113.4	35,621.1	42,163.6	41,028.2	39,941.0

6.5.1.3.3 Landings by Market Category

The Skate FMP implemented new reporting requirements for skates beginning in 2003. A list of the available skate codes in the dealer weighout database is included in Table 12. Federally permitted dealers report most of the skate wings they purchase by two separate market categories: unclassified wings (code 3651) or "big skate" (code 3671). They mostly report whole/bait skate landings as little skate (code 3660) or unclassified whole skates (code 3650). Landings reported as little skate are known to include amounts of juvenile winter skate. Although reporting of skate landings by species has been encouraged, species identification by vessels and dealers remains problematic, and most landings continue to be unclassified or misrepresented (Figure 6).

While the landings by market category from the dealer weighout data may not be entirely complete, they can be examined to identify the general proportion of skate landings that are used for either the lobster bait market or the seafood market. They can also be disaggregated into individual ports to characterize skate fishing activity in the port.

According to Table 13, more pounds of skates are caught for the wing market than for the bait market. For the time series, skate wing landings (*live weight*) accounted for 65-74% of the total landings. In general, the proportion of skate landings reported as wings has increased since 2000, which is also apparent in landings data for the state of Massachusetts, presented in Table 11.

Revenues from wing landings are generated from *landed weight*. Wing landings receive a significantly higher ex-vessel price than bait landings, as fewer landed pounds of wings generated substantially higher revenues than the larger amounts of whole skates landed. Based on the data summarized in Table 13, the price for whole skates averaged $0.07-0.12 per lb, and the price for skate wings averaged $0.30-0.55 per lb. The price for whole skates has remained relatively constant, whereas the price for skate wings has been increasing since 2001 (Figure 11).

Table 12. List of skate species and market codes used in the dealer weighout database since 2003. Note: Big skate is an alternative common name for winter skate (Leucoraja ocellata), and does not indicate the Pacific big skate (Raja binoculata).

Species Code (NESPP4)	Common Name	Grade Description	Market Description
3650	SKATES	ROUND	MIXED OR UNSIZED
3650	SKATES	ROUND	UNKNOWN
3670	SKATE, BIG	ROUND	UNKNOWN
3720	SKATE, CLEARNOSE	ROUND	UNKNOWN
3660	SKATE,LITTLE	ROUND	UNKNOWN
3640	SKATE, ROSETTE	ROUND	UNKNOWN
3680	SKATE,BARNDOOR	ROUND	UNKNOWN
3670	SKATE, WINTER	ROUND	UNKNOWN
3700	SKATE, THORNY	ROUND	UNKNOWN
3690	SKATE, SMOOTH	ROUND	UNKNOWN
3651	SKATES	WINGS	MIXED OR UNSIZED
3651	SKATES	WINGS	UNKNOWN
3671	SKATE, BIG	WINGS	UNKNOWN
3721	SKATE, CLEARNOSE	WINGS	UNKNOWN
3661	SKATE,LITTLE	WINGS	UNKNOWN
3641	SKATE, ROSETTE	WINGS	UNKNOWN
3681	SKATE,BARNDOOR	WINGS	UNKNOWN
3671	SKATE, WINTER	WINGS	UNKNOWN
3701	SKATE, THORNY	WINGS	UNKNOWN
3691	SKATE, SMOOTH	WINGS	UNKNOWN

Figure 6. Weights of landed skates by reported species code in the dealer weighout database, 2009.

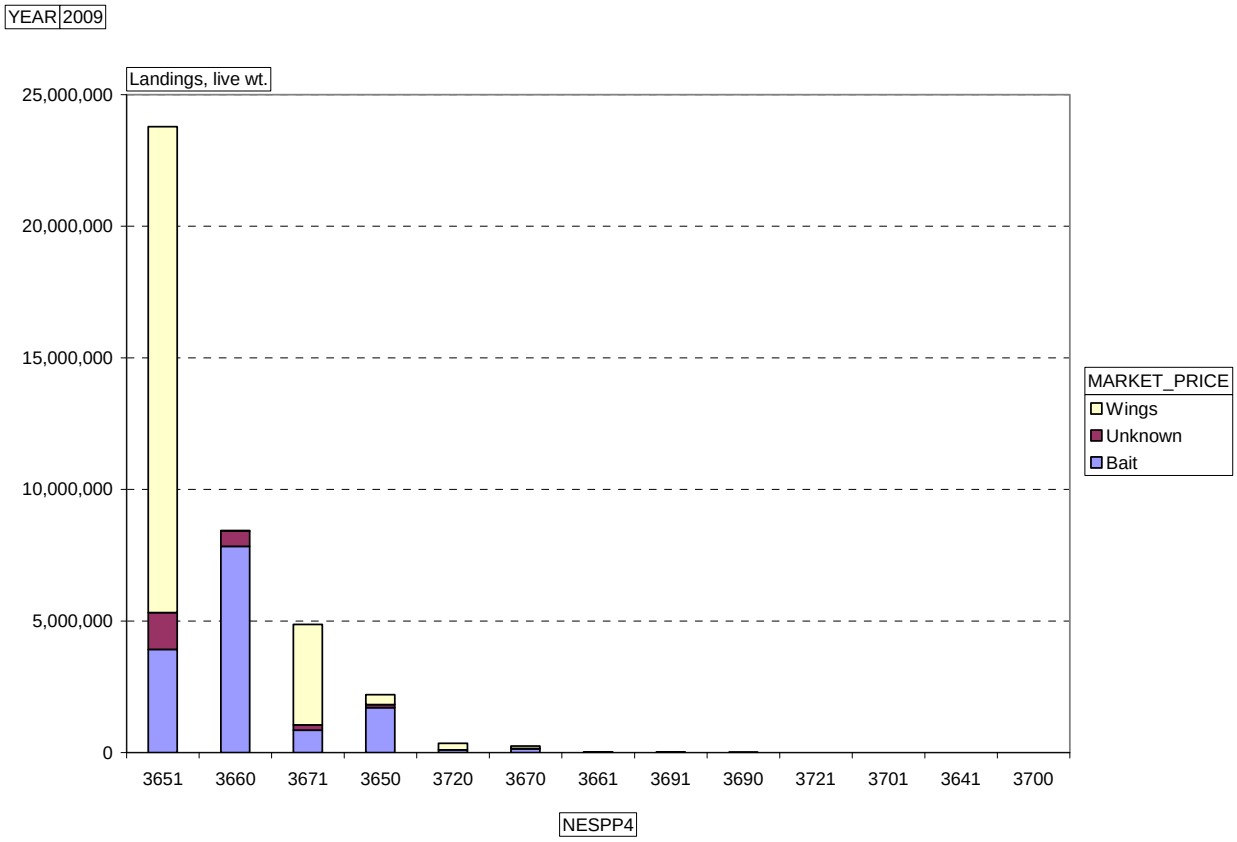


Table 13. Total Annual Landings and Revenue of Skates by Market Category (2002-2009).
Source: Dealer Weighout Database, NMFS
Revenues are generated from landed pounds.

YEAR	CATEGORY	Landings, landed wt.	Landings, live wt.	Revenue, thousand $
2002	Whole	9,693,394	9,693,394	866
	Wings	8,358,564	18,974,281	2,680
2002 Total		18,051,958	28,667,675	3,546
2003	Whole	9,543,292	9,543,292	717
	Wings	10,368,270	23,536,237	3,371
2003 Total		19,911,562	33,079,529	4,087
2004	Whole	8,538,845	8,538,845	673
	Wings	11,846,865	26,892,642	4,399
2004 Total		20,385,710	35,431,487	5,072
2005	Whole	8,770,170	8,770,170	909
	Wings	9,842,679	22,343,192	4,287
2005 Total		18,612,849	31,113,362	5,195
2006	Whole	9,958,544	9,958,544	969
	Wings	11,304,925	25,662,509	5,927
2006 Total		21,263,469	35,621,053	6,896
2007	Whole	11,004,708	11,004,708	1,083
	Wings	13,726,171	31,158,843	7,595
2007 Total		24,730,879	42,163,551	8,677
2008	Whole	12,280,109	12,280,109	1,391
	Wings	12,664,176	28,748,101	5,834
2008 Total		24,944,285	41,028,210	7,225
2009	Whole	11,235,705	11,235,705	1,082
	Wings	12,645,337	28,705,302	6,016
2009 Total		23,881,042	39,941,007	7,098

6.5.1.3.4 Landings by Gear

Table 14 presents annual skate landings (2002-2009) from the dealer weighout database by gear type and by market category as a percentage of the annual total. Otter trawl is the primary gear used to catch skates. Approximately 65-86% of the total skate landings during this period were captured by trawl gear. About 40% of the skates caught with otter trawls are landed for the lobster bait market, with the other 60% landed for the wing market (Table 14). Almost all skates caught for the lobster bait fishery are caught with a trawl. Gillnets are the secondary gear used to catch skates. Almost all skates that are caught with gillnets are landed as wings. Between 2002 and 2009, 93-98% of the total gillnet landings of skates were wings (Table 14). Gillnet landings of skates increased over the time series, representing 13.6% of the total landings in 2000, but up to 32.6% of the total in 2007. In 2009, gillnet landings of skate wings increased to almost 14 million lbs., while trawl landings of skate wings declined to 11.6 million lbs.

Other gears in which skates are consistently caught include traps, hook gear (including longlines), and scallop dredges. Almost 100% of the skates that are caught with hook gear are landed as wings. The overall contribution of skate landings from gears other than trawl and gillnets is relatively insignificant.

Table 14. Annual Skate Landings (Live Weight, thousands lbs) by Gear Type and Market Category as a Percentage of Total Skate Landings
Source: Dealer Weighout Database, NEFSC
* Landings from other codes were incorporated into the 3650 category.

Hook and Line includes bottom longlines, handlines (rod and reel), and the combined troll and handline category.
Gillnet includes sink, stake, and drift gillnets.
Otter trawl includes fish, shrimp, scallop, and other otter trawls.
Seines include common, Danish, and Scottish seines.
Pots/traps include floating, fish, and lobster traps.
Other dredges include crab, conch, and surf clam/ocean quahog dredges.
Other gear includes pound nets, fyke nets, beam trawls, and trammel nets

Landings, live wt. thousands		YEAR							
Gear type	CATEGORY	2009	2008	2007	2006	2005	2004	2003	2002
Trawls	Whole	9,928	10,858	10,649	9,483	8,106	8,341	9,023	9,198
	Wings	11,552	15,222	16,921	13,723	12,371	16,826	14,243	12,037
Trawls Total		21,480	26,080	27,570	23,206	20,477	25,167	23,266	21,235
Gill nets	Whole	718	552	269	363	298	181	484	488
	Wings	13,781	12,893	13,203	10,194	7,717	9,168	9,185	6,863
Gill nets Total		14,498	13,444	13,472	10,557	8,015	9,349	9,669	7,351
Unknown	Whole	564	829	73	22	217	7		
	Wings	2,520	542	922	687	1,016	170		0
Unknown Total		3,084	1,371	995	709	1,233	176		0
Dredges	Whole	8	11	10	69	103	1	0	
	Wings	615	51	79	1,013	712	19	4	3
Dredges Total		623	62	89	1,083	815	19	4	3
Other nets	Whole	7	25	1	0	7	0	1	3
	Wings	7	0	1	1	64	576	8	18
Other nets Total		13	26	2	1	71	576	9	21
Longlines	Whole	2	3	3	2	1			2
	Wings	46	13	17	23	387	55	66	29
Longlines Total		48	16	20	25	388	55	66	31
Traps	Whole	9	2	1	3	5	4	35	1
	Wings	139	16	7	13	29	43	6	13
Traps Total		148	18	8	15	34	47	41	15
Hook	Whole	0	0	0	16	0	5	0	1
	Wings	44	11	7	8	47	32	24	3
Hook Total		44	11	8	24	47	37	25	4
Hand	Whole				0	33	1		
	Wings	1			1	1	5		7
Hand Total		1			1	34	6		7
Grand Total		39,941	41,028	42,164	35,621	31,113	35,431	33,080	28,668

6.5.1.3.5 Landings By Port

Table 15 and Figure 7 present annual skate landings (from the dealer weighout database) by port and by market category for 2002-2009. The top 10 ports in 2009 represented over 94% of the total skate landings in the region (Figure 7). The top ports landing skates (total) currently are New Bedford, MA; Chatham, MA; Point Judith, RI; Tiverton, RI; Newport, RI; Boston, MA; Stonington, CT; Gloucester, MA; Barnegat Light, NJ; and Hampton Bays, NY.

Currently, the top ports landing whole skates for lobster bait are:
1. Point Judith, RI
2. Tiverton, RI
3. New Bedford, MA
4. Newport, RI
5. Fall River, MA

Currently, the top ports landing skate wings are:
1. New Bedford, MA
2. Chatham, MA
3. Point Judith, RI
4. Boston, MA
5. Barnegat Light, NJ

New Bedford, MA and Point Judith RI clearly dominate skate landings, averaging over 60% of the total skate landings across the time series. New Bedford dominates skate wing landings, and Point Judith dominates skate bait landings. In 2009, 90% of New Bedford's skate landings were classified as wings, and an average of 67% of Point Judith's skate landings were classified as whole skates (Table 15). Since 2000, skate wing landings in Provincetown, MA have declined, while landings in Chatham, MA have increased substantially. New Bedford's wing landings have accounted for about 47-62% of the total annual wing landings between 2000-2007. Point Judith's bait landings have accounted for 39-67% of the total annual bait landings from 2000-2007, with a decline in recent years. This appears to be due to significant increases in bait skate landings in New Bedford, MA, and Newport and Tiverton, RI (Table 15).

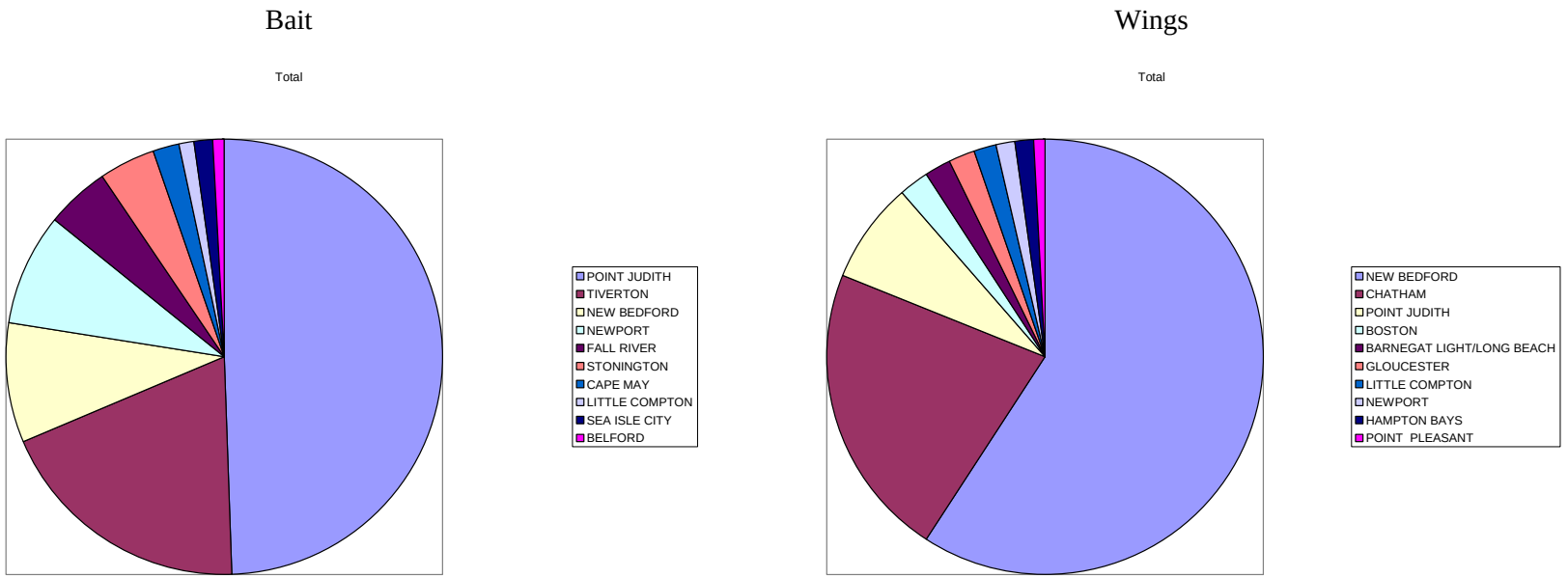
Table 15. Annual Skate Landings (Live Weight, thousands lbs) for Top 10 Ports by Market Category and as a Percentage of Total Skate Landings (2002-2009).

Source: Dealer Weighout Database, NEFSC

* Landings from other codes were incorporated into the 3650 category.

PORTNM	CATEGORY	2002	2003	2004	2005	2006	2007	2008	2009
NEW BEDFORD	Whole	52.5	46.5	33.4	0.6	1,592.0	1,880.9	1,618.9	1,467.6
	Wings	9,834.6	11,133.5	14,726.2	13,814.5	14,518.6	18,837.2	16,589.4	13,759.0
POINT JUDITH	Whole	6,051.6	6,006.3	4,779.0	4,456.0	4,137.4	4,253.4	4,344.1	3,876.6
	Wings	1,358.7	2,816.4	2,526.7	1,069.0	1,318.0	1,360.1	1,778.3	1,940.8
CHATHAM	Whole	140.0	26.0	0.1	0.0	67.5	1.7	0.2	23.0
	Wings	1,623.7	4,686.8	5,862.0	4,420.5	6,260.0	7,036.2	6,125.3	5,918.7
TIVERTON	Whole	2,175.3	1,893.2	2,341.6	2,523.4	1,583.8	2,626.2	1,502.1	71.5
	Wings	497.1	307.9	286.0	120.1	80.1	13.4	62.4	115.0
NEWPORT	Whole	66.8	86.4	7.3	554.2	804.7	786.6	1,883.3	2,269.2
	Wings	367.8	383.7	272.6	229.8	413.5	315.7	274.1	351.9
BOSTON	Whole	153.7	12.5		15.4	70.4	114.4	46.6	49.3
	Wings	213.1	541.2	575.3	632.0	426.9	868.9	592.3	554.1
LITTLE COMPTON	Whole	113.4	344.9	39.3	71.5	62.6	20.9	150.3	195.0
	Wings	439.1	283.0	495.7	267.8	255.4	123.2	480.5	892.4
GLOUCESTER	Whole		0.5	0.4	3.5	0.6	28.2	235.1	264.6
	Wings	760.6	590.5	368.9	317.3	412.6	403.1	304.1	409.3
STONINGTON	Whole	469.8	658.7	725.8	579.9	380.6	397.3		
	Wings	198.3	135.4	113.5	124.6	67.3	99.9	51.6	47.2
FALL RIVER	Whole	0.0	8.2	215.0	46.5	434.3	124.0	986.0	1,923.5
	Wings		204.6	0.7		52.7	0.5		
Grand Total		24,516.1	30,166.2	33,369.5	29,246.6	32,939.0	39,291.8	37,024.6	34,128.5

Figure 7. Top 10 ports for skate landings in 2002-2009, based on the percentage of total landings by port.



6.5.1.3.6 Landings by Day-at-Sea Program

Upon implementation of the Skate FMP in 2003, vessels were required to fish on a Multispecies, Monkfish, or Scallop Day-at-Sea (DAS) to possess skates, unless fishing in an exempted fishery. This management measure was an indirect method to control effort in the skate fishery, which has a great deal of overlap with these fisheries. The tables and figures below characterize the skate landings in each of these DAS programs.

The vast majority (73-84%) of skate landings from a DAS program are landed on Multispecies A DAS (Table 16). During the time series, 15.3 – 22.2 million lb of skates were landed in this program. This program represents the majority of effort in the northeast groundfish fleet. Landings by vessels fishing on Monkfish DAS have been relatively stable at 0.6 – 1.9 million lb per year. Vessels fishing on combination Monkfish/Multispecies A DAS landed 2.0 – 5.6 million lb annually. Skate landings by vessels fishing on Scallop DAS have been relatively negligible. Skates captured by scallop dredge vessels tend to be discarded.

Landings in the Multispecies B DAS program have increased since its implementation in 2004 (Table 16). This program was designed to allow vessels to target healthy groundfish stocks, primarily haddock, in specific areas using certain gears without using their A DAS. Since B DAS vessels fishing with trawl gear may only possess up to 500 lb of skates, the increase in skate landings observed in 2007 in this program was mainly attributed to vessels fishing with gillnets (Figure 10). Virtually all of the skate landings in the Multispecies B DAS program are landed for the wing market (Figure 8).

Table 16. Total skate landings (lb live weight) by DAS program, 2000-2007.

Calender Year	MUL A	MUL B	MNK	MNK/MUL	SC
2000	16,673,711	NA	1,037,993	2,817,080	66,012
2001	15,320,262	NA	764,437	3,037,382	6,405
2002	17,538,086	NA	665,661	3,845,897	2,796
2003	22,205,726	NA	601,063	4,123,343	63
2004	19,760,823	547,717	1,271,352	1,991,829	0
2005	17,715,403	967,069	1,911,588	2,754,418	10,835
2006	19,083,200	64,956	1,358,881	5,652,650	4,629
2007	20,349,972	1,715,633	1,087,857	2,571,196	0

Source: NMFS, Fisheries Statistics Office

In the earlier parts of this time series, skate wing landings by trawl vessels far exceeded the landings of other gears on A DAS. Since 2003, however, gillnets have become the dominant gear landing skate wings on A DAS (Figure 9). As noted above, gillnets are also the primary gear for skate wings in the B DAS program.

Figure 8. Skate Bait and Wing landings by Multispecies A and B vessels, 2000-2007.

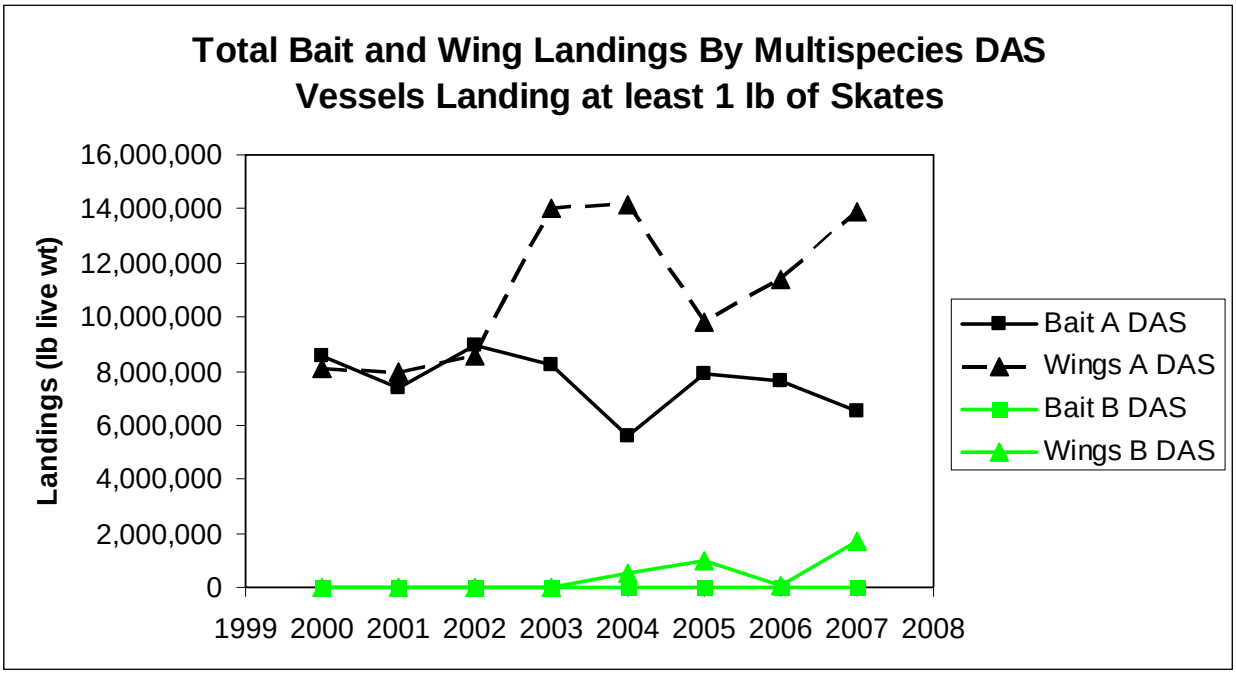


Figure 9. Skate Wing landings by gear type on Multispecies A DAS, 2000-2007

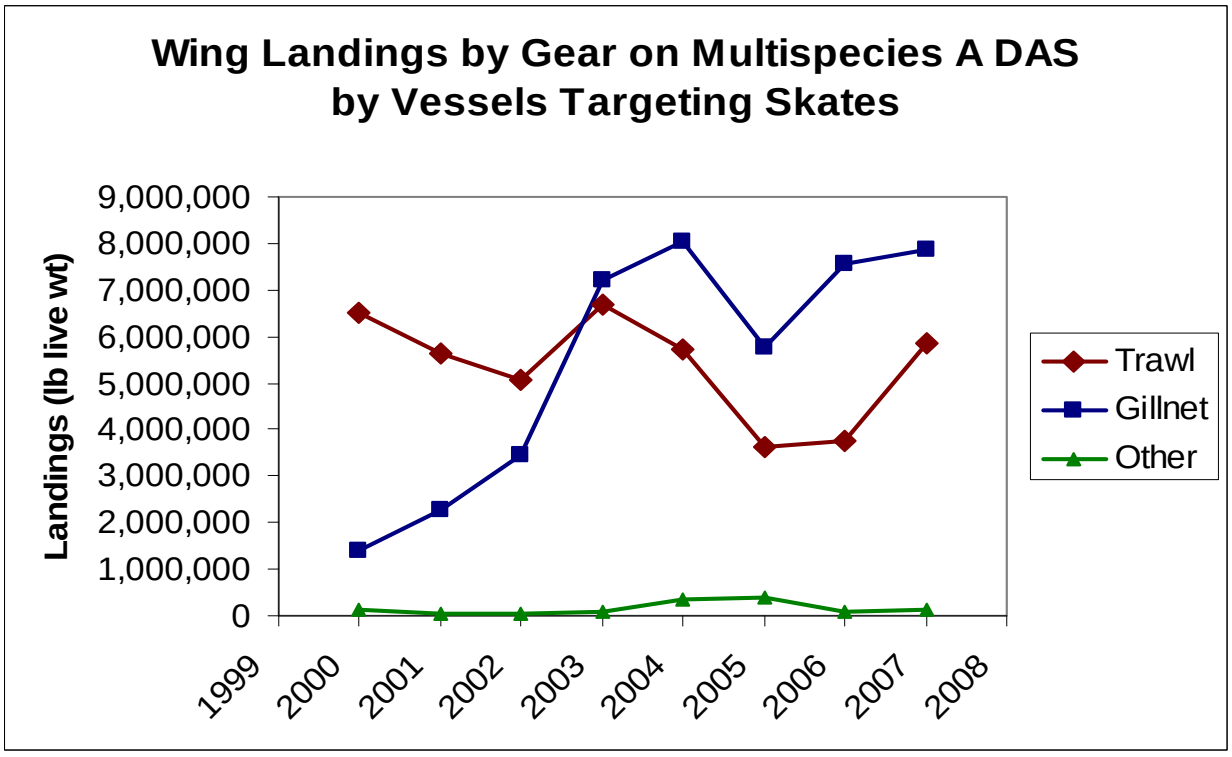
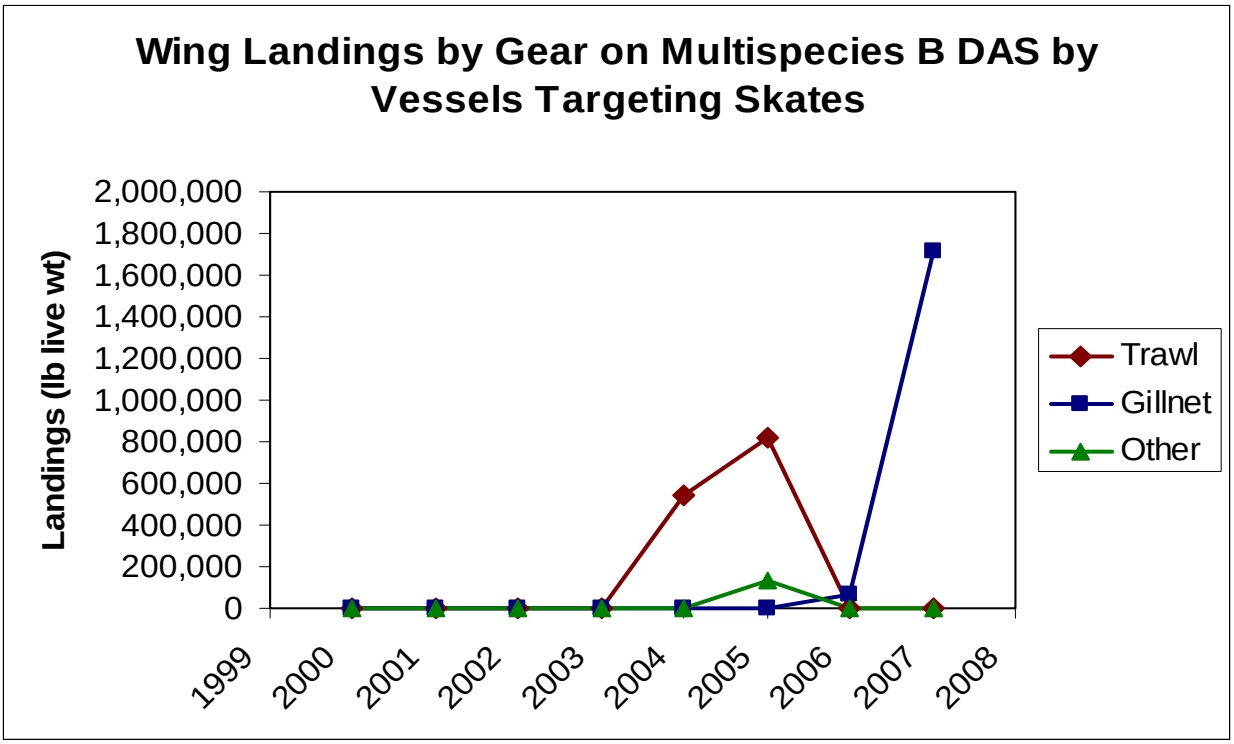


Figure 10. Skate Wing landings by gear type on Multispecies B DAS, 2000-2007.



6.5.1.4 Fishing Areas

Vessels landing skates for the wing market either target skates on Georges Bank, in the Great South Channel near Cape Cod, MA, or west of the Nantucket Lightship Area in Southern New England waters. Maps of effort distributions are presented in Section 8.3.1 of Amendment 3, which analyzed the effect of skate management areas on skate fishing. Vessels using gillnets often target skates to supply the wing market by fishing east of Cape Cod, MA.

Other vessels land skates for the wing market while fishing for other species. Vessels fishing for groundfish and in particularly flounders often land an incidental catch of skates. These vessels often fish in Massachusetts Bay and on Georges Bank. Some vessels fishing for scallops using dredges also land skates, but in particular scallop vessels with general category permits that fished in the Great South Channel often land skates. There is also a mixed monkfish/skate fishery that occurs west of the Nantucket Lightship Area and off Northern NJ, near Point Pleasant. It is important to note that in the late winter and early spring, skates account for a significant proportion of the landings and revenue on these mixed monkfish/skate trips.

A skate fishery in RI and to a lesser extent in New Bedford supplies a lobster bait market, by landing whole skates while fishing inshore waters of Southern New England. Most of these vessels use trawls and often fish in an exempted fishery.

6.5.1.5 Canadian Landings of Skates

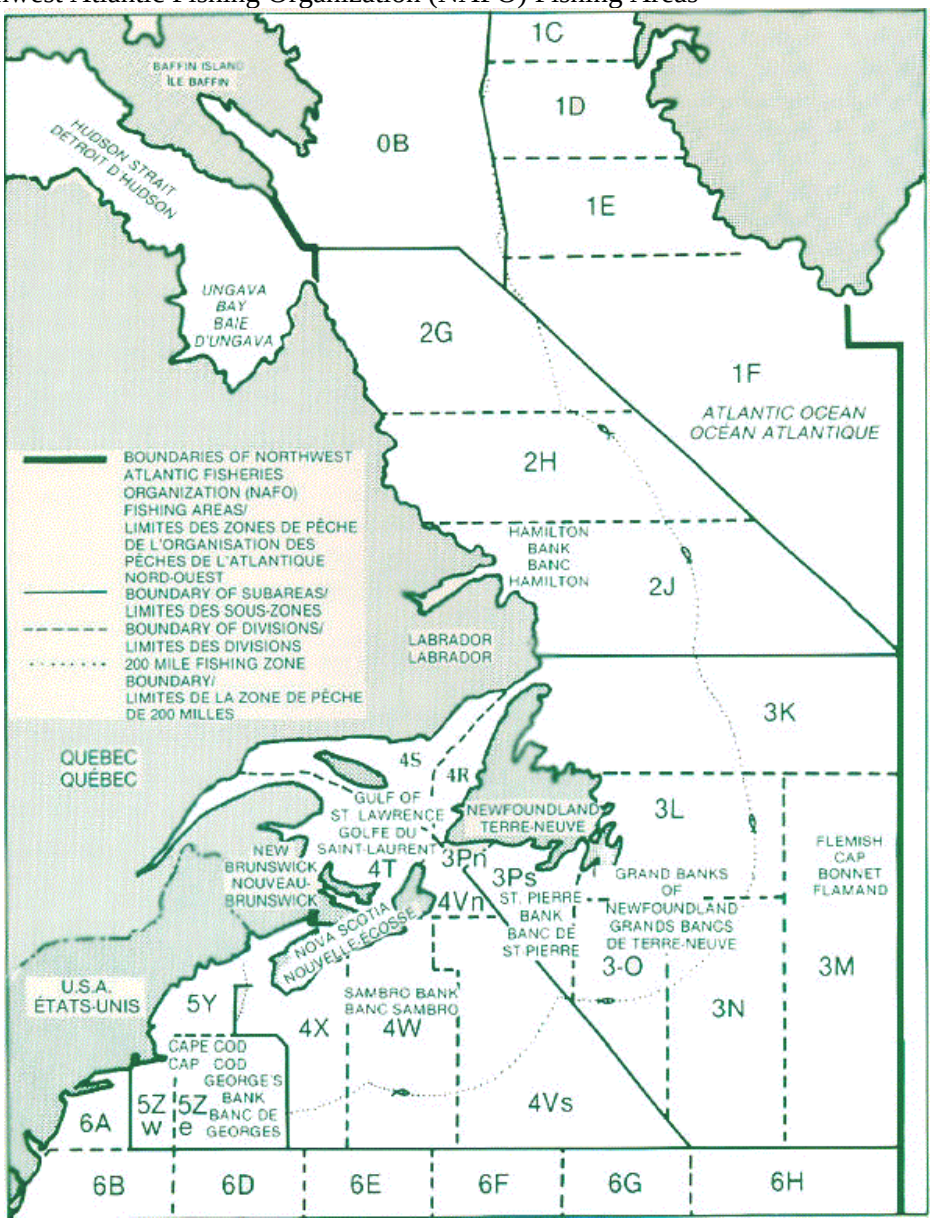
Historical information on Canadian skate fisheries and management was described in the 2000 SAFE Report for skates, and can also be found in Swain et al. (2006) and Kulka et al. (2007). Prior to 1994,

skates were only caught incidentally in Canadian fisheries like those for groundfish. However, a Canadian directed skate fishery was initiated in 1994 as a response to closures in the traditional Canadian groundfish fishery and an increasing international market for skate wings. Canadian skate catches have declined from 4200t in 1994, to 1100t in 2006 (Kulka et al. 2007).

The directed skate fishery evolved on the eastern Scotian Shelf, in NAFO Divisions 4Vs and 4W (Map 2) and targets primarily winter skate (~90%) with a small bycatch of thorny skate (less than 10%) (NEFMC 2001). A Total Allowable Catch (TAC) for the directed skate fishery in 4VsW was set in 1994 and every year thereafter to ensure that the fishery would not expand beyond sustainable levels. The TAC has been lowered almost every year since 1994 in response to interim assessments, concerns over the response of winter skate to directed fishing, and decreasing participation in the fishery. In 1994, winter skate landings exceeded 2000 mt, but as the quota has been progressively reduced, landings have fallen to less than 300 mt since 2001 (Swain et al. 2006) (Table 17). In 2005, winter skate in the southern Gulf of St. Lawrence was designated as endangered by the Committee on the Status of Endangered Wildlife in Canada. Winter skate on the eastern Scotian Shelf was also designated as threatened (Swain et al. 2006). In addition to fishing mortality, observed winter skate population declines may be influenced by natural mortality, specifically increased predation by seals (Swain et al. 2006).

While winter skate range from south of Georges Bank to the Gulf of St. Lawrence, they are near their northern limit of distribution on the offshore banks of the eastern Scotian Shelf. From observations of discontinuities in distribution, Canadian scientists believe that the winter skates in Division 4VsW are probably part of a separate stock (although very little work has been completed on skate stock delineation). Frisk et al. (2008), however, hypothesize that population connectivity exists between winter skates on the Scotian Shelf and on Georges Bank, based on trends in U.S. and Canadian trawl survey data.

Map 2. Northwest Atlantic Fishing Organization (NAFO) Fishing Areas



Map Source: Nova Scotia Department of Fisheries and Aquaculture, http://www.gov.ns.ca/fish/

Table 17. Estimated winter skate removals (tons) from NAFO Areas 4VsW, 1999-2004.

YEAR	TONS OF SKATES
1999	592
2000	358
2001	235
2002	278
2003	39
2004	233

Source: Swain et al. (2006)

In addition to the directed winter skate fishery in Division 4VsW, there is a fishery for thorny skates in the Grand Banks, Divisions 3L, 3N, 3O, and 3Ps depicted in Map 2. Table 18 summarizes the skate landings from these areas. Since 1998, the gears used in this fishery have been evenly distributed between gillnet, longline, and otter trawl.

Thorny skate range from Greenland to South Carolina in the northwest Atlantic, with a center of abundance on the Grand Banks. It is not presently known if the population comprises a single stock, or if there is structure between U.S., Canada, and other regional populations. Canadian assessments indicate that the thorny skate population in Areas 3LNOPs has been near historic low levels for the last 14 years, and there is evidence of hyper-aggregation (Kulka et al. 2007). The current TACs for thorny skate in Canada exceed the recommended level of exploitation to rebuild the stock.

Table 18. Canadian skate landings (tons) from NAFO Areas 3LNOPs, 1999-2006.

	NAFO Areas			
Year	**3L**	**3N**	**3O**	**3Ps**
1999	74	85	1,166	1,284
2000	139	156	620	1,053
2001	273	270	644	2,007
2002	245	385	1,175	1,503
2003	80	404	1,032	2,014
2004	50	209	536	1,200
2005	40	294	798	963
2006	23	0	246	1,149

Source: Kulka et al. (2007)

6.5.1.6 Recreational Fishery Catch

In general, skates have little to no recreational value and are not intentionally pursued in any recreational fisheries. Catch information for Atlantic coast skates from the Marine Recreational Fishery Statistics Survey (MRFSS) is presented in Table 19 and Table 20. Recreational skate catches between 2000 and 2007 ranged from 1.4 million fish in 2001 to 3.3 million fish in 2003. Recreational *harvest* of skates (MRFSS A+B1 data), where skates were retained and/or killed by the angler, represent only 0.4 – 3.0% of the estimated total catch during this time period Table 19. The vast majority of skates caught by recreational anglers are therefore released alive.

New Jersey, New York, North Carolina, Massachusetts, and Virginia reported the largest recreational skate catches over the time series, but the annual catch estimates for each of those states appear to be rather inconsistent and do not illustrate any clear trends. Recreational fishers in Maine did not report catching any skates in 2004, 2006, and 2007. Catch estimates from Delaware, Maryland, Virginia, and North Carolina suggest that some of the skates caught recreationally are either clearnose or rosette skate, or other species of skates that are not included in the northeast complex.

Reliability of skate recreational catch estimates from MRFSS is a concern. The shaded cells in Table 19 and Table 20 indicate that the catch estimate is associated with a proportional standard error (PSE) of 0.2 or less. PSEs provide a measure of precision and represent another way to express error associated with a point estimate. Estimates with a PSE of 0.2 or less are considered to be more reliable than those with higher PSEs, and generally, PSEs of 0.2 or less are considered acceptable for fisheries data. Note that many cells in Table 19 and Table 20 are not shaded. This suggests that skate recreational catch data from MRFSS are not very reliable. 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 19. Recreational Harvest and Total Catch of Skates (Family Rajidae) on Atlantic Coast, 2000-2007.

Type A catch is fish that are landed in a form that can be identified by trained interviewers.
Type B1 catch is fish that are used for bait, released dead, or filleted - they are killed, but identification is by individual anglers rather than trained interviewers.
Type B2 catch are fish that are released alive.

Year	HARVEST (TYPE A + B1)	TOTAL CATCH (TYPE A + B1 + B2)
2000	47,106	1,640,629
2001	5,799	1,422,319
2002	10,540	1,965,316
2003	17,297	3,264,740
2004	13,306	2,623,681
2005	19,090	2,731,706
2006	138,880	2,863,752
2007	69,857	2,303,413

Shaded values are those associated with a proportional standard error (PSE) of 0.20 or less and are considered more reliable than those with higher PSEs.

Source: National Marine Fisheries Service, MRFSS

Table 20. Recreational Catch (A + B1 + B2) in Numbers of Skates by State, 2000-2007.

	2000	2001	2002	2003	2004	2005	2006	2007
Maine	702	392	438	575	0	2,640	0	0
New Hampshire	26,751	21,052	23,029	11,792	14,998	18,872	13,070	82,478
Massachusetts	124,894	190,288	242,652	174,619	347,101	126,173	149,497	161,860
Rhode Island	61,777	78,199	100,512	53,007	86,039	65,711	66,680	112,061
Connecticut	181,702	3,213	9,163	125,226	38,606	34,603	70,184	57,347
New York	81,504	219,977	362,120	629,360	441,955	612,763	806,481	708,476
New Jersey	437,377	389,688	772,825	1,482,234	761,320	731,176	1,032,249	676,716
Delaware	42,346	71,405	71,186	136,875	150,229	160,301	166,025	77,725
Maryland	12,287	6,392	20,419	64,920	24,508	26,825	55,721	19,585
Virginia	83,611	142,068	102,231	114,594	171,898	412,604	207,181	151,542
North Carolina	577,586	290,527	248,340	439,677	565,723	528,014	287,051	234,890

Shaded values are those associated with a proportional standard error (PSE) of 0.20 or less and are considered more reliable than those with higher PSEs.

Source: National Marine Fisheries Service,MRFSS

6.5.1.7 Discards

Discard estimates were estimated during the last assessment (NEFSC 2008) and will be updated in detail in the SAFE Report prepared in 2011 as part of the 2012-2013 specifications package. Since Amendment

3, 2009 discards were estimated (Table ???). Discards in 2009 declined by 2% compared to 2008 but would make only a 3 mt increase in the 2010-2011 TAL. Discards for 2010 will be estimated later in 2011 when the 2010 data become available, and will be included in the specifications for 2012-2013.

Table 21. **Estimated skate discards by gear.**

Year	Line Trawl	Otter Trawl	Shrimp Trawl	Sink Gill Net	Scallop Dredge	Grand Total
2008	177	23,148	2	2,023	10,241	35,591
2009	311	25,453	1	1,980	7,289	35,034
Change	76%	10%	-50%	-2%	-29%	-2%

6.5.2 Description of the Skate Processing Sector

This section has not been updated since the 2000 SAFE Report for skates (NEFMC 2001). Much of the following information is also presented in Sections 7.5.1.1 and 7.5.1.2 of the Amendment 3 FEIS.

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. Bait skates are "processed" in that most are salted and strung or bagged by the buyers as preparation for use in lobster pots. A tremendous volume of salt is used in the bait operations, up to 130,000 pounds weekly during the peak of lobster season. Barrels of skates may weigh between 500 – 600 pounds. All "processing" of skates for lobster bait occurs at the level of the buyer/dealer and not the processor. No processing facilities are involved with skate products for use as lobster bait.

Skate wings are processed for export to various international markets. Winter skate, thorny skate, and barndoor skate are considered sufficient in size for processing of wings. Processors state that they prefer skate wings of at least 1-1 1/4 lb. skin-on. A one-pound skinless wing is estimated to weigh about 1.3-pounds skin-on. Skate processors buy whole, hand-cut, and/or onboard machine-cut skates from vessels primarily out of Massachusetts and Rhode Island. Cutting machines were developed in 1988 in response to increasing markets for skate wings and increased participation in the fishery. However, the practice of onboard machine cutting has decreased since that time and may not exist at all anymore. Cutting machines have been somewhat problematic because they can leave wing meat on the body of the skate or cut too close to the cartilage, decreasing the quality of the product and/or requiring additional hand-cutting. Processors prefer hand-cut wings because hand-cutting generally produces a better product and higher yield.

There are currently four known major skate wing processors in New England and another two companies in the Mid-Atlantic. The companies reportedly buy wings from vessels mostly from New Bedford and Mid-Atlantic ports. One major skate processing facility in New Bedford reports that about 90% of its product is landed in New Bedford, with the remainder trucked from Provincetown, Scituate, and other ports primarily in Massachusetts. Processors report that while demand for the product is generally consistent, profit margins are extremely low.

In total, nine processors from MA, RI, NY, and NH reported processing 3.9 million pounds of unspecified skate products. No further description of product form is available (e.g., whether frozen or fresh). Sales amounted to $3.2 million, for an average price of $0.81. These firms employ 514 workers.

The activities involved with skate processing depend on the market which the product serves. However, almost all wings are frozen for export. Wings processed for export to Europe are either skinless or skinless and boneless, and they are individually wrapped. In contrast, the Korean market prefers a whole frozen skate.

Data of annual production of processed and exported skate products is sparse. Limited trade data was collected by NOAA/NMFS for the New England Fisheries Development Program in 1975. Reports from an international seafood trade expert at the Seafood Institute indicate that skate export poundage was tracked through "Euro Stat Data" until 1995 or 1996, then abandoned. Customs does not track the exports, and no census data exists specific to skate exports.

6.5.3 Domestic and International Markets for Skates

This section has not been updated since the 2000 SAFE Report for skates (NEFMC 2001). Much of the following information is also presented in Sections 7.5.1.1 and 7.5.1.2 of the Amendment 3 FEIS.

The current market for skate wings remains primarily an export market. France, Korea, and Greece are the leading importers. France prefers skate wings, a processed product that is either skinless or skinless and boneless; frozen individually wrapped in poly (IWP). The Korean market generally prefers whole processed skates, and there is a Japanese market for wings. There is also a market for skate wings in Portugal. The Portuguese market is reported to prefer barndoor skates over winter and thorny skates because they are the least stringy, most tender and flavorful of the wing skates. Interestingly, barndoor skates are said to fetch the lowest ex-vessel prices of the wing skates because they cannot be skinned by machine, as the skin tears too easily.

Brokers have also secured skates for the European and Asian markets from Argentina and Canada. Argentina initially produced a significant amount of skates, but they were reportedly of poor quality. Processing techniques have improved, and Argentina now provides the bulk of the European and Asian market. Argentina supplements their skate production with large skates produced from the U.S. west coast fishery. Canadian production of skates for the export market has diminished, as some of the industry switched toward more lucrative crab and shrimp fisheries.

6.5.4 Economic information

This section presents available economic information on the skate fishery. This includes a brief summary of the economic frameworks (supply and demand) for both the lobster bait market and the wing market; information about dockside prices for skates; trends in revenues from skate landings; and information about skate vessels, dealers, processors, and trade.

6.5.4.1 Economic Framework

The dockside markets for skate wings and bait are depicted in **Error! Reference source not found.** and Error! Reference source not found. in stylized form. These graphs are intended only to convey a sense of the economic benefits and costs of regulating skate fisheries. That is, we do not yet have the data necessary to estimate empirical demand and supply relationships.

The dockside demand for skate wings is derived from consumer demand in overseas markets **Error! Reference source not found.**. In the most simple case where the U.S. provides only a small quantity of the global supply of skate wings, dockside price is set by international demand and supply of raw fish. The dockside prices of other export products such as Atlantic bluefin tuna, monkfish, and sea urchin roe

are probably similarly determined. A restriction on skate wing landings (if that happens) puts a kink in the U.S. landings supply at the dotted line. The short run costs of such a restriction on the fishing industry and U.S. economy is triangular area ***A*** in **Error! Reference source not found.**, which is above the competitive supply curve (which traces costs) and below the price line. (Impacts on foreign businesses and consumers generally are not factored into a benefit-cost analysis of domestic fisheries management.) Over the long run, recovery of skate populations (if that is a problem) would increase supply (i.e., shift the supply curve to the right), so the net effect of current losses and future gains would have to be weighed.

In contrast, the demand for skate bait is an input demand from the lobster fishery **Error! Reference source not found.**. In this case, a regulation that reduces skate bait landings in the short run could increase dockside price from "low" where demand and supply intersect to "high" where the new, lower landings hit demand. Conventional economic wisdom would then have costs increase in the lobster fishery, reducing supply. The area ***A'*** in **Error! Reference source not found.** is the overall short run loss of net benefits felt by the lobster fishery and, to an extent, consumers and the seafood sector (depending on the type of demand). Likewise, area ***A*** in **Error! Reference source not found.** measures the same loss in the dockside skate market. In the long run, the economic sense of such a regulation depends on the cumulative results over time.

Error! Reference source not found. and **Error! Reference source not found.** oversimplify the skate wing and bait markets in order to illustrate essential market economics. For example, the cost of skate wing landings would be close to zero when skates are, in fact, an incidental harvest in other fisheries. In addition, these graphs leave out a number of factors that comprise dockside demand, including attributes of the landed products and the prices of substitutes. For example, "dinner plates" are the preferred size of skate bait, and herring, mackerel, and menhaden are also used for lobster bait depending on the harvesters' preferences. Finally, these few lines do not adequately distinguish between benefit-cost analysis on the one hand and regional economic and financial analyses on the other. See Edwards (1994) for a primer.

6.5.4.2 Dockside Prices for Skates

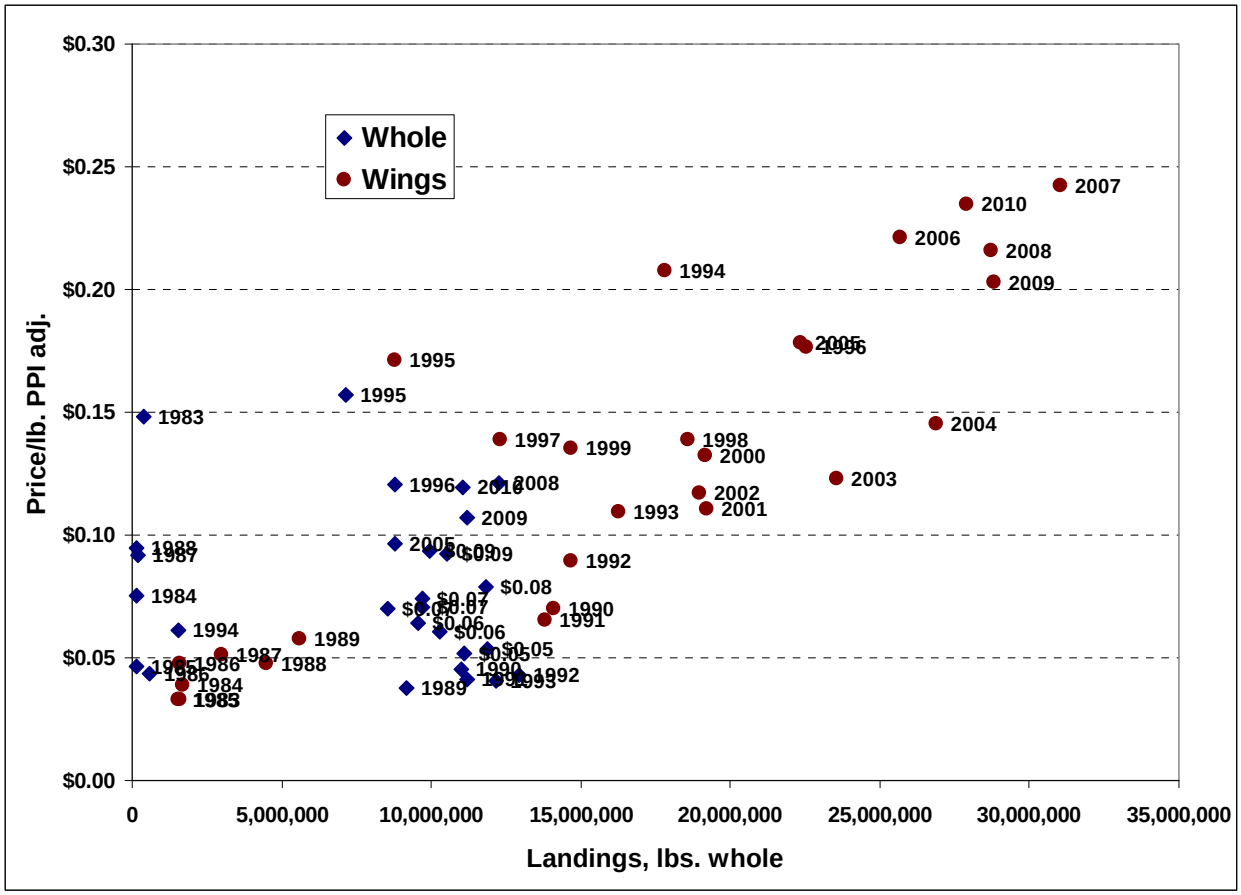
Prices reveal important information about the economic benefits and costs of fishery regulations. An overview and analysis of skate prices, including supply and demand were included in the 2008 SAFE Report, Section 7 of Amendment 3.

More recently, PPI-adjusted prices for skate wings have risen (Figure 11) and landings have risen, partially as a result of the higher prices but also because vessels with DAS allocations have been subject to greater groundfish fishing restrictions. Generally, the prices paid for skate wings has been higher than those paid for whole skates (presumably product quality is better for a food market) and since 2004, prices have been above $0.15 per pound.11 Average skate wing prices in 2007 rose to $0.24 per pound ($0.54 per pound of wings) and the 2007 skate wing landings were the highest on record. Since then, skate prices and landings have declined slightly from 2007, but still represent the top three of four years for price and the top three of five years for landings.

11 Prices for skate wings are actually higher by a factor of 2.27, but these wing prices have been converted to a whole-weight equivalent to be on the same metric as prices for whole skate landings.

PPI-adjusted prices for whole skates, most of which are landed to supply bait to the lobster fishery, have been relatively stable. Except for three years12, whole skate prices have been generally less than $0.10 per pound and annual landings in recent years have been around 10,000,000 lbs. Since 2007, landings have increased slightly to 11-12 million lbs. and adjusted prices have also risen to $0.11-0.12.

Figure 11. PPI adjusted annual prices for skate wing and whole skate landings compared to quantity landed (whole weight).



6.5.4.3 Revenues from Skate Landings

A detailed review of skate revenues and revenue distribution was presented in the 2008 SAFE Report (Section 7.0 of Amendment 3), which will be updated later in 2011 for the 2012-2013 specifications package.

6.5.5 Skate Vessels

A detailed analysis and discussion of participating vessels in the skate fishery was given in the 2008 SAFE Report, Section 7.0 of Amendment 3 (NEFMC 2009). Undoubtedly there are some changes in vessel participation that have occurred due to and since implementation of Skate FMP Amendment 3 and

12 The higher prices for whole skate in 1983, 1995, and 1996 may have been influenced by mis-reported (or erroneously recorded) landings of skate wings, possibly landed in whole form and processed on shore.

Multispecies FMP Amendment 16 (sectors). These changes and their effects will be analyzed and summarized for the SAFE Report later in 2011, once the 2010 data become fully available for analysis.

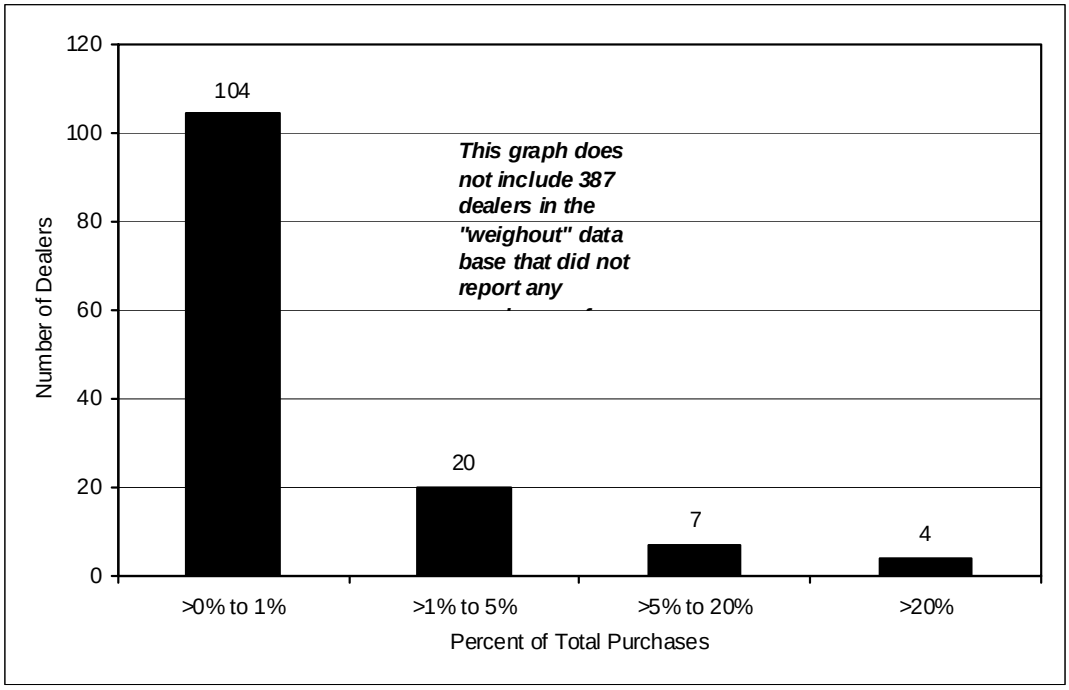
6.5.5.1 Skate Dealers and Processors

An analysis of trends in skate dealers and processors in New England and the Mid-Atlantic region will be completed in a SAFE Report prepared later this year, after the 2010 data become fully available for analysis.

6.5.5.2 International Trade

The U.S. Customs Bureau and U.S. Census do not report separate trade statistics for skate products.

Figure 12 Dependence of Individual Dealers on Skate Landings: Percent of Total Purchases of Raw Fish



7.0 ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF IMPACTS (EA)

7.1 Cumulative Effects Analysis

The purpose of this section is to summarize the incremental impact of the proposed action on the environment resulting when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes them.

7.1.1 Background

The National Environmental Policy Act (NEPA) requires that cumulative effects of "past, present, and reasonably foreseeable future actions" (40 CFR § 1508.7) be evaluated along with the direct effects and indirect effects of each proposed alternative. Cumulative impacts result from the combined effect of the proposed action's impacts and the impacts of other past, present, and reasonably foreseeable future actions. These impacts can result from individually minor but collectively significant actions taking place over a period of time. The Council on Environmental Quality (CEQ) directs federal agencies to determine the significance of cumulative effects by comparing likely changes to the environmental baseline. On a more practical note, the CEQ (1997) states that the range of alternatives considered must include the "no-action alternative as a baseline against which to evaluate cumulative effects." Therefore, the analyses in this document, referenced in the following cumulative impacts discussion, compare the likely effects of the proposed actions to the effects of the no-action alternative13.

CEQ Guidelines state that cumulative effects include the effects of all actions taken, no matter who (federal, non-federal or private) has taken the actions, but that the analysis should focus on those effects that are truly meaningful in terms of the specific resource, ecosystem and human community being affected. Thus, this section will contain a summary of relevant past, present and reasonably foreseeable future actions to which the proposed alternatives may have a cumulative effect. This analysis has taken into account, to the extent possible, the relationship between historical (both pre- and post-FMP) and present condition of the skate population and fishery, although significantly less is known about the population and the fishery prior to the implementation of the FMP and other management actions affecting the fishery (particularly Multispecies Amendments 5 and 7 and Sea Scallop Amendment 4). The time frame for this analysis, therefore, is primarily the 1980's and 1990's for historical information, although trawl survey data extending to the 1960's is considered, and approximately 5-10 years for reasonably foreseeable future actions affecting the fishery. The geographic scope of the analysis is the range of the skate fishery in the EEZ and adjacent fishing communities, from the U.S.-Canada border to, and including North Carolina.

13 In the case of this amendment, there are no default actions that would cause No Action to differ from Status Quo. Therefore for the purposes of this Cumulative Effects analysis, No Action and Status Quo (Section **Error! Reference source not found.**) are equivalent.

The cumulative effects analysis focuses on five Valued Ecosystem Components (VEC's) listed below. The non-fishing activities also include past, present, and reasonably foreseeable future actions.

1. Target species (skates)
2. Non-target species (incidental catch and bycatch)
3. Protected species
4. Habitat, and
5. Communities.

The cumulative effects determination on these VEC's is based on the following analyses: (1) the discussion in this section of non-fishing actions occurring outside the scope of this FMP; (2) the analysis of direct and indirect impacts contained in the Environmental Consequences section of this DEIS (Sections 7.3 to **Error! Reference source not found.**) and summarized in this section (Sections ??? 7.1.4 and 7.1.5); (3) the summary of past, present and future actions affecting the skate fishery; and (4) the cumulative effects of the alternatives provided in Section 7.1.2.

NOAA Fisheries staff determined that the 5 VECs (target species, non-target species, protected species, habitat and communities) are appropriate for the purpose of evaluating cumulative effects of the proposed action based on the environmental components that have historically been impacted by fishing, and statutory requirements to complete assessments of these factors under the Magnuson-Stevens Act, Endangered Species Act, Marine Mammal Protection Act, Regulatory Flexibility Act, and several Executive Orders. The VECs are intentionally broad (for example, there is one devoted to protected species, rather than just marine mammals, and one on habitat, rather than Essential Fish Habitat) to allow for flexibility in assessing all potential environmental factors that are likely to be impacted by the action. While subsistence fishing would ordinarily fall under the "communities" VEC, no subsistence fishing or Indian treaty fishing take place in the area managed under this FMP.

The vessels participating in the skate fishery must comply with all federal air quality (engine emissions) and marine pollution regulations, and, therefore, do not significantly affect air or marine water quality. Consequently, the management measures contained in the proposed action would not likely result in any additional impact to air or marine water quality.

7.1.2 Summary of the proposed action measures

This Skate FMP and particularly Amendment 3 were designed to achieve a number of goals and objectives as outlined in Section **Error! Reference source not found.**, consistent with the skate stock-rebuilding goals established by the FMP, adopted in 2002. The purpose and need for this amendment is summarized in Section **Error! Reference source not found.**. The proposed action (final alternative) and alternatives considered but not adopted are outlined in Section **Error! Reference source not found.**, and the direct and indirect impacts on the environment are analyzed and discussed in Sections 7.2 to **Error! Reference source not found.**.

This framework adjustment addresses problems and issues raised the public about implementation of Amendment 3 and specifically the in-season accountability measure. In addition, an alternative addresses NMFS strategic objectives of streamlining the management process and reducing administrative burdens on the agency and public.

The preferred alternative is ???. The measures are described in detail within Section **Error! Reference source not found.** and the biological impacts on the skate resource in Section 7.3.

In summary, as stated in the Goals and Objectives, the proposed actions are primarily designed to address new management problems and issues that have arisen since implementation of the FMP, and to comply with applicable laws such as NEPA and the Magnuson-Stevens Act. Recent changes in stock conditions have changed the status determinations for smooth and thorny skates, which were classified as overfished and required this action. As a result, the Magnuson-Stevens Act requires the Council to develop an amendment and NMFS to implement measures to redress the conditions and initiate rebuilding of overfished stocks. The Council is concerned that with rising landings of wing skates, winter skate could still experience overfishing and biomass of winter skate and other managed skates would decline. More importantly, the greater the number and duration of trips targeting winter and little skates, the greater the risk to overfished smooth and thorny skates. So keeping the catches below the median exploitation ratio is important, and work in tandem with prohibitions on landing smooth, thorny, and barndoor skates[14].

7.1.3 Summary of non-fishing actions and their effect

This framework adjustment proposes a modification to the measures implemented by Amendment 3, and as such the cumulative effects of non-fishing actions are the same as those described in the amendment, which are duplicated below for completeness.

Following is an assessment of non-fishing impacts on fish habitat and fishery resources. For fish habitat, non-fishing effects have been reviewed in the Essential Fish Habitat Amendment for Skate prepared by the NEMFC (Amendment 2 to the Skate FMP). Table 22, taken from that document, represents the review of the EFH Technical Team of the potential effects of numerous chemical, biological and physical effects to riverine, inshore and offshore fish habitats. Table 22 exhibits twelve representative classes of chemicals, three categories of biological and nineteen types of physical threats, which are categorized as low, moderate or high threats to habitat, based on their geographic location—riverine, inshore and offshore. In general, the closer the proximity to the coast, i.e., close to pollution sources and habitat alternations, the greater the potential for impact.

Riverine and inshore habitats were generally categorized as moderate to high threats whereas the offshore areas were low to moderate. For the offshore area, with the exception of events such as oil spills and algae blooms, which can spread over large areas, moderate effects were generally localized to a well-defined and relatively small impact area such as oil/gas mining and dredged material disposal. Thus, only small portions of fish stocks would potentially use these sparsely located areas and would be adversely affected. For example, dredged material disposal sites, usually about 1 nm^2 in size, are managed by the U.S. Army Corps of Engineers and the U.S. EPA to minimize physical effect to the defined disposal area and allow no chemical effects at the site based on stringent sediment testing.

For fishery resources, there are several non-fishing threats that could have a direct and/or indirect impact on skate stocks. Several of the items identified as non-fishing threats to fish habitat, identified in Table 22 could also pose a threat, such as the oil spills, pesticides, and radioactive wastes. Generally the closer the proximity of skate stocks to the coast, the greater the potential for impact (although predation, a non-fishing impact, would be one threat that would occur everywhere). Skate reside or migrate through both inshore and offshore areas at different stages of their lives and during different seasons throughout the year. In the offshore areas, effects of non-fishing activities would likely be low because the localized nature of the effects would minimize exposure to organisms in the immediate area. However, new exploration and drilling in offshore areas for oil and gas could have adverse effects on skates, depending on the nature of the disturbance.

14 Barndoor skate is in a rebuilding plan, not yet having reached the target biomass.

An additional inshore threat of note would be the effect on fishery resources presented by power plants. The operations of power plants are thought to be especially of consequence to fish eggs, larvae and juveniles. Entrainment, or intake of cooling seawater for the purposes of cooling power plant reactors, is known to draw in eggs and larvae and, therefore, could have a negative impact on some fishery resources that spawn in areas in close proximity to active power plants. An additional threat associated with power plants is the discharge of warm water. This thermal discharge is believed to have a negative impact on reproduction capability and recruitment of affected fishery resources. Since skate spawning and larval stages occur primarily in the offshore environment, this threat is not as significant as it is for other fish stocks, such as winter flounder. Little skate however reside and spawn in shallow coastal waters and like other skates produce demersal egg sacs, which may be susceptible to entrainment and coastal dredging.

Table 22- Potential non-fishing threats to fish habitat in the New England region prioritized within regions (H = high; M = moderate; L = low)2

THREATS	RIVERINE	INSHORE	OFFSHORE
Chemical			
oil	M	M	M
heavy metals	M	M	M
nutrients	H	H	L
pesticides	M	M	L
herbicides / fungicide	M	M	L
acid	H	M	
chlorine	M	M	
thermal	M	M	
metabolic & food wastes	M	M	
suspended particles	M	M	L
radioactive wastes	L	M	M
greenhouse gases	M	M	M
Biological			
nonindigenous / reared species	M	M	M
nuisance / toxic algae	M	H	M
pathogens	M	M	M
Physical			
channel dredge	M	H	
dredge and fill	H	H	
marina / dock construction	M	H	
vessel activity	M	H	L
erosion control			
bulkheads	M	M	
seawalls		M	
jetties		M	
groins		M	
tidal restriction	M	H	
dam construction / operation	H	M	
water diversion			
water withdrawal	H	M	
irrigation	M	M	
deforestation	H	M	
mining			
gravel/mineral mining	M	M	M
oil/gas mining	L	M	M
peat mining	L		
debris	M	M	M
dredged material disposal	L	M	M
artificial reefs	L	M	M

[1] From NEFMC (1998)

[2] Prioritization developed by compilation of *EFH Technical Team* survey

Other future non-fishing threats to fishery resources could include global warming and siting of wind farms in the coastal or offshore environment. The effects of global warming and rising sea temperature on the life cycles and distribution of fishery stocks are uncertain and, therefore, could not be incorporated into this assessment. The possibility of windmill construction in marine waters for the purposes of harnessing alternative means of energy could also have an impact on fishery resources, especially as it relates to disruption of habitat. It is notable that the MA DMF survey captures considerable numbers of little skate year around and winter skate in the spring. These skate species are likely to inhabit in Nantucket Sound, but it is not known to what extent little and winter skate rely on the area. Windfarm siting is the subject of a forthcoming EIS being prepared by the Army Corps of Engineers. The impacts of this project to the fisheries have been analyzed in the draft environmental impact statement for the Cape Windfarm Project.

7.1.4 Summary of fishing gear effects on fish habitat

A gear effects and adverse impacts determination analysis was conducted by NMFS, based on the results of the Councils' Gear Effects Workshop (available at http://www.nefsc.noaa.gov/publications/crd/crd0201/crd02-01.pdf) and information provided by the NEFMC Habitat Technical Team, as well as a report from the National Research Council on the "Effects of Trawling and Dredging on Seafloor Habitat" (available at http://books.google.com/books?id=orSv2JlXPykC&pg=PA19&lpg=PA19&dq=Effects+of+Trawling+and+Dredging+on+Seafloor+Habitat&source=web&ots=Dbb2thYahm&sig=ij4CAEKP1LveldPqpBF5BNLhsdg&hl=en&sa=X&oi=book_result&resnum=3&ct=result#PPP1,M1 or http://books.nap.edu/catalog.php?record_id=10323). This latter study determined that repeated use of trawls/dredges reduce the bottom habitat complexity by the loss of erect and sessile epifauna, smoothing sedimentary bedforms and bottom roughness. Such activity, when repeated over a long term also results in discernable changes in benthic communities, which involve a shift from larger bodied long-lived benthic organisms for smaller shorter-lived ones. This shift also can result in loss of benthic productivity and thus biomass available for fish predators.

Thus, such changes in bottom structure and loss of productivity can reduce the value of the bottom habitat for demersal fish. These effects varied with sediment type with lower level of impact to sandy communities, where there is a high natural dynamic nature to these bedforms, to a high degree of impact to hard bottom areas such as bedrock, cobble and coarse gravel, where the substrate and attached epifauna are more stable. Fishermen in most areas report that their skate effort is predominantly directed in sandy and mud/sand bottomed areas, which are often categorized as a high energy environment that is less affected by fishing activities than other substrates.

Use of trawls and gillnets are common in inshore and offshore areas and much less common in riverine areas. In the Northeast, otter trawls are used to prosecute most managed fisheries including: Northeast Multispecies; Sea Scallops; Skate; Mackerel, squid and butterfish; Summer flounder, scup and black seabass; Bluefish; and Spiny dogfish. Scallop dredges are used in the sea scallop fishery and hydraulic clam dredges are used in the surf clam and ocean quahogs fisheries. Smaller trawls are used in inshore areas and lower estuaries, which are managed by states and not subject to the Magnuson-Stevens Act. In addition, some states allow smaller dredges are used for harvesting oysters, bay scallops, sea urchins, quahogs, and mussels. It is assumed for this analysis that the effects of gear are generally moderate to high in the riverine, inshore and offshore areas, depending upon the type of bottom and the frequency of fishing.

7.1.5 Summary of existing threats to protected resources

Six large whale species (right, humpback, fin, sei, blue and sperm whales) and three sea turtles (leatherback, Kemp's ridley and green turtles) found in the region are listed as "endangered" under the Endangered Species Act. The loggerhead turtle is listed as threatened and thorny skate has been petitioned for listing under the Endangered Species Act. The remaining mammal species are protected under the Marine Mammal Protection Act. The right whale continues to be at the highest risk for extinction because of its low numbers and low reproductive status. Table 23 summarizes the past and current threats for the whale species that have a special status because of threats to their continued sustainability.

Ship strikes and fishing gear entanglement continue to be the most likely sources of injury or mortality for the right, humpback, fin and minke whales. Gear entanglement occurs in the vertical buoy lines of sink gillnet and pot/trap gear, the groundlines of pot/trap gear, and also in the net panels of gillnet gear. Sei, blue and sperm whales are also vulnerable, but fewer ship strikes or entanglements have been recorded. Mobile bottom trawls are less of a concern for the large whale species. Other marine mammals, such as harbor porpoise, dolphins and seals, are also at risk to be entangled in net gear (including seines, gillnets and drift nets). Turtles have been entangled in shrimp trawls, pound nets, bottom trawls sink gillnets, and scallop dredges. Shrimp and summer flounder[15] trawls are required to use turtle excluder devices. Scallop dredges are required to have turtle-deflection chains in areas and seasons where sea turtle capture has been observed.

Protected species are also affected by habitat alteration or destruction. Species such as turtles may be more prone to such impacts because their nests are particularly vulnerable to disturbance or predation. The impacts of pelagic habitat alteration on protected species are less known. Water quality in coastal areas is particularly vulnerable to coastal pollution from nutrients, which can alter the phytoplankton and the food of species such as the right whale. Toxic contaminants, such as PCBs and DDT which are suspected of causing reproductive failure in many vertebrates including marine mammals (Reijinders and Aguilar, 2002), can also accumulate through the prey species and cause adverse effects to a predator that is higher in the food web. The potential impact of pollution is more likely problematic in nearshore areas closer to the source, such as agricultural and urban runoff and sewer outfalls. Nutrients can also promote toxic phytoplankton blooms, which have been known or suspected in killing whales and other marine mammals (Geraci, et al., 1990; Harwood, 2002).

Low frequency sonar may pose an additional threat, although the extent of its continued use by the U.S. military is unclear at this writing. A successful lawsuit brought by environmental groups limited the use of such sonar following a number of marine mammal deaths in the vicinity of naval exercises in several places around the world. Federal legislation being debated in Congress at this time could override the lawsuit settlement agreement and exempt the military from the "harassment" provisions of the MMPA, easing the restrictions on the limited deployment of low frequency sonar.

The factors discussed above, and other factors, potentially have had cumulative adverse effects on all protected species to varying degrees. Because of a lack of cause-effect data, little is known about the magnitude and scope of these factors and how they have contributed to the species' special listing. The direct and indirect effects of the alternatives in this amendment are discussed in Section **Error! Reference source not found.**. Section 7.1 summarizes the cumulative effects of the alternatives in the context of the discussion above.

15 Final rule, FR 61:1846, 24 January 1996.

Table 23- Summary of past and present threats for whales that have special status because of threats to their continued sustainability.

Species	Status	Threats			
		Ship Strikes	Gear Entanglement	Habitat	Other
Right whale	Endang Highest risk	High Potential	High potential due sink gillnets, pots, traps	Unknown: Water Quality: Nutrients; Toxic contaminants; Biotoxins; Noise	Unknown: Low Genetic diversity; Low reproductive rates; Reduction/ Competition of prey; Harassment
Humpback whale	Endang	High Potential	High potential	Unknown: Water Quality: Nutrients; Toxic contaminants; Biotoxins; Noise	Unknown: Reduction/ Competition of prey; Harassment
Fin whale	Endang	High Potential Mortality Less Certain	High potential Mortality Less Certain	Unknown: Water Quality: Nutrients; Toxic contaminants; Biotoxins; Noise	Unknown: Reduction/ Competition of prey; Harassment
Sei whale	Endang	Potential but few recorded instances	Potential but no recorded instances	Offshore Species Less likely but still vulnerable to Offshore Development	Unknown: Reduction/ Competition of prey; Harassment
Blue whale	Endang	Potential but few recorded instances	Potential but few recorded instances	Offshore Species Less likely but still vulnerable to Offshore Development	Unknown (no data): Ice entrapment
Sperm whale	Endang	Potential but few recorded instances	Potential but few recorded instances	Offshore Species Less likely but still vulnerable to Offshore Development	Unknown: Reduction/ Competition of prey; Harassment
Minke whale	Protected under MMPA	Potential but few recorded instances	Sink Gillnets known threat; Pot/Trap Gear	Unknown: Water Quality: Nutrients; Toxic contaminants; Biotoxins; Noise	Aboriginal subsistence whaling on West Greenland stock (non-U.S. stock)
Green turtle	ESA threatened	Some potential	Entangled in gillnets and pound nets Capture by trawls and dredges without TEDs or turtle-deflecting chains	Marine debris; global warming; loss or gegradation of nesting sites; beach renourishment and artificial coastal lighting; non-native vegetation; coastal runoff; aquaculture	Disease, particularly fibropapillomatosis infections of green turtles Harassment Poaching
Kemp's ridley turtle	Endang				
Leatherback turle	Endang				
Loggerhead turtle	ESA threatened				

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7.1.6 Summary of past, present and future actions affecting the skate fishery

7.1.6.1 Past and present actions

The current condition of the skate fishery (in the context of the five VECs) is the result of the cumulative effect of the Skate FMP, implemented in 2003, and regulations under other FMPs in the region that impact vessels catching skate as well as measures adopted under other laws, particularly the Endangered Species Act and the Marine Mammal Protection Act. The status of the fishery, its stocks, human component and the biological and physical environment, is discussed in the Affected Environment section of this document, Section **Error! Reference source not found.**. This section contains a discussion of past actions that have cumulatively, and in most cases positively affected the VECs of the skate fishery, including regulatory and judicial actions.

In summary, the directed skate fishery is relatively young, having emerged over the past two decades and coming under regulation only in 2003 with the adoption of the FMP. The Councils developed the FMP in response to concerns that skate fishing was causing biomass to decline, threatening the existence of species that are targeted to supply the wing market, particularly barndoor skate which was petitioned for listing under the Endangered Species Act.

Since the FMP was implemented in 2003, the results have been mixed to unfavorable. An increase in barndoor skate biomass was already underway by the time the FMP was developed and implemented. Since then, barndoor skate biomass has stabilized above the threshold, but below the target (see Section **Error! Reference source not found.**, for more information on biomass trends). Once deemed overfished because biomass was below the threshold, barndoor skate is in a rebuilding program because its biomass has not yet achieved the target. Thorny skate was also deemed overfished when the FMP was implemented, i.e. its biomass was below the threshold. Since then, biomass has declined and is well below the threshold. At the time, a rebuilding period for thorny skate could not be estimated due to missing life history data. Since then, the PDT has estimated that thorny skate cannot be rebuilt in 10 years and this amendment adopts a 25 year rebuilding schedule beginning in 2003.

Smooth and thorny skate are now deemed overfished, because their biomass index has now slipped below the threshold. Since 2003, however, smooth skate biomass has not changed significantly, and the recent changes are probably within the margin of sampling error, but is still way below the target. Biomass of thorny skate has continued to decline, a pattern that is characteristic of the entire 1963-2008 time series. Clearnose skate biomass has remained relatively stable and is well above the target. Rosette skate biomass increased, but the survey samples the edge of rosette skate distribution and the changes are probably not significant.

The two skates that are targeted by the fishery and landed, little and winter skates, have however seen substantial declines in biomass since FMP implementation in 2003, but both have also seen recent substantial increases. Little skate biomass has declined from a 6.72 kg/tow average to a 3.67 kg/tow average, but have increased to 6.5532 in the Spring 2009 survey. Preliminary estimates for the 2010 Spring survey indicates an additional increase from 2009, but the calibrations to correct for vessel and gear effects in the new survey have not yet been peer reviewed. Winter skate biomass however has declined below the 3.23 kg/tow threshold and is therefore overfished. Biomass declined from 4.29 kg/tow in 2003, became overfished in 2006 and biomass continued to decline to 2.93 kg/tow in 2007. Winter skate biomass has however rebounded in 2008 to 9.5 kg/tow, an estimate that the Council used in setting the specifications for Final Amendment 3. This was a substantial biomass increase over previous levels and received extra scrutiny before it had been used in setting an ABC and TALs. It appeared that

the result was not simply due to variability and sampling error, but possibly due to a temporary or permanent migration of medium size winter skate from outside the US waters. Preliminary indications of 2010 fall survey data indicate that this higher biomass persisted and may also have modestly increased. If this perception and biomass level holds after calibration peer review, winter skate biomass will be somewhat above the B_{MSY} proxy, the FMPs biomass target for MSY.

The three FMP's that have had the greatest impact on skate fishery VECs, other than the Skate FMP, are the Sea Scallop, Monkfish, and Northeast Multispecies FMP's 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 (mostly in the Multispecies fishery). Both Multispecies and Sea Scallop fisheries have undergone a series of major actions since 1994 to reduce fishing effort and rebuild overfished stocks. These include Multispecies Amendments 5 –15 and 43 framework adjustments, Monkfish Amendments 1-3 (with one pending) and 5 framework adjustments (with one pending), and Sea Scallop Amendments 4-13 (with two pending to address EFH and ACL/AMs) and 20 framework adjustments (with one pending). These actions have reduced overall fishing effort significantly since 1994, and have imposed other restrictions such as year-round and seasonal closed areas, and gear restrictions that have affected both the directed and incidental catch skate fishery. Cumulatively, these actions have likely had a positive effect on skate, contributing to the increasing stock abundance observed over the past five years.

Additional action in all three FMP's is pending, and will be discussed below (Section 7.1.6.2). Other FMPs that likely have had an impact on the fishery VECs include those managing other demersal species in the region, such as the Skate Spiny Dogfish FMP (implemented 2000), and the Summer Flounder, Scup, Black Sea Bass FMP (1996 and amendments). To varying degrees, these management plans, as well as others in the region, have directly or indirectly affected the skate fishery by causing effort to shift among fisheries and by changes to the levels of incidental catch of skate. It is not possible within this document to analyze all of the inter-relationships of these management plans with the skate fishery because in most cases these relationships are not well understood and vary widely for individual vessels and areas.

Standard Bycatch Reporting Methodology (SBRM)

The SBRM Amendment was an omnibus amendment to all 13 FMPs developed by the New England and Mid-Atlantic Fishery Management Councils. The actions considered in the SBRM Amendment focused solely on the administrative processes through which data and information on bycatch occurring in Northeast Region fisheries are collected, analyzed, and reported to fishery scientists and managers. This amendment did not address bycatch reduction or other issues related to the management measures utilized in Northeast Region fisheries.

The SBRM Amendment formalized and expanded the administrative mechanisms used previously in the Northeast Region to collect information and data on fisheries bycatch and to analyze bycatch data in order to effectively determine appropriate observer coverage levels and allocate observer effort across the many Northeast Region fisheries. The action did not result in any changes to fishing operations in areas covered by the subject FMPs. There were no incremental impacts to any fishing areas or living marine resources associated with the SBRM Amendment. The new SBRM elements —implementation of an importance filter to establish and allocated target observer coverage levels, establishment of an SBRM performance standard, the requirement to conduct periodic evaluations and prepare a periodic SBRM report, the prioritization process, and the framework adjustment provisions—are purely administrative features intended to improve the effectiveness and the transparency of the Northeast Region SBRM. None of these additional components are associated with impacts to any fishing areas or living marine resources within the Northeast Region.

Replacing a requirement for a baseline review of each Council management action, Amendment 3 to the Northeast Skate Complex FMP (Skate FMP) requires an Annual Monitoring Report to be presented at the June Council meeting (see Section 5.1.4.1 attached). The baseline review had become relatively irrelevant and obsolete because most of the measures in other FMPs that the Skate FMP relied on to achieve its objectives had become redefined and modified. Over time, it became more difficult to relate new proposed measures to old baseline measures. Separation of Multispecies DAS allocations into a Category A and B is just one such example.

The new Annual Monitoring Report is both reactive and proactive. Reactively, the Report is intended to evaluate the most recent data on the skate fishery and to monitor the effectiveness of the management plan, and determine if accountability measures (AMs) were triggered, possibly leading to options for modified specifications, framework adjustments or plan amendments. Proactively, the Report is to include an evaluation of recent and pending changes to other FMPs that manage fisheries that catch skates. This evaluation could include recently implemented measures and alternatives that are under development. The latter task replaces the function of the baseline review.

7.1.6.1.1 Skate fishery update and effectiveness of Skate FMP

The Council submitted Amendment 3 to the Skate FMP in November 2009, which was approved in March 2010. NMFS published a proposed rule in January 2010, which was intended to become effective by May 1, 2010 (the start of the skate fishing year). This amendment established Annual Catch Limits (ACLs) and AMs. To keep the fishery from exceeding these limits early in the fishing year, the amendment also reduced the skate wing possession limit to 1,900 lbs. (4,313 lbs. whole), and established a seasonal quota system for the skate bait fishery with a 20,000 lbs. possession limit. The amendment also established this Annual Monitoring Report and a two year specification process accompanied by a SAFE Report.

Since the Council submitted Amendment 3, the Scientific and Statistical Committee reviewed updated information about the skate resource, including the 2008 fall biomass index and 2009 fishery performance. Discards were estimated for 2008 and the discard rate was updated to include 2006-2008 data, instead of 2005-2007 data. Preliminary 2009 discard estimates were provided and considered, but not used in the formal specifications due to incomplete data. The survey data could not be updated through 2009 at this time, because the data had been collected by the FSV Bigelow with new gear and calibration analyses for skates are not yet fully available.

As a result of this re-analysis and update of skate fishery and resource characteristics, the Council approved new specifications for the 2010 and 2011 fishing years, shown in the table below. NMFS is considering these new specifications as part of the final rulemaking. Publication of a final rule for Amendment 3 with the new specifications is expected in June 2010.

Table 24. **Revised skate specifications for 2010 and 2011 fishing years.**

ABC	41,080 mt	Wing fishery possession limit	5,000 lbs. skate wings (11,350 lbs. whole weight)
ACT (75% of ABC)	30,810 mt	Wing fishery TAL trigger	80% of wing fishery TAL
TAL (assuming 53.7%	14,277 mt	Bait fishery possession limit with a Letter of	20,000 lbs. whole weight

discard rate)		Authorization	
State waters catch	391 mt	Bait fishery TAL trigger	90% of bait fishery TAL
Wing fishery TAL	9,209 mt	Bait fishery quotas	
Bait fishery TAL	4,639 mt	May 1 – Jul 31	1,429 mt
		Aug 1 – Oct 31	1,721 mt
		Nov 1 – Apr 30	1,489 mt + any remaining from periods 1 & 2

Little new data is presently available to reassess the status and performance of the skate fishery. As of May 27, 2010, while still fishing under pre-Amendment 3 skate possession limits, the skate wing fishery had landed nearly 3.4 million lb (about 17% of the proposed TAL). Even after Amendment 3 possession limits are implemented, the wing fishery may reach 80% of its TAL half-way through the fishing year, meaning that the incidental limit of 500 lb wing wt. may be in effect for several months this year. During the same time period, the skate bait fishery has landed 480,356 lb of whole skate (about 15% of their Season 1 quota). All other recent information that could have been considered by the PDT was already addressed in the calculation that formed the basis for the revised 2010 and 2011 specifications. The potential effectiveness of the proposed possession limits were evaluated using 2009 fishery data and it is too early to tell how effective they will be in 2010, particularly given the magnitude of the changes in skate management and new regulations for other plans (notably Amendment 16 to the Multispecies FMP, see below) that become effective on May 1, 2010. There is no basis therefore to conduct a formal review of skate management under Amendment 3 because the amendment is not yet effective. More information will of course be available in next year's SAFE Report (prepared to set specifications in 2012 and 2013).

Changes to other FMPs that regulate fisheries catching skates and other information

Discussed below are several recent or expected changes to the Council's FMPs with a discussion of how the revised measures could affect skate catches. The Council should keep these effects in mind as it develops new measures and alternatives for fisheries that catch skates.

7.1.6.1.2 Multispecies FMP

Amendment 16 to the Multispecies FMP took effect on May 1, 2010, setting groundfish specifications for the 2010 and 2011 fishing years. Since there is a considerable overlap between participation in the multispecies and skate fisheries and multispecies DAS may be used to target skates, changes in the multispecies fishery regulations could have a significant bearing skate catches and the effectiveness of the Skate FMP measures.

Among other things, Amendment 16 decreases the allocation of Category A DAS by 50% and allows greater participation in groundfish sectors, a program where vessel associations may fish for groundfish while being exempt from specific multispecies regulations, most often DAS limits. About half of the vessels with limited access multispecies permits have enrolled in one of the sectors. This disassociation with DAS management and potential transfer of groundfish effort among sector vessels could increase the availability of Category A DAS to fish for skates. The table below shows that most of the skate landings were made by vessels operating on a Category A DAS, but it is unclear how much of those landings were from trips targeting skates as opposed to trips targeting groundfish. In any case, a greater fraction of those Category A DAS might be used by sector vessels to target skates, rather than groundfish. This potential has so far failed to materialize through May 27, 2010 (Table 26).

Table 25. **Total skate landings (lb. live wgt.) by DAS program, 2000-2007.**

Calendar Year	MUL A	MUL B	MNK	MNK/MUL	SC
2000	16,673,711	NA	1,037,993	2,817,080	66,012
2001	15,320,262	NA	764,437	3,037,382	6,405
2002	17,538,086	NA	665,661	3,845,897	2,796
2003	22,205,726	NA	601,063	4,123,343	63
2004	19,760,823	547,717	1,271,352	1,991,829	0
2005	17,715,403	967,069	1,911,588	2,754,418	10,835
2006	19,083,200	64,956	1,358,881	5,652,650	4,629
2007	20,349,972	1,715,633	1,087,857	2,571,196	0

Source: NMFS, Fisheries Statistics Office

Table 26. **Landings and value by sector enrollment from May 1 to May 27.**

	Non-sector		Inactive		Sector	
	2009	2010	2009	2010	2009	2010
Landings, lbs. whole	1,529,626	2,590,509	91,084	88,468	1,315,933	1,995,334
Value $	215,755	335,892	12,499	11,215	204,645	316,945
Pct change		69.4%		-2.9%		51.6%

This potential increase in skate (and also monkfish and whiting) fishing by sector enrolled vessels may be offset by three other actions (see Section 7.7.7 of Amendment 16 for more detail). First, it is thought that sector vessels targeting groundfish will do so more efficiently and therefore potentially have less skate bycatch. This outcome and how it affects the various species of skates will of course depend on where and when fishing occurs under the new sector rules. A second factor is that Amendment 16 includes a 50% reduction in Category A DAS allocations for vessels enrolled in the common pool, governed by DAS restrictions. There were 286 active multispecies vessels that in January 2010 were not sector-enrolled and would be subject to the DAS restrictions, compared with 453 active vessels (and 359 inactive) sector vessels. It is unknown how many of the 359 inactive sector vessels fished for skates in 2009. A third factor is that Skate FMP Amendment 3 prohibits the use of Multispecies Category B DAS to target skates, although for reasons that are not as valid as they once were. This measure could reduce skate landings, particularly compared to the spike in landings observed in 2007.

7.1.6.1.3 Monkfish FMP

There is also considerable overlap in participation in the monkfish and skate fisheries, although a relatively small fraction of skate landings occur on a Monkfish DAS (see table above). Some vessels target monkfish during one part of the year and skates (using either a Monkfish or Multispecies DAS) during other parts. Nonetheless vessels may increase or decrease the use of Monkfish DAS to target skates depending on a variety of factors, including relative prices, catch rates, and fishing restrictions.

No changes to monkfish regulations were implemented in 2010. The Council is developing a monkfish action which could tighten or loosen the monkfish regulations. At the present time, it is unclear how these alternatives would affect the skate resource or the effectiveness of the Skate FMP.

7.1.6.1.4 Scallop FMP

Many vessels targeting scallops also have a bycatch of skates, an amount that varies by season and area. This bycatch is a major source of skate discards, although there is scant research to quantify the proportion of dredge-caught skates that perish. Some scallop vessels land skates, but this is rare due to the disproportionate value of scallops and skates.

Management measures that allocate or redirect more effort and catch to Georges Bank and the Gulf of Maine would have a greater effect on winter skate, rebuilding barndoor skate, and overfished smooth and thorny skate. During 2010, the Scallop FMP allocated one trip for Georges Bank closed area access (the same as 2009) and three access area trips in the Mid-Atlantic (one less than in 2009). Overall scallop fishing effort in 2010 is expected to be less than 2009 because the fishery has been allocated one less access area trip and essentially the same number of open area DAS (37 in 2009 compared to 38 in 2010). Projected catch for 2010 is 47 million pounds, and catch in 2009 is already above 55 million pounds, so impacts on skates should be neutral or less compared to 2009 since there are no increases in Georges Bank closed area trips and the total amount of allowable effort is less in 2010 than it was in 2009.

Conversely, such an increase in Mid-Atlantic effort would be expected to increase the catches of clearnose skates, but this species is not overfished and overfishing is not occurring. Rosette skate would not be affected, since they occur too deep and do not overlap the geographical distribution of scallop fishing effort to any meaningful extent. Section 5.1.2.5 in Scallop Framework 21 describes the projected bottom area swept for 2010 and beyond. However, specific measures for 2011 and 2012 are being developed in Framework 22 and the fishery allocations for those years are not available yet.

7.1.6.1.5 Herring FMP

Skate catches in the herring fishery are believed to be inconsequential, so changes to herring regulations are not expected to have a meaningful direct effect on skate catches. Skates are however a potential substitute for herring as lobster pot bait. Reductions in herring landings could have a significant effect on prices for whole skates landed for the bait market, increasing the attractiveness of fishing for skates under a Skate Bait Letter of Authorization. This potential may be magnified by regulations in other fisheries which reduce the income of or idle vessels fishing for other species.

The 2010-2012 herring specifications reduced the ABC by 45% to 106,000 mt. In particular, herring are often used as lobster bait in the Gulf of Maine and the Area 1A TAC declined by 41% to 26,546 mt. Although most of the skate bait dealers are located in Southern New England, this decline in herring landings could open up new markets for alternative baits, some of it filled by either whole skate landings or by the carcasses of skates landed for the wing market.

In any case, the potential higher demand for skates landed for the bait market is unlikely to have an adverse effect on skate conservation and achievement of Skate FMP biological objectives since the skate bait fishery is limited by seasonal quotas. Higher demand may however spur more landings of skates landed for bait and fill the quotas earlier than anticipated. An earlier closure could negatively affect the Southern New England lobster fishery if seasonal closures are longer than expected due to increasing skate bait landings elsewhere.

7.1.6.1.6 Habitat FMP

Alternatives for an Omnibus Amendment may include area restrictions that affect skate catches. These alternatives may take effect in late 2011, but there is no way at this time for the PDT to evaluate how the developing amendment might affect skates or skate management. How these alternatives may

affect skates will depend on the location of such areas and how they affect vessels fishing with various gears.

7.1.6.2 Reasonably foreseeable future actions

Future actions considered in this section include actions taken under this FMP, actions taken under other FMPs that affect vessels catching skate, and actions taken to protect marine mammals or threatened and endangered species. Given that skate fishing occurs in relative isolation from other (than fishing) spatially co-occurring activities (for example, shipping and recreational boating), it is unlikely that any regulatory action or other changes in those activities will have an impact on the fishery, or vice versa.

Other activities that could potentially have an impact on skate fishing, such as development of offshore energy facilities or offshore aquaculture projects, would require a thorough analysis of the potential environmental impacts including those on skates. Although a few offshore aquaculture proposals have been developed in the past, and feasibility studies are currently underway, these projects face a number of technical and environmental obstacles that reduce the likelihood these projects will actually become commercially viable within the next five to seven years.

Included in the reasonably foreseeable future actions that may have an impact on the skate fishery are other FMP amendments in various stages of development or implementation, the most notably Multispecies Framework Adjustment 43 and Sea Scallop Amendment 11 and Framework Adjustments 18-20. Both Framework Adjustment 43 and Amendment 11 will have direct and indirect impacts on skate vessels since most skate vessels are also permitted in one of those other fisheries and are directly affected by the cumulative effect of the proposed action and those other amendments.

Scallops

In terms of the scallop fishery, several actions have been implemented recently or are currently under consideration for the Scallop FMP that could impact skates since skate discards and incidental catch are a significant component of the total skate catch. Skates are caught in both the scallop dredge and trawl fisheries. Framework 19 and Amendment 11 are two actions that have recently been approved and implemented under the Scallop FMP. In addition, Amendment 15 is currently being considered and is expected to be implemented in 2011. Overall, these actions are expected to have neutral to positive impacts on skate mortality.

The Council worked on Amendment 11 for several years and it became effective on June 1, 2008. Amendment 11 established a new management program for the general category scallop fishery, including a limited access program with individual fishing quotas (IFQs) for qualified general category vessels, a specific allocation for general category fisheries, and other measures to improve management of the general category scallop fishery. The number of general category vessels in this fishery is expected to decline as a result of this action, and the total fishing effort of this fleet will be limited by an overall TAC, 5% of the annual scallop catch. In general, this action is expected to reduce general category scallop fishing compared to overall fishing levels in recent years. Thus this action may have positive impacts on skate mortality since general category effort levels are expected to decrease as a result of this action and will have an overall limit based on the sum of IFQ available. In addition, this action implemented a limited entry program for general category fishing in the northern Gulf of Maine (NGOM). Only qualifying vessels can participate in this fishery and it is limited to an overall TAC as well; once that amount is harvested, no general category vessels can fish in the NGOM. This measure may have positive impacts on skate mortality for species within the GOM.

Framework 19 to the Scallop FMP also became effective on June 1, 2008. It sets fishery specifications for FY2008 and FY2009 as well as other measures. Overall, this action allocated fewer DAS than previous years. Full-time limited access scallop vessels received 35 open area DAS in 2008 and 42 DAS in 2009, compared to 51DAS in 2007 and 52 DAS in 2006. IN addition, more effort was allocated in "scallop access areas" in 2008 and 2009 compared to earlier years. This is important when considering potential impacts on non-target species like skates. Scallop catch per unit of effort is much higher in access areas compared to open areas. If scallop gear is on the ocean bottom for less time to harvest the same amount of scallop catch, then impacts on non-target species are expected to decline. Under FW19, estimates of projected area swept by scallop gear are lower compared to previous years.

Lastly, the Council is currently developing Amendment 15 to the Scallop FMP. This action is expected to be implemented in 2011. The primary need for this action is to bring the Scallop FMP in compliance with the re-authorized Magnuson-Stevens Fishery Conservation and Management Act (MSA). The Act was reauthorized in 2007 and included several new legal requirements. Foremost, the Act requires that each fishery use annual catch limits (ACLs) to prevent overfishing, including measures to ensure accountability. This action is also considering measures that reduce capacity in the limited access scallop fishery as well as several other adjustments to the overall program. This action is very early in development, but it will likely have neutral impacts on skate mortality since it is not expected to directly affect fishing effort levels.

The cumulative effect of scallop fishing regulations on skates depends largely on the resulting distribution of scallop fishing effort. More scallop fishing effort in the Closed Area I access area and along the northern edge of Georges Bank is more likely to increase catch and discards, particularly of little, winter, thorny and smooth skates.

Monkfish

The next management action to regulate the monkfish fishery under the Monkfish FMP will be an amendment to comply with new Magnuson-Steven Act mandates, primarily establishment of annual catch limits (ACL) and accountability measures (AM). This action could have an important effect on the skate resource and fishery, because at least some monkfish trips also target skate or land incidental amounts. In particular, a mixed skate/monkfish fishery appears to exist in the offshore waters south of RI and off the northern NJ coastline. Changes in Monkfish DAS or other related regulations could increase or decrease fishing activity on trips landing or discarding skates.

Monkfish are presently considered rebuilt and current fishing mortality estimates are below the MSY threshold. So the catch limits and targets associated with ACLs and AMs could be set at levels above current amounts. In this case, the monkfish regulations may become more liberal and monkfish DAS allocations could increase, allowing more fishing on trips landing and/or discarding skates. On the other hand, a new assessment may take place before the next Monkfish FMP action is planned which could change this outlook. Also, the Council will be required to build in precautionary limits and thresholds to account for scientific and management uncertainty. At this point, it is not known whether future monkfish fishing effort will increase or decrease due to the combination of influencing factors, assessments, and management considerations (especially the development of ACLs and AMs and an updated assessment that will likely incorporate another cooperative survey and information gathered in recent and ongoing cooperative research projects).

Multispecies

The Northeast Multispecies FMP manages nineteen stocks of groundfish. Thirteen of these stocks are overfished and are (or will be) subject to formal rebuilding plans. The NEFMC is currently developing

Amendment 16 to the FMP to address rebuilding requirements. Preliminary stock status information suggests that fishing mortality for many stocks will need to be reduced on the order of thirty to fifty percent in order to meet rebuilding objectives, and for some stocks larger reductions are needed. The Council is considering additional effort control restrictions in Amendment 16 to achieve these reductions. Options under consideration include reductions in days-at-sea (DAS), area closures, and large restricted gear areas. While an eighteen percent DAS reduction is planned for May 1, 2009, the new measures will probably be implemented in November, 2009. The measures are likely to apply throughout the Gulf of Maine, Georges Bank, and Southern New England, though restrictions in Southern New England may be more stringent than in the other area because of the poor status of Southern New England yellowtail flounder and Southern New England winter flounder.

The following alternatives under consideration in Multispecies Amendment 16 are not expected to directly affect the skate fishery:

- Revisions to status determination criteria and formal rebuilding programs
- Annual Catch Limits: Option 2 takes into account the catch of groundfish species in other fisheries. This action does not propose a specific ACL for the summer flounder fishery but it is possible a specific ACL may be considered in the future.
- Addition of Atlantic Wolffish to the Management Init
- Sector administration provisions: these options will not have direct impacts on the skate fishery, but the formation of additional sectors may and will be discussed below.
- Reporting requirements
- Allocation of groundfish to the commercial and recreational groundfish fisheries
- Changes to the DAS transfer and leasing programs
- Special management programs
- Periodic Adjustment Process
- Possession of a limited access multispecies permit and a limited access scallop permit by the same vessel
- Recreational Management measures
- Atlantic halibut minimum size
- Prohibition on retention of Atlantic wolffish
- Accountability measures

There are four primary management options (including the No Action alternative) being considered to reduce fishing mortality that results from vessels that choose not to join groundfish sectors. All four options reduce the number of Category A DAS available to fish for groundfish, with the No Action option and Option 2A reducing DAS by 18 percent, Option 3A by 50 percent, and Option 4 by 40 percent. In addition, two options either extend differential DAS counting areas or modify the ways DAS are counted. Both of these options further reduce groundfish fishing opportunities. Since at present much skate fishing is required to use either a scallop, monkfish, or scallop DAS, all of these options would reduce the number of groundfish DAS available to use while fishing for skates. This would be expected to reduce skate landings. A side effect of reduced opportunities to fish for skates while using groundfish DAS might be that vessels choose to participate more frequently in the skate exempted fisheries programs.

In addition to additional effort control restrictions that would take effect in 2009, the amendment may authorize the operation of seventeen additional groundfish sectors beginning in fishing year 2010. These sectors would not be subject to effort controls, but would have their catch limited by hard quotas with a concomitant increase in monitoring of landings and discards. The impact of sector formation is likely to result in reduced fishing effort of at least the same order of magnitude as the proposed effort control

reductions. Since sector vessels are not subject to DAS limits, trip limits, and some other effort controls, fishing operations will probably be more efficient and less time on the water will be necessary to harvest the resources.

Under both scenarios – additional effort control restrictions and an increase in sectors- the bycatch of skate species on directed groundfish trips would be expected to decrease as a result of lower levels of fishing activity. It is possible that these changes might shift some effort onto skates that can take place outside of the groundfish DAS program – for example, in state waters or in an exempted fishery. Since sector vessels will not need to use groundfish DAS to target groundfish, they may use those DAS to target skates.

Several multispecies rebuilding plans are supposed to end in 2014. Should they be successful, fishing effort may be allowed to increase above rebuilding levels, but not to current levels.

Since much of the analysis in this document relies on 2007 data, it implicitly includes the effects of these recently implemented actions on the skate fishery. In general, Framework 43 made groundfish regulations more restrictive and reduced the incentive to use Category A and B DAS to target regulated groundfish. As a result of this action and rising skate wing prices, more Multispecies DAS have been used by permitted vessels to fish for skates, landing the wings for an export food market. On the other hand, reducing effort from trips fishing for groundfish probably resulted in a decline in associated skate discards and incidental landings, but discard estimates for 2007 are not yet available. A large increase in the use of Category B DAS by vessels fishing for skates with gillnets occurred in 2007. Skate landings on Category B DAS rose from negligible amounts to nearly 2 million pounds in 2007. A prohibition on the use of Category B DAS in this amendment would reverse this cumulative effect on skates, but may have an adverse effect on multispecies if the B DAS are used to target other species, or a favorable effect on groundfish if vessels use a greater fraction of A DAS to target skates.

Also, since publication of the Skate DEIS, two important changes to the Multispecies FMP fishery regulations have taken place. Recently, a lawsuit challenging the Multispecies Framework 42 regulations was heard and the court ordered that some of the regulations should be suspended pending an analysis of the mixed stock exception. Although the suspension may be temporary, it lifted certain regulations including 2:1 DAS counting. This action effectively increased the amount of DAS available to fish for multispecies, skates, and other species. If the court finds in favor of the plaintiffs and sets the Framework 42 regulations aside, it could allow landings and discards of skates to increase, potentially causing overfishing because the Skate FMP relies on DAS limits in other FMPs to limit fishing effort.

At nearly the same time, the NMFS took interim action to reduce mortality in the multispecies fishery, because the Council was unable to submit Amendment 16 in time to be implemented by May 1, 2009 (the start of the multispecies fishing year). This action has a drastic impact on skate fishing, particularly in Southern New England. The interim action includes a large area closure from the Great South Channel westward to NJ. This closure affects skate fishing vessels because most vessels utilize Multispecies DAS to fish for skates, except for vessels with state permits fishing for skates in state waters. The interim action is likely to substantially curtail fishing for bait skates in Southern New England. It appears that it will also have an effect on vessels using trawls to target skates for the wing market. Many of these vessels fish in the southern part of the Great South Channel that will be affected by the proposed Interim Action. Fishing effort is likely to shift north, to areas east of Cape Cod where vessels using gillnets target skates. This effort shift may reduce skate catches for vessels fishing in the area that would remain open and possibly increase the potential for gear conflicts.

<u>Other related actions</u>

Even vessels not directly impacted by virtue of having a scallop, monkfish, or multispecies permit could be affected by the displacement of effort resulting from restrictions imposed on those fisheries, and by any measures, such as area closures to protect EFH, that restrict the operation of all fishing with specific gear types. EFH closures were in effect during much of the period when the data used to analyze impacts of this amendment were collected. Other than in areas where there is an overlap in the EFH closed areas and the groundfish closed areas (which have been closed to skate fishing since 1994), very little fishing for skates has occurred. Therefore the cumulative effect of EFH closed areas on skates is likely to be small.

Other potential future actions whose effects would be cumulative to the proposed action include actions taken to protect marine mammals, endangered and threatened species. Current measures in effect are discussed in Section **Error! Reference source not found.**. These could be modified in the future under either a fishery management plan, marine mammal take-reduction plan, or regulation promulgated under authority of the Endangered Species Act. Specifically, known or anticipated future actions include: short-term closures to sink gillnets under the Atlantic Large Whale Take Reduction Plan Dynamic Area Management (DAM) system; changes to the Harbor Porpoise Take Reduction Plan; and measures adopted under the NMFS final rule implementing large-mesh gillnet closures off the North Carolina/Virginia coast to protect sea turtles. Since the specific nature of those potential changes is not known at this time, their effect on the skate VECs cannot be determined at this time.

In the more distant future, two other actions outside the fisheries arena could potentially affect the skate fishery VEC's due to their geographic overlap: offshore windfarms and offshore oil and gas exploration/drilling. In the case of the windfarm project, the current proposal under consideration would site the facility in Nantucket Sound, which could have an effect on little and winter skate because these skates occur in shallow, inshore waters surrounding MA. It is not known, but probably unlikely, that a windfarm project in Nantucket Sound will have a significant environmental effect on skates. Little and winter skates occur over a broad area of the coastline and a localized project individually would have a minor effect on the total population of these skates. However, siting of many windfarms over a broad area of the coastline could have a significant cumulative effect, as could other wide-spread human activities in shallow coastal waters.

The Nantucket Sound windfarm proposal is controversial, however, and the Army Corps of Engineers has prepared an Environmental Impact Statement that includes other site alternatives that may also impact skates. In that case, there is a potential, but unknown impact on the skate fishery, depending on the exact location and other parameters of the project. In the case of offshore oil and gas exploration, a current federal moratorium is preventing any such activities. According the recent media reports, discussions have begun in Washington on reconsidering the moratorium, in which case the potential exists for such activities to have an effect on the skate fishery VEC's, since one of the primary areas of interest is Georges Bank. As with the windfarm proposal, however, insufficient detail is available to determine the potential effects of such activities with any reasonable certainty or specificity.

With advances in fishing technology and ongoing restrictions in traditional fisheries, some vessels may begin to develop deepwater fisheries, much like what occurred in Europe over the past two decades. Not much is known at this time about the potential for such fisheries in the northwest Atlantic, nor about how such fisheries would interact, directly or indirectly, with deepwater components of the skate fishery or its essential fish habitat. Furthermore, such fisheries would likely have an impact on deepwater coral habitat whose role in the life stages of skate and other deepwater species currently being harvested, such as red crab, is not well known. The deepwater fisheries do not have management plans in place at this time, although such plans would likely be implemented if such fisheries were to begin. The cumulative effect of the development of deepwater fisheries and the associated FMP's is not ascertainable at this time.

7.1.7 Cumulative effects of the proposed action

Table 27 summarizes the anticipated cumulative effects of the proposed action on each of the five VECs compared to taking no action. The cumulative effects determination is based on the preceding analysis of non-fishing activities, fishing gear effects, direct and indirect impacts in the context of the past, present and reasonably foreseeable future actions discussed in the preceding section, as well as the analysis of the direct and indirect impacts in Sections 7.2 to **Error! Reference source not found.**.

In summary, the proposed measures viewed together, are not likely to have a significant cumulative effect on the environment. As a whole, these measures are likely to have a slightly positive effect on communities, since they address a number of issues identified by the affected public, such as regulatory discards and the inability to profitably conduct a traditional offshore fishery. The measures proposed to minimize impacts of the fishery on EFH (SFMA roller restriction and canyon closures) are also positive, but since they are effectively preventative, rather than restrictive on current fishing activities, the impacts are also not significant. The impact of the proposals on the other VECs is essentially neutral compared to no action.

Table 27. **Cumulative effects on valued ecosystem components (VECs) compared to no action.**

Measure	Valued Ecosystem Components				
	Target Species	**Non-target Species**	**Protected Species**	**Habitat**	**Communities**
Status quo 5,000 lbs. skate wing possession limit	Neutral. Positive impacts accrue from keeping discards low on directed skate trips. Negative impacts accrue from early implementation of the in-season accountability measure which limits landings, but has the potential to increase discarding.	Slight negative impact. Lower skate possession limits could cause vessels to take more frequent (but shorter) trips subject to DAS restrictions or target other species during all or part of a trip.	No or unknown impact. Unlikely to cause large shifts in effort to areas where protected species are more abundant.	Unknown impact. Vessels may take more frequent (but shorter) trips closer to port, where habitat may be more or less sensitive than in traditional skate fishing areas. Area fished is unlikely to change in the skate bait fishery.	Positive impact if the skate landings do not exceed the TAL during the fishing year. Prevents derby style fishing behavior which reduces economic benefits. Negative impact occurs if the limit is too high and the in-season accountability measure is triggered, causing temporary and possibly permanent loss of employment and markets.

Measure	Valued Ecosystem Components				
	Target Species	**Non-target Species**	**Protected Species**	**Habitat**	**Communities**
Alternative 2 – Reduce the skate wing possession limit to 4,100 lbs.	Neutral impacts – Higher discards on trips targeting skates and other species would be offset by the lower discards on incidental trips when the accountability measure is triggered, presumably later in the fishing year than with the above alternative.	Same as above.	Same as above.	Same as above.	Positive impact if the skate wing fishing season is lengthened for the reasons described above, but skate trips become less profitable.
Alternative 3 –	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.
Alternative 4 –	Same as above.	Same as above.	Same as above.	Same as above.	Negative impact if skate trips are unprofitable with the lower possession limit. It may prevent the fishery from achieving OY if the possession limit is too low.
Alternative ??? – Status quo monitoring	Negative: Less utilization of catch.	No effect anticipated, except that it could reduce supply of bait for the lobster fishery.	No effect anticipated since discarded skate carcasses are not known to attract protected species and make them more vulnerable to fishing.	Positive effect because discarded skate carcasses liberate energy as a food source for crustaceans and scavenging species.	Positive effect on employment and the shore side economy, from processing skate wings ashore (increasing the price otherwise paid for skate wings).
Alternative ??? – Allow vessels targeting skates for the wing market to land skate carcasses	Positive: Fuller utilization of existing catch.	No effect anticipated, other than a positive effect of supplying the lobster fishery with less expensive bait.	Same as above.	Negative effect due to the reduction of a food source for crustaceans and scavenging species.	Negative effect by reducing demand for shore side workers to process skate wings.
Final Alternative and Proposed Action	To be completed???				

7.2 Impact on Stellwagen Bank National Marine Sanctuary

The Gerry Studds Stellwagen Bank National Marine Sanctuary (SWBMS), established in 1992, is the only such area in the northeast to be so designated under the Marine Protection, Research and Sanctuaries Act (Map 3). The designation does not prohibit fishing, although it prohibits mining of sand and gravel

and the transfer of petroleum products in the area, and it protects cultural resources (shipwrecks), and requires federal agencies considering any action in the vicinity of the Sanctuary to consult with the Secretary of Commerce.

A relatively small amount of fishing effort on trips landing skate wings occurs in the central and southeastern sections of the SBNMS (Map 3). During 2006, fishing by gillnet trips landing skate wings occurred on the western edge of the Western Gulf of Maine closed area and into the center of the SBNMS, while the trawl trips landing skates and skate wings were somewhat more dispersed. Although some fishing effort within the SBNMS may target skates, most of the fishing activity appears to be a mixed trawl fishery focusing on flounders and other groundfish species.

Somewhat more skate fishing effort occurred nearby, along the outer part of Cape Cod, where the depth breaks to deeper water. This area was dominated by trips fishing with gillnets and landing skate wings. These trips appear to be targeting skates for the wing market.

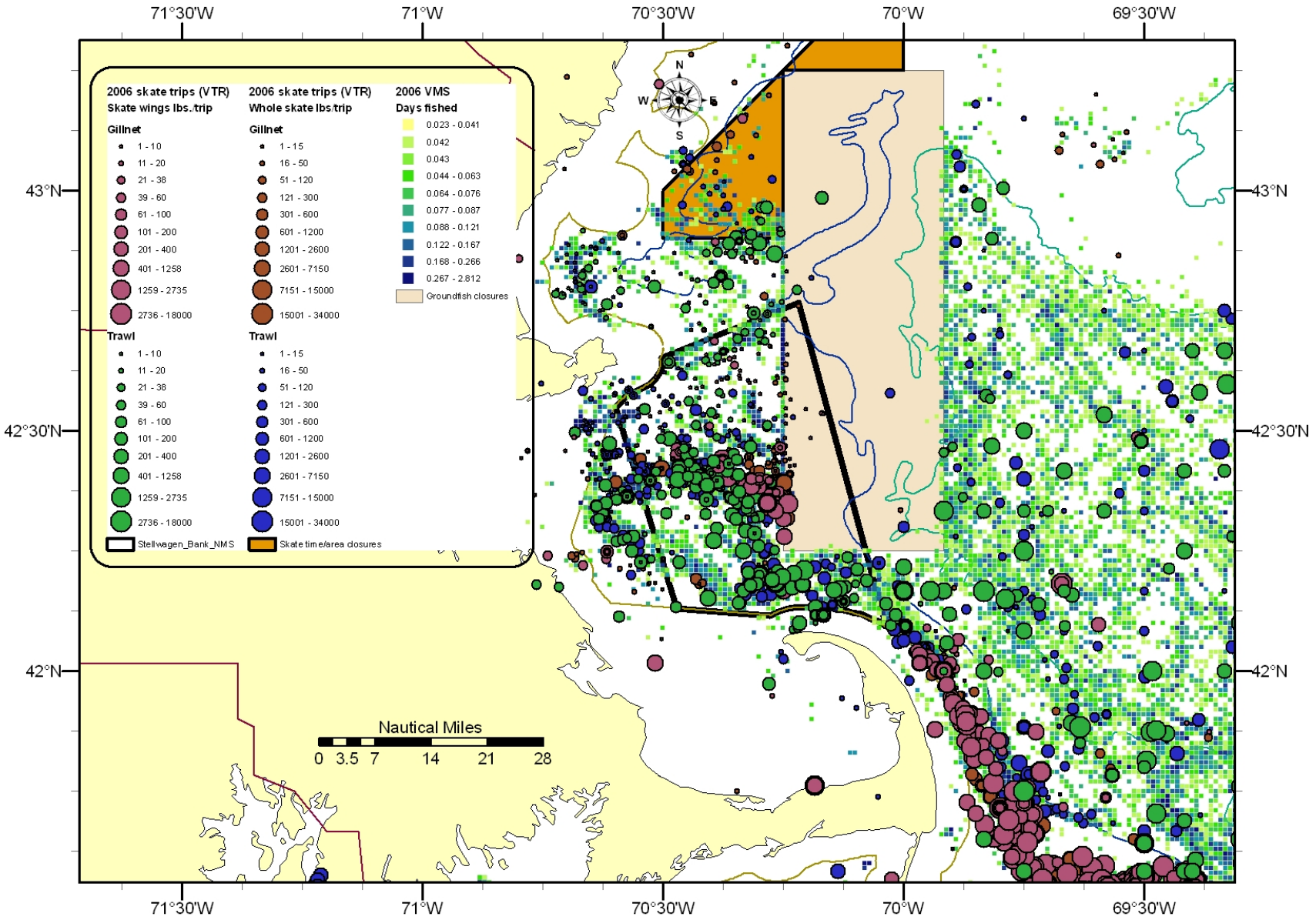
The proposed changes to the possession limit and monitoring measures are unlikely to have a meaningful effect on fishing within the SBNMS boundary. Some effort shift to fishing areas closer to port may occur with alternatives having lower possession limits, which could increase skate fishing activity within the SBNMS boundary.

7.3 Impacts on Skates and the Skate Fishery (Biological Impacts)

7.3.1 Impacts from proposed measures

At reasonably high levels, possession limits may affect fishing effort targeting skates, but some fishermen taking multi-day trips could compensate by taking more frequent trips (causing fishing costs to rise) unless doing so is unprofitable or reduces DAS availability for more profitable fishing activity. When possession limits are too low, however, unacceptable discarding is a frequent outcome as fishermen target other species without changing fishing locations or effort.

Map 3 Fishing locations reported on 2006 vessel trip reports (VTR) for trips that landed skates in the vicinity of the Stellwagen Bank National Marine Sanctuary, with fishing effort intensity derived from vessel monitoring system (VMS) data for trips landing skates in 2006.



7.3.1.1 Possession limits

The effect of various skate possession limits on the fishery were estimated using a cost/revenue economic model, applied to fishing activity and landings reported on 2009 VTRs. Each trip was matched to permit data to estimate daily fishing costs, as described in Document 12 in Appendix I. These equations were re-estimated using 2009 sea sampling data and a dummy variable representing year was added to account for the recent rapid increases in fuel prices. A $100 per day opportunity cost was also applied for each crew person reported to be on the trip16. Prices were associated with the landings for each trip by species, month, and state of landing to estimate total daily revenue for skate and non-skate species.

The model assumes that trips where the total revenue derived from landing non-skate species exceeds the daily fishing cost for the vessel, it would continue fishing for species other than skates when it reaches the possession limit. Excess skates that were landed in 2009 were assumed to be discarded, 50% of which were assumed to survive and represent a reduction in skate mortality. An example for trips landing skates in RI is shown in Figure 18, each vertical bar representing the skate landings of an individual trip (there are 466 trips that exceed the example possession limit shown in this figure). The 'Adjusted landings' are the skate landings that would occur with the skate possession limit in place. Trips in this category have 'Discards' shown as a medium gray in Figure 6, which is equivalent to 50% of the excess landings that had occurred on the trip. The remaining portion of the skates on each trip were assumed to survive discarding and contribute to mortality reduction. Landings of other species were assumed to be unchanged from the original trip.

Trips that required skate landings to be profitable were assumed to end when the daily catch of skate landings equaled the possession limit. The difference between what this type of trip (i.e. a 'skate' trip that would not otherwise be profitable on a daily basis without retaining skates) actually landed in 2009 and what it would be able to land under a skate possession limit is assumed to not be caught. Landings on these trips were assumed to equal the skate possession limit and no additional discarding of skates would occur. All of the excess landings would contribute to skate mortality reduction (shaded light gray in Figure 18). Trip duration, fishing costs, and the landings and revenue of other species were assumed to decline proportionally to the ratio of the possession limit to the amount of skates landed on the original trip.

Effect on discards by skate possession limits

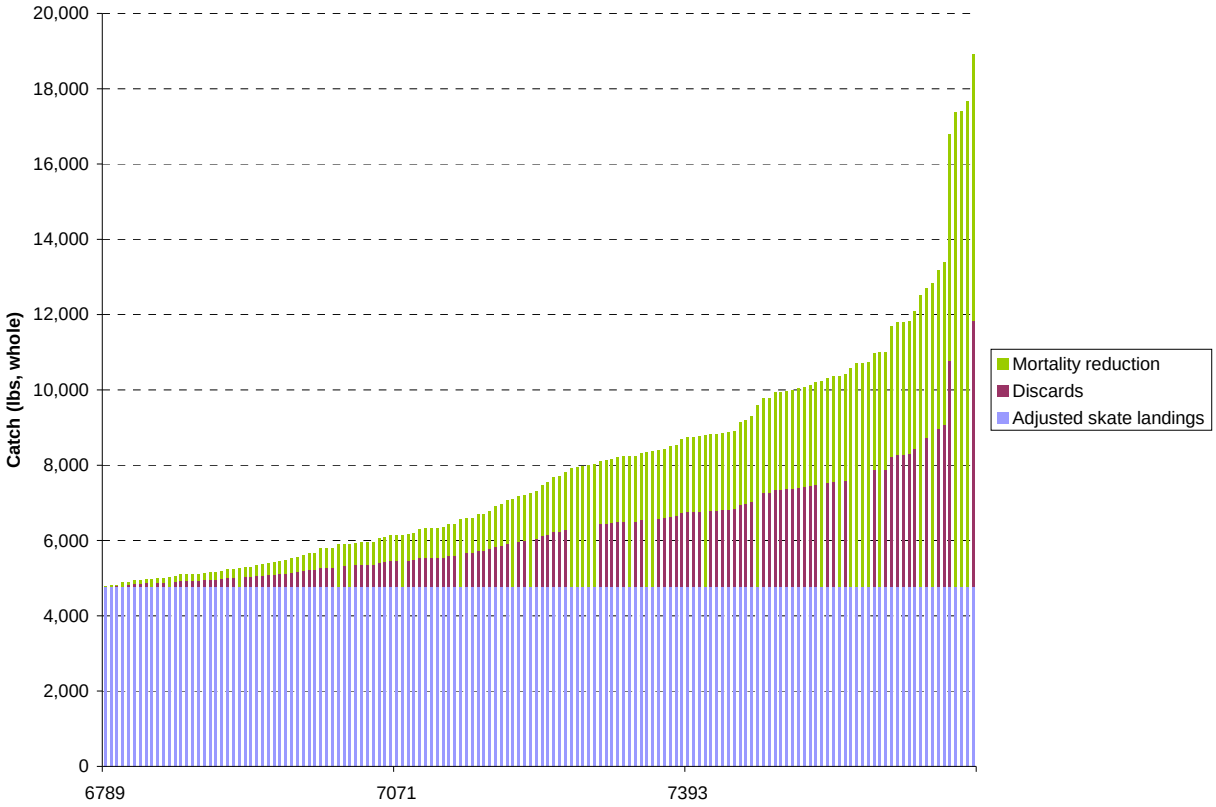
Two outcomes are possible, one increasing discards and the other decreasing discards. Trips that would continue fishing for other species would discard skates once its landings reach the skate possession limit. Although reducing skate mortality through survival of discards, vessels fishing for other species would increase skate discards.

Another set of vessels, or trips, that require skate landings to be profitable are less likely to continue fishing once the skate landings reach the possession limit. Some may change their fishing method or location to target other species. Other vessels may return to port on shorter trips. In this latter case, the vessel presumably will have skate discards associated with its catch, from both undersized (or oversized in the case of the bait fishery which has a maximum size limit) and from prohibited species (barndoor

16 An opportunity cost in this case represents a potential wage that might be earned by a crew person if that person was not fishing. Another way of looking at this factor is it represents a minimum 'wage' that a crew person expects to earn by continuing to fish.

skate, smooth, and thorny skates). If as a result of the possession limit, the vessel reduces the amount of fishing effort targeting skates, skate discards is likely to decline.

Figure 13. Possession limit model results by trip, derived from 2009 VTR data for trips using trawls and landing skates in RI. The adjusted landings represent a proposed trip limit.



Although the model estimates the amount of surviving skate discards at various possession limits, there is not sufficient information currently available to estimate the discard reduction caused by less skate fishing. There are many difficult-to-predict factors that will come into play as the fishermen change the way they fish in response to a skate possession limit.

The net effect on discards can however be generalized with respect to various potential possession limits. Higher possession limits are least likely to affect trips that are targeting other species and would continue fishing after the skate landings equal the possession limit. Modest decreases in skate discards could be expected from vessels that fish less for skates as a result of the possession limit.

As the skate possession limit becomes more restrictive, however, it would more frequently affect trips that are relying less on skate landings to be profitable. In this case, skate discards would be expected to increase, but some mortality reduction would be expected through surviving discards.

Wing and bait fishery skate possession limits

Due to the unique characteristics of the wing and skate bait fisheries, it requires a different possession limit in the two fisheries to achieve an equivalent amount of skate mortality reduction. In general, the possession limit model indicates that skate mortality reductions from 10 to 40% are possible at a

reasonable range of possession limits (4,000 to 10,000 lbs. for the wing fishery; 7,000 to 23,000 lbs. for the bait fishery; Figure 14).

As skate possession limits become more restrictive, they would affect the landings of a greater number of trips and achieve greater mortality reduction. At the limit (no skate possession allowed), the mortality reduction would reach a maximum representing the loss of landings from trips that target skates plus the survival of skate discards on trips that target other species. Within the analyzed range, the effect of different assumptions about discard mortality is small (Figure 15).

Figure 14. Skate mortality reduction predicted by the Two-Bin Model over a range of potential skate possession limits, by fishery.

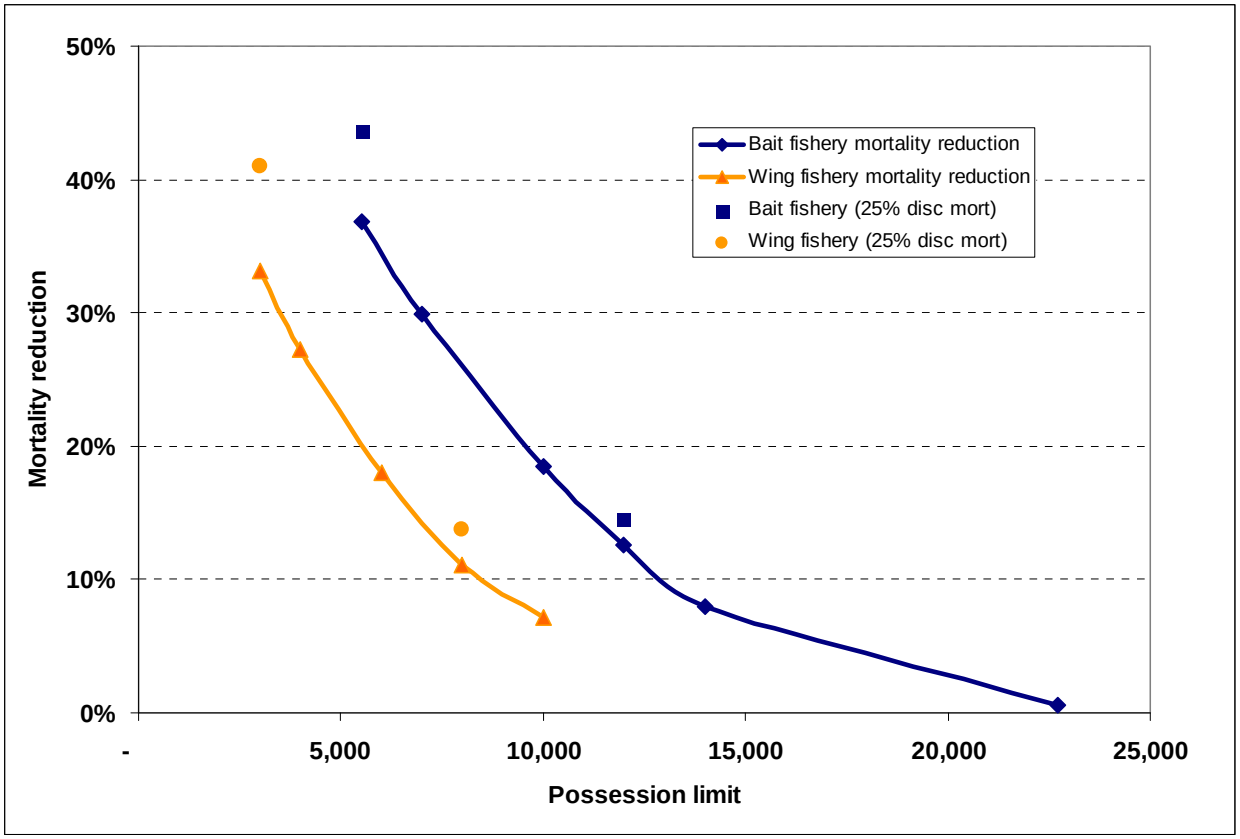
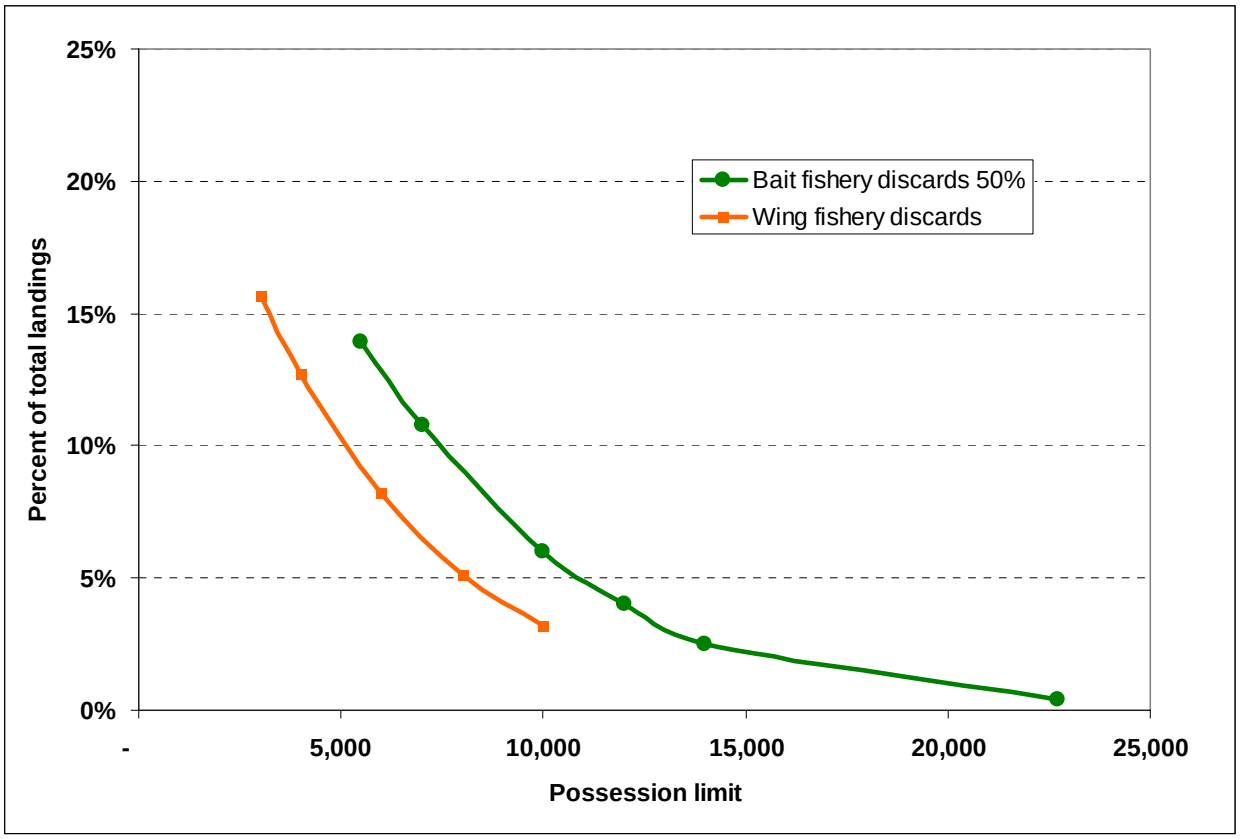


Figure 15. **Additional skate discards as a fraction of original landings by fishery vs. a skate possession limit, assuming 50% skate discard mortality. The model assumes that trips do not re-direct on other species or take compensatory trips.**



Other effects

The skate possession limits will affect various numbers of vessels and trips; potentially reducing trip length, landings, and revenue for trips that rely on skate landings to be profitable. Vessels and ports that rely on trips targeting skates will of course be affected by the possession limits much more than vessels and ports that land skates from trips targeting other species. For vessels that target skates and end trips early due to a skate possession limit, revenue from skates and non-skate species will decline as well as total fishing costs due to changes in the consumption of fuel, ice, food and other variable expenses. Reductions in fishing costs from the predicted reduction in fishing activity are about 31% of lost revenue for the wing fishery and 26-29% of lost revenue for the whole/bait fishery.

7.3.2 Impacts on other finfish and fisheries

7.3.2.1 Multispecies and monkfish fisheries

Part of the reason behind the recent increase in skate wing landings has been the more restrictive regulations in the groundfish and monkfish fisheries. And part of the intent of Amendment 3 is to scale back this recent increase in skate wing landings. Doing so with skate possession limits and time/area closures could make it relatively more costly to use DAS to fish for skates (particularly if differential DAS accounting comes into play).

As a result, once more restrictive skate regulations are in place, vessels may use more of their Multispecies DAS allocations to fish for traditional species than has occurred since 2005. Vessels may also redirect fishing effort into other areas (because of skate time/area closures or to fish closer to port) where groundfish and monkfish may be more (or less) abundant. When this occurs, the vessels may have a greater incidental catch of groundfish and/or monkfish, but this effect is impossible to quantify.

The final alternative (proposed action) includes lower TALs than anticipated in the DEIS and as a result, the skate possession limit may be reduced to discourage skate fishing earlier in the year than had been anticipated. Some skate bait fishermen may continue fishing for bait using the skate wing fishery possession limit and a DAS when the skate bait quotas are reached and the skate bait possession limit is reduced. But when the wing fishery reaches the TAL trigger and the skate wing possession limit is reduced, vessels may use the remaining days to fish for multispecies and monkfish, as allowed by regulations in those FMPs. The final alternative does not include skate time/area closures, which could have had an effect on multispecies and monkfish catches when vessels redirected fishing effort during a closure.

7.3.2.2 Scallops

Few, if any, scallop DAS are used to target or land skates. It is therefore unlikely that the proposed alternatives would effect scallops or effort directed on scallops. Some vessels with general category scallop permits land skates incidental to their scallop fishing, however. The skate landings apparently add value to the (up to 400 lbs.) of scallop landings allowed under general category rules. It is possible that reducing the allowable skate landings on a scallop trips will reduce profits, but it is unlikely to cause most trips to become unprofitable. On the other hand, Scallop Amendment 11 rules are intended to exclude vessels that do not qualify for general category scallop permits and effort may decline for trips that land an incidental amount of skates. Some vessels that do not qualify for a limited access general category scallop permit may turn to skate fishing in exempted areas to make up for their loss in the scallop fishery.

The final alternative (proposed action) does not include skate time/area closures and is therefore unlikely to effect the scallop fishery. Most scallop vessels do not land more skates than the 1135 lb. whole weight skate possession limit, so the proposed action is unlikely to change skate landings by vessels on a scallop DAS. Some general category vessels retain a mix of species to augment the landings of 400 lbs. of scallops, so the proposed action may have cause general category vessels to discard skates that they would otherwise have landed. The effect on their revenue is unlikely to change their fishing behavior and reduce skate discards.

7.3.2.3 Fisheries not regulated by DAS limits

Vessels unable to use DAS to fish for skates or loose skate revenue may target other species for which the vessel has a permit to possess and land. Since many vessels that fish for skates land in Southern New England, it is likely that some may target other species like summer flounder or squid to compensate for the lower revenue from skate fishing. This may be more of a factor for Alternative 4, which could cause the skate bait fishery to close for extended periods. In addition, the supply of skates for lobster bait will decline and other species (such as herring, mackerel, and menhaden) may be a suitable (but more costly) substitute, increasing demand for other species. Since the proposed action is a combination of Alternative 3B for the skate wing fishery and Alternative 4 for the bait fishery, the above discussion is a good qualitative approximation of the effects on other fisheries not regulated by DAS limits.

7.4 Impact on Stellwagen Bank National Marine Sanctuary

No appreciable impacts on the Stellwagen Bank National Marine Sanctuary are foreseen or anticipated.

7.5 Impacts on Skates and the Skate Fishery (Biological Impacts)

7.5.1 Impacts from proposed measures

The purpose of the proposed alternatives is to lengthen the skate wing fishery, not change the total catch or mortality of skates. The primary effect is economic (Section 7.6) and social (Section 7.7), not biological. It is possible that preventing an early closure and reduction to a 500 lb. skate wing possession limit will decrease skate discards on trips targeting non-skate species (such as monkfish, groundfish, and scallops), but this is probably offset by increases in the number of trips targeting skates with a longer skate season.

7.5.2 Other finfish and fisheries

Some trips target both monkfish and skates, particularly during the spring. On one hand, an extension of the season for landing skate wings would make these trips more profitable than if they land skates alone. Therefore more monkfish trips might be taken with a reduced skate wing possession limit and longer skate season than under the status quo. This would improve the economic effect on the monkfish fishery, but would not increase the mortality on monkfish which are controlled by DAS limits.

With a reduced skate wing possession limit, other fisheries which might have seen a shift in fishing effort due to an early skate wing fishery closure might experience a decrease in effort and associated fish mortality. Few scallop trips land relatively low value skates and therefore a lower skate wing possession limit is unlikely to have any appreciable effect on the scallop fishery.

7.5.3 Discards (bycatch) of non-target species

Reducing the skate wing possession limit is intended to increase the number of trips targeting skates, albeit with shorter durations. If the time to catch a set amount of skates is unchanged, however, no changes in discards of non-target (non-skate) species are anticipated. However, some trips that target skates with a reduced skate wing possession limit may continue fishing for other species once the skate possession limit is reached, increasing associated discards. Quantitative analysis of this possible effect is unavailable due to a lack of data.

7.5.4 Protected species

The type of effects on protected species is related to the amount of time fished, as discussed in the non-target species section above. No changes in the use and deployment of gear is anticipated, except that some trips targeting skates may fish closer to shore than they would under the current 5,000 lb. skate wing possession limit. Therefore, protected species that occur offshore would be affected less than under the status quo, and inshore protected species would be affected more.

7.5.5 Habitat, including Essential Fish Habitat

No change in the use and deployment of gear is anticipated. The total amount of time fished and bottom trawled is expected to remain the same as it would be under the status quo, so no appreciable impacts on habitat are anticipated.

7.6 Economic Impacts

The primary effect of changing the skate wing possession limit is economic, since total catches are defined by the specifications (ABC and TALs). The effects of different choices on the fishery using 2009 individual trip data and 2010 daily landings rates are discussed below.

7.6.1 Estimated consequences of possession limit alternatives based on 2009 fishery performance

Amendment 3 implemented several risk-averse strategies that reduce the probability that catch would exceed the ABC (for skates, ABC=ACL, equivalent to the median catch/biomass exploitation ratio), a limit chosen to help smooth and thorny skates to increase biomass and rebuild to the biomass target. These strategies include a 25% buffer between the ABC (a catch threshold) and the ACT (a catch target) that accounts for uncertainty. It also includes a mechanism to change future Total Allowable Landings (TAL) to account for changes in discarding as well as a TAL trigger to reduce the probability that landings would exceed the wing and bait fishery TALs.

During the final development of Amendment 3, using new data from 2009 the Council re-analyzed various skate wing possession limits (in wing weight unless otherwise noted) that range from 2,600 lbs to 5,000 lbs.. Each of these options has varying levels of risk that need to be considered. The methodology behind these options and the pros and cons of each are provided below and the expected impacts are summarized in Table 28 and Table 29. A major difference between the possession limit options is how they address regulatory discards. Additional regulatory discards are expected with the implementation of a reduced possession limit for skate wings. Explicitly accounting for a predicted increase in discards associated with a reduction in the possession limit requires the possession limit to be lower than would otherwise be required in order to ensure that the combination of expected landings and expected discards together do not exceed the TAL. A more traditional approach, as used in the monkfish fishery, is to establish a possession limit based on achieving 100% of the TAL. While this approach does not explicitly account for an increase in regulatory discards, it does provide the fishing industry with a higher probability of attaining the TAL. This strategy allows for a higher possession limit in that year; the accountability measures would be triggered if the actual landings are projected to greatly exceed the TAL. Any increase in regulatory discards that may be associated with the new possession limit would be accounted for as part of the reduction from the ACT in the specification setting process for future years.

Table 28. **Summary of skate wing possession limit options**

Possession Limit (skate wing lbs.)	Estimated % TAL achieved	Mortality achieved from 2009 landings	Risk of exceeding ACL	Additional discards accounted for in possession limit
2,600	80%	31.1%	Very Low	Yes
3,200	89%	27.5%	Low	Yes
4,100	100%	23.0%	Moderate	No
4,500 – 5,000	104-109%	19.1-21.2%	Moderate	No

Table 29. **Approaches to setting a skate wing possession limit considered by the PDT, with pros and cons of each.**

Option	**Description**	**Pros**	**Cons**
2,600 lbs.	Set limit to achieve the 80% of the TAL trigger and account for additional discard mortality within the 20% TAL buffer (proactive).	a. More likely to achieve the intended mortality reduction. a. Provides additional buffer against exceeding the TAL.	a. Will not achieve the TAL and would increase discards due to the low possession limit.
3,200 lbs. Method A	(Method in Amendment 3) Set limit so that expected landings account for the additional discard mortality created by a possession limit within the 9,209 skate wing TAL. (front-loading estimated additional discards).	a. More conservative approach in 2010 (does not need to account for additional mortality caused by the possession limit for setting year 2 TAL).	a. Reduces likelihood for wing fishery to reach the TAL. b. Achieves 89% of the TAL, which is higher than the 80% TAL trigger but may not cause a change in the possession limit if landings appear unlikely to reach the TAL.
3,200 lbs. Method B	Reduce TAL to account for additional discards (proactive, but circular). This explicitly accounts for additional discards in setting the existing TAL.	a. Unlikely to cause a higher discard rate in future years that would reduce the discard-adjusted TAL.	a. *This approach is not allowed in the Amendment 3 ACL framework.* b. The SSC approved using the most recent three years to estimate a discard rate to be applied to the ACT and derive a TAL.

Option	Description	Pros	Cons
4,100 lbs.	Set limit so that expected landings reach 100% of 9,209 mt skate wing TAL. Rely on additional discards resulting from the possession limit to be captured in future discard estimates and appropriately applied to TALs if necessary (back loading additional discards; part of ACL framework to account for changes in discarding)	a. Higher possession limit would create fewer discards and result in better utilization of the resource (i.e. more of the TAL is likely to be landed)	a. Greater risk in exceeding the ABC due to unaccounted discards caused by possession limits. b. More likely to cause the in-season 80% TAL trigger to be met, reducing the skate possession limit to 500 lbs. of wings, potentially causing discards to increase depending on when the AM is tripped. c. Foregoing opportunity to correct for higher discards in the current year (2010).
4,500-5,000 lbs.	Set limit so that expected landings reach 104-109% of 9,209 mt skate wing TAL. The method relies on additional discards resulting from the possession limit to be captured in future discard estimates and appropriately applied to TALs if necessary (back loading additional discards)	a. Would counteract effect the trip limit reduction triggered at the 80% TAL trigger. b. High likelihood of achieving 100% of the TAL. c. Would not cause as large an increase in regulatory discarding until the AM is triggered, reducing the skate possession limit to 500 lbs.	a. Would increase the risk of incidental possession limits being triggered and cause AMs to reduce the possession limit if the landings exceed the TAL. b. Derby-style fishing behavior may result.

Taking the same approach as in Amendment 3 which implicitly accounted for additional discards that result from a skate wing possession limit, the new estimate to achieve a landing mortality reduction of 27.5% (equivalent to 14,277 mt TAL) is 3,200 lbs. per trip (Table 30). If the additional discards are not taken into account in the current TAL or in the method for estimating a reduction in fishing mortality resulting from lower landings, then a 4,100 lbs. skate wing possession limit would allow the fishery to achieve 100% of the 14,277 mt TAL, but would probably ensure that the 80% TAL trigger would be met and a 500 lbs. possession limit might be invoked mid-season17. Higher possession limits (e.g. those set to overshoot the TAL) could also have the desired effect but could increase the risk that derby style fishing effects (higher cost fishing, lower prices) could occur and possibly result in a longer in-season closure from the 80% TAL trigger. The additional discards that were not taken into account could also

17 The Amendment 3 regulations would give the Regional Administrator authority to reduce the skate possession limit to 500 lbs. of wings or 1135 lbs. of whole skates if the wing landings have reached the 80% trigger and it appears that without such action the wing fishery will exceed the TAL.

increase the risk that discards would be substantially higher, exceed the ABC, and trigger a post-hoc accountability change to increase the 25% buffer, although such an event would require a considerable increase in the catch after landings had been reduced by 27.5%. Triggering a change to the incidental possession limit (500 lbs. of wings) would itself contribute to an increase in discards (up to 7% of the total catch, Table 30).

Table 30. **Affected number of vessels and trips landing skates with total revenue at various skate wing possession limit options, based on 2009 landing characteristics reported by dealers. The revised TAL is 27.5% less than preliminary 2009 landings. These possession limits exceed the range of options recommended by the PDT, but are included for information and illustration across a wide potential range.**

Skate wing possession limit option	Percent morality reduction	Additional discard rate (% total catch)	Number of vessels	Trips	Gross annual revenue (millions)	Net revenue (millions)	Gross annual revenue from skate wings (millions)
500	50.7%	7.0%	288	2,831	$23.5	$16.5	$0.9
1,900	36.0%	4.1%	178	1,360	$32.6	$22.6	$2.1
2,600	31.1%	3.3%	149	1,083	$34.6	$24.0	$2.4
3,200	**27.5%**	2.7%	130	930	$35.8	$24.8	$2.7
3,600	25.4%	2.4%	124	837	$36.5	$25.3	$2.8
4,100	23.0%	2.1%	116	756	$37.3	$25.8	$3.0
5,000	19.1%	1.6%	95	606	$38.3	$26.5	$3.3
10,000	7.5%	0.5%	42	179	$40.9	$28.3	$4.0
All skate trips			465	7,933	$41.9	$29.0	$4.4

Future changes in specifications would explicitly take the additional discards into account and future possession limit calculations would not need to internally account for this source of mortality, since the additional discards will then have been estimated and deducted from the ACT. Possession limits might need to be reconsidered however if unaccounted discard mortality results in a lower TAL in future specifications. Increasing reliance on possession limits to achieve mortality goals has the potential to create a negative feedback loop that continually reduces the TAL, while continually increasing regulatory discards.

Higher possession limits and TALs reduce the probability of increasing the biomass of overfished smooth and thorny skates, because at this time it is not possible to directly prevent catch of these species. Landings of smooth and thorny skates are prohibited and therefore do not appreciably contribute to commercial landings. If Amendment 3 regulations result in fewer trips that target and/or discard skates, it may cause biomass of smooth and thorny skates to increase if it results in a catch/biomass exploitation ratio for these species that is below the historic median value. The unknown question is whether keeping catch below a higher aggregate ABC will also reduce catch for smooth and thorny skates, both of which are overfished.

Higher possession limits would of course affect fewer vessels and trips landing skates. A greater fraction of trips longer than 24 hours and a greater fraction of vessels that depend on skates as a source of annual revenue are affected with a skate wing possession limit, whether the skate wing possession limit is low (1,900 lbs.), medium (3,200 lbs.), or high (4,100 lbs.) (Table 31, Table 32, and Table 33), compared to the

status quo of 5,000 lbs. (Table 34). Comparisons can be made between these tables to examine how the range of possession limit options affects different classes of vessels and trips.

If the 5,000 lbs. skate wing possession limit had been in effect in 2009, only 4.3% of trips less than a day in duration ("day trips") and 15.1% of trips more than a day in duration ("trip trips") would have been affected (Table 34). Compared to 2009, the 5,000 lbs. possession limit was expected to reduce landings on these 233 high volume day trips by 1,340,784 lbs., or a loss of value of $201,118. And discards were forecast to increase by 110,178 lbs. For trips over 24 hours, the possession limit was expected to reduce landings on these 373 high volume trips by 4,479,126 lbs., or a loss of $851,093 at prevailing skate wing prices. And discards on these longer high volume trips were forecast to increase by 896,681 lbs. These figures should be compared with 22,959,294 lbs. landed (whole weight equivalent) valued at $4,080,161 on 2009 trips that had been analyzed by the possession limit model.

In comparison, a 4,100 lbs. skate wing possession limit would have reduced landings by 1,880,773 lbs. valued at $282,116 on day trips and by 5,332,815 lbs. valued at $1,013,234 on trips longer than 24 hours (Table 33). Total discards would have increased from 1,006,859 lbs. with a 5,000 lbs. limit of 1,292,870 lbs. With a 3,200 lbs. possession limit (a level expected to achieve the intended mortality reduction accounting for the increase in discards), a landings reduction of 2,551,544 lbs. valued at $382,733 was forecast on day trips, and 6,370,126 lbs. valued at $1,337,726 on trips longer than 24 hours.

Of course, a lower skate wing possession limit increases economic loss and increases discard, and also increases the number of vessels that would be affected. With a 1,900 lbs. skate wing possession limit (the lowest possession limit alternative in this framework adjustment), 581 day trips (10.6% of trips analyzed in 2009) and 779 trips greater than 24 hours (31.6%) would be affected. Total landings would have declined by 3,902,386 lbs. valued at $585,358 on day trips and by 8,328,710 lbs. valued at $1,582,454 on trips longer than 24 hours. Discards were projected to increase by 2,546,170 lbs.

The increasingly high economic loss and higher discards associated with lower skate wing possession limits led the Council to adopt a 5,000 lbs. skate wing possession limit when it approved Amendment 3. Industry argued that the economic effects of lower possession limits would offset the economic benefit of a longer season, and urged the Council to adopt the higher limit.

Although the 83% of trips landing skates are unaffected by a skate wing possession limit as low as 1,900 lbs. (Table 30), the effects of a possession limit will depend on how the fishery responds to the new regulations. All of the possession limit options assume that the trip frequency and landings per trip in 2010 will be the same as they were before the regulations take effect. If the number of trips landing skates declines in 2010 (due to skate and other related fishery regulations), these possession limits will be too conservative.

On the other hand, if the number of trips increases in 2010 (such as vessels taking more frequent trips in response to lower possession limits or higher skate prices) then the possession limit options will be too liberal. Early indications are that the number of trips targeting skates while the 20,000 lb. possession limit was in place (May 1 to July 15) increased substantially, and the number of trips targeting skates while the 5,000 lbs. possession limit was in effect (July 16 to September 3) did not decline as much as predicted by the model using 2009 trip data.

Part of the reason for this increased fishing activity may have arisen due to higher skate prices, due to more stringent regulations in related groundfish and monkfish fisheries, and most probably due to more vessels taking skate trips before the skate wing possession limit decreased (i.e. a derby style fishing behavior). Based on a preliminary analysis of landings (Section ???), the increase in skate fishing does not appear to be related to sector implementation, which might have allowed sector vessels to divert

groundfish DAS allocations to trips targeting skates and monkfish (both fisheries where DAS use is mandatory).

At a 500 lbs. wing limit, the analysis indicates that 2,831 or 36% of trips would be affected. The number of vessels and trips landings greater than 10,000 lbs. represents the smallest proportion of the fishery; however, the impact of these possession limits on the 42 vessels cannot be discounted.

Table 31. **Skate trip diagnostics and effects of a 1,900 lbs. skate wing possession limit on 2009 trips landings skate wings according to dealer reports. Prices are adjusted to dollars per whole pound.**

			Trip affected by measures?			Percent
Trip type	Dependency	Data	N	Y	Grand Total	
Day	Low	Trips	4,686	254	4,940	5.1%
		Daily fishing cost	$678	$381	$663	
		Sum of Total skate landings, live weight	2,792,119	1,887,435	4,679,554	40.3%
		Sum of Adj. skate landings	2,792,119	1,095,502	3,887,621	58.0%
		Sum of Skate discard mortality	0	268,916	268,916	14.2%
		Sum of Skate price	$0.17	$0.15	$0.16	
		Sum of Orig. revenue/DA	$3,715	$4,773	$3,783	
	Medium	Trips	138	273	411	66.4%
		Daily fishing cost	$472	$423	$440	
		Sum of Total skate landings, live weight	183,302	3,649,868	3,833,170	95.2%
		Sum of Adj. skate landings	183,302	1,177,449	1,360,751	32.3%
		Sum of Skate discard mortality	0	357,922	357,922	9.8%
		Sum of Skate price	$0.19	$0.14	$0.15	
		Sum of Orig. revenue/DA	$3,691	$5,198	$4,809	
	High	Trips	7	54	61	88.5%
		Daily fishing cost	$376	$393	$391	
		Sum of Total skate landings, live weight	19,136	870,935	890,072	97.9%
		Sum of Adj. skate landings	19,136	232,902	252,038	26.7%
		Sum of Skate discard mortality	0	31,445	31,445	3.6%
		Sum of Skate price	$0.26	$0.19	$0.19	
		Sum of Orig. revenue/DA	$2,583	$8,169	$7,455	
	#N/A	Trips	52		52	0.0%
		Daily fishing cost	$487		$487	
		Sum of Total skate landings, live weight	679		679	0.0%
		Sum of Adj. skate landings	679		679	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.23		$0.23	
		Sum of Orig. revenue/DA	$2,939		$2,939	
Day Trips			4,883	581	5,464	10.6%
Day Daily fishing cost			$670	$402	$641	
Day Sum of Total skate landings, live weight			2,995,236	6,408,239	9,403,475	68.1%
Day Sum of Adj. skate landings			2,995,236	2,505,853	5,501,089	39.1%
Day Sum of Skate discard mortality			0	658,283	658,283	10.3%
Day Sum of Skate price			$0.17	$0.15	$0.16	
Day Sum of Orig. revenue/DA			$3,705	$5,234	$3,894	
Trip	Low	Trips	1,594	601	2,195	27.4%
		Daily fishing cost	$996	$1,193	$1,050	
		Sum of Total skate landings, live weight	1,692,610	8,470,850	10,163,461	83.3%
		Sum of Adj. skate landings	1,692,610	2,592,113	4,284,723	30.6%
		Sum of Skate discard mortality	0	1,632,925	1,632,925	19.3%
		Sum of Skate price	$0.22	$0.22	$0.22	
		Sum of Orig. revenue/DA	$3,541	$3,818	$3,653	
	Medium	Trips	90	160	250	64.0%
		Daily fishing cost	$385	$448	$425	
		Sum of Total skate landings, live weight	168,216	2,967,308	3,135,524	94.6%
		Sum of Adj. skate landings	168,216	690,080	858,296	23.3%
		Sum of Skate discard mortality	0	227,119	227,119	7.7%
		Sum of Skate price	$0.21	$0.18	$0.18	
		Sum of Orig. revenue/DA	$2,080	$3,541	$3,001	
	High	Trips	2	18	20	90.0%
		Daily fishing cost	$388	$425	$421	
		Sum of Total skate landings, live weight	6,315	250,378	256,693	97.5%
		Sum of Adj. skate landings	6,315	77,634	83,949	31.0%
		Sum of Skate discard mortality	0	27,844	27,844	11.1%
		Sum of Skate price	$0.17	$0.30	$0.30	
		Sum of Orig. revenue/DA	$3,180	$4,331	$4,222	
	#N/A	Trips	4		4	0.0%
		Daily fishing cost	$901		$901	
		Sum of Total skate landings, live weight	141		141	0.0%
		Sum of Adj. skate landings	141		141	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.18		$0.18	
		Sum of Orig. revenue/DA	$5,094		$5,094	
Trip Trips			1,690	779	2,469	31.6%
Trip Daily fishing cost			$962	$1,022	$981	
Trip Sum of Total skate landings, live weight			1,867,282	11,688,536	13,555,819	86.2%
Trip Sum of Adj. skate landings			1,867,282	3,359,827	5,227,109	28.7%
Trip Sum of Skate discard mortality			0	1,887,887	1,887,887	16.2%
Trip Sum of Skate price			$0.22	$0.21	$0.21	
Trip Sum of Orig. revenue/DA			$3,505	$3,805	$3,629	
Total Trips			6,573	1,360	7,933	17.1%
Total Daily fishing cost			$745	$757	$747	
Total Sum of Total skate landings, live weight			4,862,519	18,096,775	22,959,293	78.8%
Total Sum of Adj. skate landings			4,862,519	5,865,680	10,728,199	32.4%
Total Sum of Skate discard mortality			0	2,546,171	2,546,171	14.1%
Total Sum of Skate price			$0.19	$0.19	$0.19	
Total Sum of Orig. revenue/DA			$3,562	$3,911	$3,685	

Table 32. **Skate trip diagnostics and effects of a 3,200 lbs. skate wing possession limit on 2009 trips landings skate wings according to dealer reports. Prices are adjusted to dollars per whole pound.**

			Trip affected by measures?			Percent
Trip type	Dependency	Data	N	Y	Grand Total	
Day	Low	Trips	4,850	90	4,940	1.8%
		Daily fishing cost	$668	$366	$663	
		Sum of Total skate landings, live weight	3,700,927	978,628	4,679,554	20.9%
		Sum of Adj. skate landings	3,700,927	653,760	4,354,687	66.8%
		Sum of Skate discard mortality	0	103,977	103,977	10.6%
		Sum of Skate price	$0.17	$0.15	$0.16	
		Sum of Orig. revenue/DA	$3,739	$5,543	$3,783	
	Medium	Trips	183	228	411	55.5%
		Daily fishing cost	$450	$431	$440	
		Sum of Total skate landings, live weight	436,269	3,396,901	3,833,170	88.6%
		Sum of Adj. skate landings	436,269	1,656,192	2,092,461	48.8%
		Sum of Skate discard mortality	0	204,478	204,478	6.0%
		Sum of Skate price	$0.20	$0.14	$0.15	
		Sum of Orig. revenue/DA	$4,179	$5,160	$4,809	
	High	Trips	13	48	61	78.7%
		Daily fishing cost	$377	$395	$391	
		Sum of Total skate landings, live weight	55,422	834,649	890,072	93.8%
		Sum of Adj. skate landings	55,422	348,672	404,094	41.8%
		Sum of Skate discard mortality	0	18,472	18,472	2.2%
		Sum of Skate price	$0.22	$0.19	$0.19	
		Sum of Orig. revenue/DA	$3,944	$8,463	$7,455	
	#N/A	Trips	52		52	0.0%
		Daily fishing cost	$487		$487	
		Sum of Total skate landings, live weight	679		679	0.0%
		Sum of Adj. skate landings	679		679	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.23		$0.23	
		Sum of Orig. revenue/DA	$2,939		$2,939	
Day Trips			5,098	366	5,464	6.7%
Day Daily fishing cost			$658	$411	$641	
Day Sum of Total skate landings, live weight			4,193,297	5,210,178	9,403,475	55.4%
Day Sum of Adj. skate landings			4,193,297	2,658,624	6,851,921	51.0%
Day Sum of Skate discard mortality			0	326,927	326,927	6.3%
Day Sum of Skate price			$0.17	$0.15	$0.16	
Day Sum of Orig. revenue/DA			$3,745	$5,627	$3,894	
Trip	Low	Trips	1,766	429	2,195	19.5%
		Daily fishing cost	$1,003	$1,243	$1,050	
		Sum of Total skate landings, live weight	2,668,179	7,495,281	10,163,461	73.7%
		Sum of Adj. skate landings	2,668,179	3,116,256	5,784,435	41.6%
		Sum of Skate discard mortality	0	1,188,504	1,188,504	15.9%
		Sum of Skate price	$0.22	$0.22	$0.22	
		Sum of Orig. revenue/DA	$3,530	$3,933	$3,653	
	Medium	Trips	130	120	250	48.0%
		Daily fishing cost	$386	$467	$425	
		Sum of Total skate landings, live weight	397,984	2,737,540	3,135,524	87.3%
		Sum of Adj. skate landings	397,984	871,680	1,269,664	31.8%
		Sum of Skate discard mortality	0	152,331	152,331	5.6%
		Sum of Skate price	$0.21	$0.17	$0.18	
		Sum of Orig. revenue/DA	$2,470	$3,547	$3,001	
	High	Trips	5	15	20	75.0%
		Daily fishing cost	$385	$433	$421	
		Sum of Total skate landings, live weight	22,493	234,200	256,693	91.2%
		Sum of Adj. skate landings	22,493	108,960	131,453	46.5%
		Sum of Skate discard mortality	0	17,371	17,371	7.4%
		Sum of Skate price	$0.20	$0.31	$0.30	
		Sum of Orig. revenue/DA	$3,252	$4,551	$4,222	
	#N/A	Trips	4		4	0.0%
		Daily fishing cost	$901		$901	
		Sum of Total skate landings, live weight	141		141	0.0%
		Sum of Adj. skate landings	141		141	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.18		$0.18	
		Sum of Orig. revenue/DA	$5,094		$5,094	
Trip Trips			1,905	564	2,469	22.8%
Trip Daily fishing cost			$959	$1,056	$981	
Trip Sum of Total skate landings, live weight			3,088,797	10,467,021	13,555,819	77.2%
Trip Sum of Adj. skate landings			3,088,797	4,096,896	7,185,693	39.1%
Trip Sum of Skate discard mortality			0	1,358,206	1,358,206	13.0%
Trip Sum of Skate price			$0.22	$0.21	$0.21	
Trip Sum of Orig. revenue/DA			$3,499	$3,913	$3,629	
Total Trips			7,003	930	7,933	11.7%
Total Daily fishing cost			$740	$802	$747	
Total Sum of Total skate landings, live weight			7,282,094	15,677,199	22,959,293	68.3%
Total Sum of Adj. skate landings			7,282,094	6,755,520	14,037,614	43.1%
Total Sum of Skate discard mortality			0	1,685,133	1,685,133	10.7%
Total Sum of Skate price			$0.19	$0.19	$0.19	
Total Sum of Orig. revenue/DA			$3,564	$4,022	$3,685	

Table 33. **Skate trip diagnostics and effects of a 4,100 lbs. skate wing possession limit on 2009 trips landings skate wings according to dealer reports. Prices are adjusted to dollars per whole pound.**

			Trip affected by measures?			Percent
Trip type	Dependency	Data	N	Y	Grand Total	
Day	Low	Trips	4,893	47	4,940	1.0%
		Daily fishing cost	$666	$359	$663	
		Sum of Total skate landings, live weight	4,062,893	616,661	4,679,554	13.2%
		Sum of Adj. skate landings	4,062,893	437,429	4,500,322	70.9%
		Sum of Skate discard mortality	0	56,010	56,010	9.1%
		Sum of Skate price	$0.16	$0.15	$0.16	
		Sum of Orig. revenue/DA	$3,756	$5,814	$3,783	
	Medium	Trips	212	199	411	48.4%
		Daily fishing cost	$443	$436	$440	
		Sum of Total skate landings, live weight	669,595	3,163,575	3,833,170	82.5%
		Sum of Adj. skate landings	669,595	1,852,093	2,521,688	58.5%
		Sum of Skate discard mortality	0	127,806	127,806	4.0%
		Sum of Skate price	$0.19	$0.14	$0.15	
		Sum of Orig. revenue/DA	$4,387	$5,126	$4,809	
	High	Trips	15	46	61	75.4%
		Daily fishing cost	$377	$395	$391	
		Sum of Total skate landings, live weight	71,891	818,181	890,072	91.9%
		Sum of Adj. skate landings	71,891	428,122	500,013	52.3%
		Sum of Skate discard mortality	0	12,258	12,258	1.5%
		Sum of Skate price	$0.21	$0.19	$0.19	
		Sum of Orig. revenue/DA	$4,072	$8,600	$7,455	
	#N/A	Trips	52		52	0.0%
		Daily fishing cost	$487		$487	
		Sum of Total skate landings, live weight	679		679	0.0%
		Sum of Adj. skate landings	679		679	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.23		$0.23	
		Sum of Orig. revenue/DA	$2,939		$2,939	
Day Trips			5,172	292	5,464	5.3%
Day Daily fishing cost			$654	$418	$641	
Day Sum of Total skate landings, live weight			4,805,058	4,598,417	9,403,475	48.9%
Day Sum of Adj. skate landings			4,805,058	2,717,644	7,522,702	59.1%
Day Sum of Skate discard mortality			0	196,074	196,074	4.3%
Day Sum of Skate price			$0.17	$0.15	$0.16	
Day Sum of Orig. revenue/DA			$3,772	$5,709	$3,894	
Trip	Low	Trips	1,849	346	2,195	15.8%
		Daily fishing cost	$1,009	$1,269	$1,050	
		Sum of Total skate landings, live weight	3,346,604	6,816,857	10,163,461	67.1%
		Sum of Adj. skate landings	3,346,604	3,220,222	6,566,826	47.2%
		Sum of Skate discard mortality	0	964,129	964,129	14.1%
		Sum of Skate price	$0.22	$0.22	$0.22	
		Sum of Orig. revenue/DA	$3,580	$3,858	$3,653	
	Medium	Trips	145	105	250	42.0%
		Daily fishing cost	$388	$476	$425	
		Sum of Total skate landings, live weight	519,145	2,616,379	3,135,524	83.4%
		Sum of Adj. skate landings	519,145	977,235	1,496,380	37.4%
		Sum of Skate discard mortality	0	120,205	120,205	4.6%
		Sum of Skate price	$0.22	$0.17	$0.18	
		Sum of Orig. revenue/DA	$2,479	$3,690	$3,001	
	High	Trips	7	13	20	65.0%
		Daily fishing cost	$386	$440	$421	
		Sum of Total skate landings, live weight	38,667	218,026	256,693	84.9%
		Sum of Adj. skate landings	38,667	120,991	159,658	55.5%
		Sum of Skate discard mortality	0	12,462	12,462	5.7%
		Sum of Skate price	$0.22	$0.31	$0.30	
		Sum of Orig. revenue/DA	$3,341	$4,705	$4,222	
	#N/A	Trips	4		4	0.0%
		Daily fishing cost	$901		$901	
		Sum of Total skate landings, live weight	141		141	0.0%
		Sum of Adj. skate landings	141		141	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.18		$0.18	
		Sum of Orig. revenue/DA	$5,094		$5,094	
Trip Trips			2,005	464	2,469	18.8%
Trip Daily fishing cost			$961	$1,067	$981	
Trip Sum of Total skate landings, live weight			3,904,556	9,651,262	13,555,819	71.2%
Trip Sum of Adj. skate landings			3,904,556	4,318,448	8,223,004	44.7%
Trip Sum of Skate discard mortality			0	1,096,796	1,096,796	11.4%
Trip Sum of Skate price			$0.22	$0.21	$0.21	
Trip Sum of Orig. revenue/DA			$3,546	$3,853	$3,629	
Total Trips			7,177	756	7,933	9.5%
Total Daily fishing cost			$740	$816	$747	
Total Sum of Total skate landings, live weight			8,709,614	14,249,679	22,959,293	62.1%
Total Sum of Adj. skate landings			8,709,614	7,036,092	15,745,706	49.4%
Total Sum of Skate discard mortality			0	1,292,870	1,292,870	9.1%
Total Sum of Skate price			$0.19	$0.19	$0.19	
Total Sum of Orig. revenue/DA			$3,604	$3,963	$3,685	

Table 34. **Skate trip diagnostics and effects of a 5,000 lbs. skate wing possession limit on 2009 trips landings skate wings according to dealer reports. Prices are adjusted to dollars per whole pound.**

			Trip affected by measures?			Percent
Trip type	Dependency	Data	N	Y	Grand Total	
Day	Low	Trips	4,918	22	4,940	0.4%
		Daily fishing cost	$664	$355	$663	
		Sum of Total skate landings, live weight	4,321,378	358,176	4,679,554	7.7%
		Sum of Adj. skate landings	4,321,378	249,700	4,571,078	69.7%
		Sum of Skate discard mortality	0	35,046	35,046	9.8%
		Sum of Skate price	$0.16	$0.15	$0.16	
		Sum of Orig. revenue/DA	$3,767	$6,344	$3,783	
	Medium	Trips	241	170	411	41.4%
		Daily fishing cost	$437	$443	$440	
		Sum of Total skate landings, live weight	972,001	2,861,169	3,833,170	74.6%
		Sum of Adj. skate landings	972,001	1,929,500	2,901,501	67.4%
		Sum of Skate discard mortality	0	67,947	67,947	2.4%
		Sum of Skate price	$0.19	$0.13	$0.15	
		Sum of Orig. revenue/DA	$4,556	$5,058	$4,809	
	High	Trips	20	41	61	67.2%
		Daily fishing cost	$412	$381	$391	
		Sum of Total skate landings, live weight	124,083	765,989	890,072	86.1%
		Sum of Adj. skate landings	124,083	465,350	589,433	60.8%
		Sum of Skate discard mortality	0	7,185	7,185	0.9%
		Sum of Skate price	$0.21	$0.19	$0.19	
		Sum of Orig. revenue/DA	$4,626	$8,943	$7,455	
	#N/A	Trips	52		52	0.0%
		Daily fishing cost	$487		$487	
		Sum of Total skate landings, live weight	679		679	0.0%
		Sum of Adj. skate landings	679		679	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.23		$0.23	
		Sum of Orig. revenue/DA	$2,939		$2,939	
Day Trips			5,231	233	5,464	4.3%
Day Daily fishing cost			$651	$424	$641	
Day Sum of Total skate landings, live weight			5,418,141	3,985,334	9,403,475	42.4%
Day Sum of Adj. skate landings			5,418,141	2,644,550	8,062,691	66.4%
Day Sum of Skate discard mortality			0	110,178	110,178	2.8%
Day Sum of Skate price			$0.17	$0.15	$0.16	
Day Sum of Orig. revenue/DA			$3,794	$5,755	$3,894	
Trip	Low	Trips	1,924	271	2,195	12.3%
		Daily fishing cost	$1,012	$1,320	$1,050	
		Sum of Total skate landings, live weight	4,118,124	6,045,337	10,163,461	59.5%
		Sum of Adj. skate landings	4,118,124	3,075,850	7,193,974	50.9%
		Sum of Skate discard mortality	0	792,828	792,828	13.1%
		Sum of Skate price	$0.22	$0.22	$0.22	
		Sum of Orig. revenue/DA	$3,588	$3,889	$3,653	
	Medium	Trips	159	91	250	36.4%
		Daily fishing cost	$389	$489	$425	
		Sum of Total skate landings, live weight	665,701	2,469,823	3,135,524	78.8%
		Sum of Adj. skate landings	665,701	1,032,850	1,698,551	41.8%
		Sum of Skate discard mortality	0	94,824	94,824	3.8%
		Sum of Skate price	$0.23	$0.16	$0.18	
		Sum of Orig. revenue/DA	$2,555	$3,745	$3,001	
	High	Trips	9	11	20	55.0%
		Daily fishing cost	$387	$450	$421	
		Sum of Total skate landings, live weight	59,177	197,516	256,693	76.9%
		Sum of Adj. skate landings	59,177	124,850	184,027	63.2%
		Sum of Skate discard mortality	0	9,029	9,029	4.6%
		Sum of Skate price	$0.24	$0.32	$0.30	
		Sum of Orig. revenue/DA	$3,347	$4,928	$4,222	
	#N/A	Trips	4		4	0.0%
		Daily fishing cost	$901		$901	
		Sum of Total skate landings, live weight	141		141	0.0%
		Sum of Adj. skate landings	141		141	
		Sum of Skate discard mortality	0		0	
		Sum of Skate price	$0.18		$0.18	
		Sum of Orig. revenue/DA	$5,094		$5,094	
Trip Trips			2,096	373	2,469	15.1%
Trip Daily fishing cost			$962	$1,092	$981	
Trip Sum of Total skate landings, live weight			4,843,143	8,712,676	13,555,819	64.3%
Trip Sum of Adj. skate landings			4,843,143	4,233,550	9,076,693	48.6%
Trip Sum of Skate discard mortality			0	896,681	896,681	10.3%
Trip Sum of Skate price			$0.22	$0.20	$0.21	
Trip Sum of Orig. revenue/DA			$3,555	$3,887	$3,629	
Total Trips			7,327	606	7,933	7.6%
Total Daily fishing cost			$740	$835	$747	
Total Sum of Total skate landings, live weight			10,261,284	12,698,010	22,959,293	55.3%
Total Sum of Adj. skate landings			10,261,284	6,878,100	17,139,384	54.2%
Total Sum of Skate discard mortality			0	1,006,858	1,006,858	7.9%
Total Sum of Skate price			$0.19	$0.19	$0.19	
Total Sum of Orig. revenue/DA			$3,614	$3,995	$3,685	

7.6.2 Fishery performance under various skate wing possession limits in 2010 and implications possession limit alternatives

7.6.2.1 Comparative landings of skates and other species for sector and non-sector vessels

The analysis of impacts in Amendment 3 expected a 31% decline in skate wing landings to achieve the 2010 TAL, but for various reasons the expected reduction did not materialize, even when the 5,000 lbs. skate wing possession limit became effective on July 16, 2010. The Amendment 3 analysis also included the caveat that skate (and monkfish) landings by vessels enrolled in new groundfish sectors could increase. The increasing landings were expected to occur because sector-enrolled vessels would no longer be required to use their DAS allocation to catch and land groundfish, potentially making them more available to target skates and monkfish. But this increase did not materialize as much as expected.

Amendment 3 implementation was delayed a few weeks to accommodate some last minute changes approved by the Council, in response to new data which allowed for higher specifications (ABC and TALs). As a result, the 20,000 skate wing possession limit remained in effect until July 16, 2010. During this time, 17 new groundfish sectors were established with 760 enrolled vessels.

A year over year comparison of landings before the Amendment 3 implementation date is shown in Table 35. While regulated groundfish landings for sector vessels decline by 16% (and common pool vessels using DAS increased by 4%), skate wing landings increased by 52 and 79%, respectively. Since skate landings for common pool vessels increased even more than sector vessels, it does not appear that there was the expected sector effect on skate landings. Instead, it is apparent that more trips landing skates occurred during this period due to the pending reduction in the skate wing possession limit. Curiously, landing of small skates for the bait market also increased (+94%) by common pool groundfish vessels, but not for sector vessels (-10%). The reason for the divergence is unknown.

More germane to fishery performance under the status quo, skate wing landings did not decline as expected under a 5,000 lbs. limit. Year over year landings increased by 7% for sector vessels and declined by 7% for common pool vessels (Table 36), increasing slightly overall compared to 2009 landings when the skate wing possession limit was 20,000 lbs. The above possession limit model analysis indicated that a 25% reduction should be expected, all other factors (such as price, operating costs, and other regulations) held constant.

Since skate wing landings did not decline as much as anticipated, either more trips were made than in 2009, or similar trips which had landed less than 5,000 lbs. landed more in 2010, or both. And even though the 5,000 lbs. slowed landings in 2010, it was not sufficient to keep the fishery from closing at the existing TAL, even if the 5,000 lbs. possession limit had been in effect from the beginning of the fishing year.

Table 35. **Year over year comparison of landings of skates and other related finfish made between May 1 (beginning of fishing year) and July 15 for 2009 and 2010. A 20,000 lbs. skate wing possession limit was in effect during both years. Inactive vessels are those enrolled in sectors, which ???**

			Fleet assignment			
Year	Market group	Data	Sector	Inactive	Common Pool	Total
2009	1. Skate Wings	Landings, whole lbs.	3,583,606	94,021	2,180,492	5,858,119
		Value.	$468,758	$15,564	$280,812	$765,134
	2. Skate Bait	Landings, whole lbs.	1,429,253	46,304	863,784	2,339,341
		Value.	$119,827	$3,709	$90,907	$214,443
	3. Monkfish	Landings, whole lbs.	1,844,441	47,341	2,863,015	4,754,797
		Value.	$1,647,650	$40,218	$2,755,085	$4,442,953
	4. Small mesh groundfish	Landings, whole lbs.	1,803,311	288,859	1,167,391	3,259,561
		Value.	$717,687	$110,989	$478,710	$1,307,386
	5. Other species	Landings, whole lbs.	5,426,022	685,574	25,714,033	31,825,629
		Value.	$3,958,307	$477,811	$11,964,118	$16,400,236
	6. Regulated groundfish	Landings, whole lbs.	11,284,055	720,679	897,305	12,902,039
		Value.	$10,530,364	$782,570	$1,008,539	$12,321,473
	Total	Landings, whole lbs.	25,370,688	1,882,778	33,686,020	60,939,486
		Value.	$17,442,593	$1,430,861	$16,578,171	$35,451,625
2010	1. Skate Wings	Landings, whole lbs.	5,464,928	17,077	3,913,184	9,395,189
		Value.	$746,083	$2,679	$562,407	$1,311,169
	2. Skate Bait	Landings, whole lbs.	1,291,809	41,771	1,672,854	3,006,434
		Value.	$163,561	$5,462	$194,060	$363,083
	3. Monkfish	Landings, whole lbs.	1,398,682	5,754	2,157,166	3,561,602
		Value.	$1,483,563	$5,822	$2,568,897	$4,058,282
	4. Small mesh groundfish	Landings, whole lbs.	2,823,558	228,850	711,677	3,764,085
		Value.	$1,610,855	$118,275	$370,496	$2,099,626
	5. Other species	Landings, whole lbs.	4,752,355	413,311	25,787,341	30,953,007
		Value.	$4,175,163	$268,443	$13,919,429	$18,363,035
	6. Regulated groundfish	Landings, whole lbs.	9,515,436	112,372	954,198	10,582,006
		Value.	$12,007,390	$123,973	$1,356,964	$13,488,327
	Total	Landings, whole lbs.	25,246,768	819,135	35,196,420	61,262,323
		Value.	$20,186,615	$524,654	$18,972,253	$39,683,522
YOY change	1. Skate Wings	Landings, whole lbs.	52%	-82%	79%	60%
		Value.	59%	-83%	100%	71%
	2. Skate Bait	Landings, whole lbs.	-10%	-10%	94%	29%
		Value.	36%	47%	113%	69%
	3. Monkfish	Landings, whole lbs.	-24%	-88%	-25%	-25%
		Value.	-10%	-86%	-7%	-9%
	4. Small mesh groundfish	Landings, whole lbs.	57%	-21%	-39%	15%
		Value.	124%	7%	-23%	61%
	5. Other species	Landings, whole lbs.	-12%	-40%	0%	-3%
		Value.	5%	-44%	16%	12%
	6. Regulated groundfish	Landings, whole lbs.	-16%	-84%	6%	-18%
		Value.	14%	-84%	35%	9%
	Total	Landings, whole lbs.	0%	-56%	4%	1%
		Value.	16%	-63%	14%	12%

Table 36. **Year over year comparison of landings of skates and other related finfish made between July 16 and September 2 for 2009 and 2010. A 20,000 lbs. skate wing possession limit was in effect during 2009 and a 5,000 lbs. skate wing possession limit was in effect during 2010.**

			Fleet assignment			
Year	Market group	Data	Sector	Inactive	Common Pool	Total
2009	1. Skate Wings	Landings, whole lbs.	3,536,843	55,138	210,525	3,802,506
		Value.	$561,846	$10,746	$29,873	$602,465
	2. Skate Bait	Landings, whole lbs.	1,575,991		787,624	2,363,615
		Value.	$132,704		$85,955	$218,659
	3. Monkfish	Landings, whole lbs.	784,718	17,415	277,027	1,079,160
		Value.	$773,221	$17,019	$283,123	$1,073,363
	4. Small mesh groundfish	Landings, whole lbs.	1,863,182	120,961	383,005	2,367,148
		Value.	$639,381	$47,930	$170,325	$857,636
	5. Other species	Landings, whole lbs.	7,572,010	1,453,906	27,737,272	36,763,188
		Value.	$3,844,441	$588,143	$12,155,357	$16,587,941
	6. Regulated groundfish	Landings, whole lbs.	9,360,178	605,466	545,771	10,511,415
		Value.	$8,670,678	$644,297	$534,844	$9,849,819
	Total	Landings, whole lbs.	24,692,922	2,252,886	29,941,224	56,887,032
		Value.	$14,622,271	$1,308,135	$13,259,477	$29,189,883
2010	1. Skate Wings	Landings, whole lbs.	3,784,960	223	195,876	3,981,059
		Value.	$699,895	$60	$30,540	$730,495
	2. Skate Bait	Landings, whole lbs.	896,090		924,239	1,820,329
		Value.	$93,712		$107,084	$200,796
	3. Monkfish	Landings, whole lbs.	761,839	2,677	145,910	910,426
		Value.	$835,700	$3,019	$137,252	$975,971
	4. Small mesh groundfish	Landings, whole lbs.	2,831,245	46,980	351,214	3,229,439
		Value.	$1,600,134	$26,011	$182,005	$1,808,150
	5. Other species	Landings, whole lbs.	3,910,875	1,107,519	20,752,249	25,770,643
		Value.	$2,411,184	$352,481	$12,773,814	$15,537,479
	6. Regulated groundfish	Landings, whole lbs.	5,288,572	97,914	369,011	5,755,497
		Value.	$6,717,202	$115,684	$557,187	$7,390,073
	Total	Landings, whole lbs.	17,473,581	1,255,313	22,738,499	41,467,393
		Value.	$12,357,827	$497,255	$13,787,882	$26,642,964

YOY change	1. Skate Wings	Landings, whole lbs.	7%	-100%	-7%	5%
		Value.	25%	-99%	2%	21%
	2. Skate Bait	Landings, whole lbs.	-43%		17%	-23%
		Value.	-29%		25%	-8%
	3. Monkfish	Landings, whole lbs.	-3%	-85%	-47%	-16%
		Value.	8%	-82%	-52%	-9%
	4. Small mesh groundfish	Landings, whole lbs.	52%	-61%	-8%	36%
		Value.	150%	-46%	7%	111%
	5. Other species	Landings, whole lbs.	-48%	-24%	-25%	-30%
		Value.	-37%	-40%	5%	-6%
	6. Regulated groundfish	Landings, whole lbs.	-43%	-84%	-32%	-45%
		Value.	-23%	-82%	4%	-25%
	Total	Landings, whole lbs.	-29%	-44%	-24%	-27%
		Value.	-15%	-62%	4%	-9%

7.6.2.2 Weekly landings rates

Skate wing landings before June 16, 2010 averaged over 1,000,000 lbs./week (Figure 16), or nearly 160,000 pounds per day (Table 38). Leading up to the publication of the final rule of Amendment 3 on June 1618, skate wing landings actually increased and peaked at over 1.6 million lbs./week. After this, weekly landings dropped to about 600,000 lbs, or 77,539 lbs./day (Table 38), and continued at that level until the 500 lbs. skate wing possession limit accountability measure became effective on Sep 3rd. Since then and through Nov 27th (when the analysis was completed), daily landings averaged 27,631 lbs. (Table 38) and it appears that the skate wing fishery will exceed 105% of the TAL if the wing landings do not decline in the remainder of the 2010 fishing year (NMFS Regional Office, pers. comm.), which will trigger a post-season accountability measure to prevent the fishery from exceeding future TALs.

18 The final rule became effective on July 16, 2010, following a 30-day cooling off period.

Using daily landings rates for the 2010 fishing year, the rate of landing can be modeled as a power function to estimate a possession limit that would produce any TAL. Fitted to the average daily landings (Figure 17) rates in 2010 when 500; 5,000; and 20,000 lbs. skate wing possession limit were effective, results in a curve which fits the following equation:

$$y = 1425.5x^{0.4733}$$

If the 2011 skate wing TAL remains the same as specified in Amendment 3 (9,209 mt), the average daily landings rate should be 55,623 lbs. whole weight to achieve the limit at the end of the fishing year. And applying the above equation implies that all things being held constant (e.g. skate prices, operating costs, other regulations), the skate wing possession limit should be 2,268 lbs., if the fishery operates like it did in 2010 but with a constant skate wing possession limit.

This possession limit estimate at the current TAL is closest to the 1,900 lbs. skate wing possession limit alternative, with a small additional buffer for uncertainty (such as increasing skate wing prices). This is obviously lower than the limit predicted by the possession limit model in Section 7.6.2.1, but other sundry factors (as discussed above) were at work in 2010. It should be noted that landings in 2010 occurred at nearly double the rate that occurred in 2009, during both periods when a 20,000 lbs. possession limit was effective (Table 38, Figure 17). And when the 5,000 lbs. possession limit became effective, the landings rate declined to 77,539 lbs./day which is only a modest decline from the 95,385 lbs./day that occurred in 2009.

As an example, if the ABC and wing TAL were higher than that specified in 2010 as a result of higher survey biomass indices, the skate wing possession limit could also be higher than what would be appropriate to keep the season open at the existing TAL. Increasing the TAL from 9,206 to 12,000 mt would imply that the industry could land an average of 72,481 lbs./day (31,930 lbs. of skate wings). Using the above equation implies that the skate wing possession limit could be as high as 3,968 lbs. (9,008 lbs. whole weight) to allow the fishery to remain open for the entire year and achieve optimum yield. This again assumes that external factors (skate prices, operating costs, other regulations, etc.) have the same effect on skate fishing as they did in 2010.

In this example, a 4,100 lbs. skate wing possession limit (Alternative 2) might close the fishery late in the fishing year but also might not exceed the 105% TAL threshold that would trigger a post-season accountability measure. The actual amount chosen should be based on a balance between a limit that is high enough to allow the fishery to land its allocation, while low enough to prevent the fishery from closing early so that discards increase while markets and shoreside economic activity suffers.

The table below shows the skate wing TAL that would be associated with each alternative with a fully utilized fishery (i.e. the average daily landings rate in 2010 equals 1/365th of the TAL).

Table 37. **Predicted skate wing landings at various possession limit alternatives, based on fitted average daily landings in 2010.**

Possession limit alternative	Predicted daily landings rate (whole lbs./day)	Predicted annual landings (TAL, mt)	Percent over 2010 TAL (9,209 mt)
5,000 lbs. (status quo)	80,859	13,387	45%
4,100 lbs. (Alternative 2)	73,609	12,187	32%
3,200 lbs. (Alternative 3)	65,462	10,838	18%
2,600 lbs. (Alternative 4)	59,335	9,824	7%

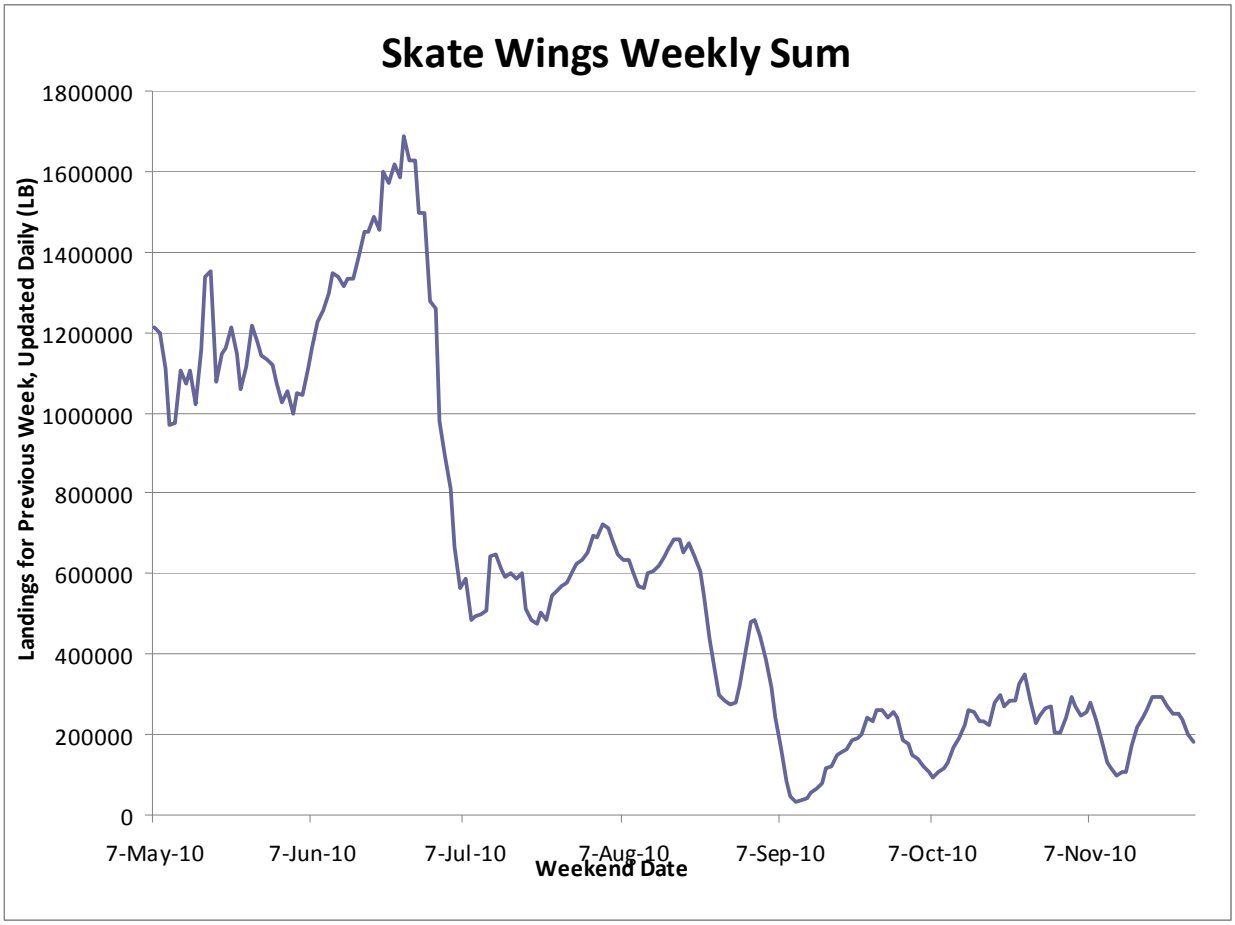


Figure 16. **Seven day moving average of daily landings during 2010.**

Table 38. **Average daily skate wing landings.**

Fishing year	Possession limit, lbs.	Average of Daily landings, lbs.	Standard deviation, lbs.
2009	20000 (May 1 to Nov 27)	95,385	55,151
2010	20000 (May 1 to Jun 15)	159,684	76,462
	5000 (Jun 16 to Sept 2)	77,539	29,819
	500 (Sep 3 to Nov 27)	27,631	20,765

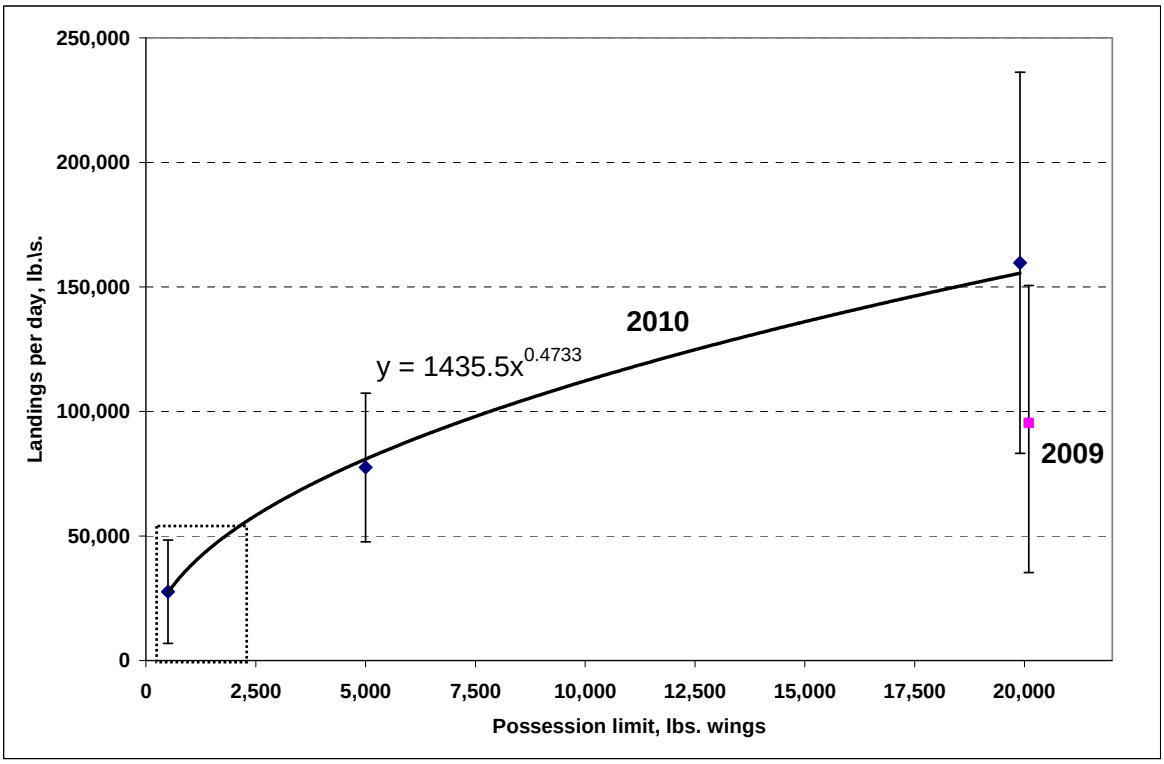


Figure 17. **Fitted and observed daily catch rates in 2010 compared to observed daily catch rates in 2009, from May 1 to November 27 of each year.**

7.6.3 General economic effects of possession limits

The effect of various skate possession limits on the fishery were estimated using a cost/revenue economic model, applied to fishing activity and landings reported on 2007 VTRs. Each trip was matched to permit data to estimate daily fishing costs, as described in Document 12 in Appendix I. These equations were re-estimated using 2007 sea sampling data when they became available and a dummy variable representing year was added to account for the recent rapid increases in fuel prices. A $100 per day opportunity cost was also applied for each crew person reported to be on the trip19. Prices were associated with the landings for each trip by species, month, and state of landing to estimate total daily revenue for skate and non-skate species.

The model assumes that trips where the total revenue derived from landing non-skate species exceeds the daily fishing cost for the vessel, it would continue fishing for species other than skates when it reaches the possession limit. Excess skates that were landed in 2007 were assumed to be discarded, 50% of which were assumed to survive and represent a reduction in skate mortality. An example for trips landing skates in RI is shown in Figure 18, each vertical bar representing the skate landings of an individual trip (there are 466 trips that exceed the example possession limit shown in this figure). The 'Adjusted landings' are the skate landings that would occur with the skate possession limit in place. Trips in this category have 'Discards' shown as a medium gray in Figure 6, which is equivalent to 50% of the excess landings that had occurred on the trip. The remaining portion of the skates on each trip were assumed to survive

19 An opportunity cost in this case represents a potential wage that might be earned by a crew person if that person was not fishing. Another way of looking at this factor is it represents a minimum 'wage' that a crew person expects to earn by continuing to fish.

discarding and contribute to mortality reduction. Landings of other species were assumed to be unchanged from the original trip.

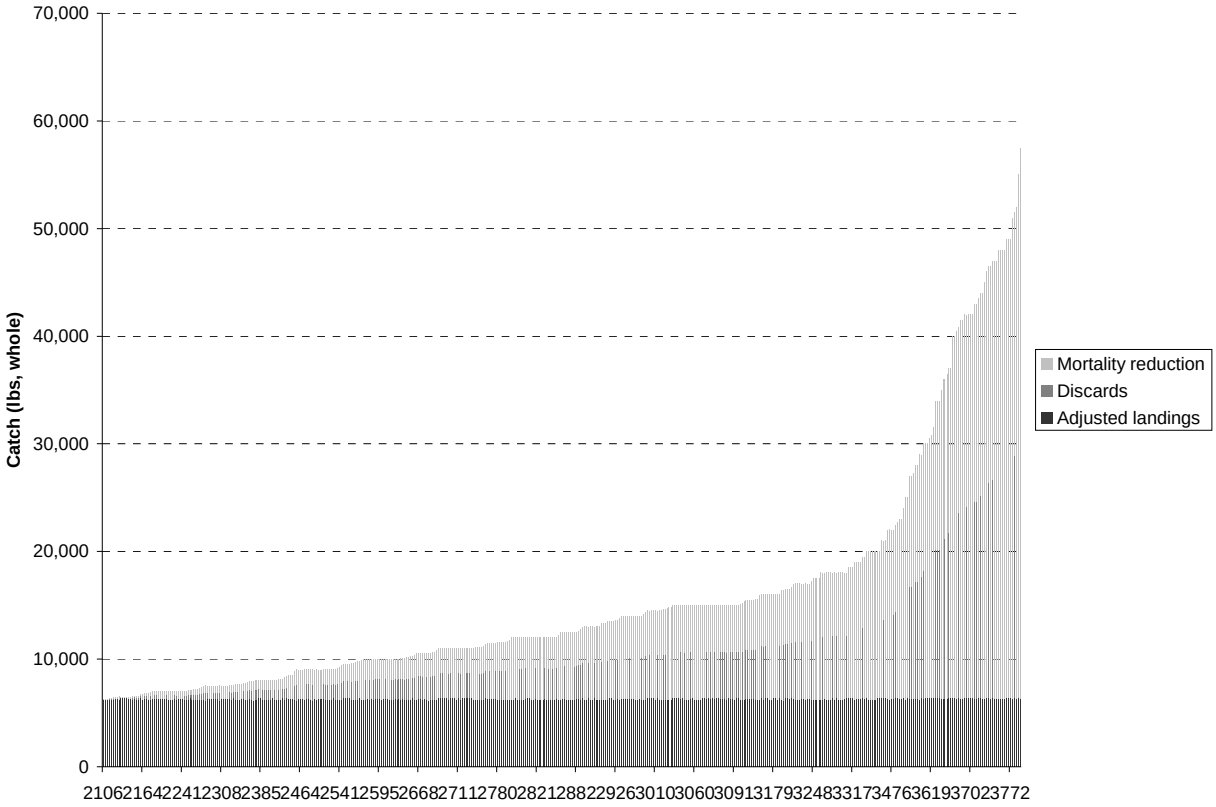
Trips that required skate landings to be profitable were assumed to end when the daily catch of skate landings equaled the possession limit. The difference between what this type of trip (i.e. a 'skate' trip that would not otherwise be profitable on a daily basis without retaining skates) actually landed in 2007 and what it would be able to land under a skate possession limit is assumed to not be caught. Landings on these trips were assumed to equal the skate possession limit and no additional discarding of skates would occur. All of the excess landings would contribute to skate mortality reduction (shaded light gray in Figure 18). Trip duration, fishing costs, and the landings and revenue of other species were assumed to decline proportionally to the ratio of the possession limit to the amount of skates landed on the original trip.

Effect on discards by skate possession limits

Two outcomes are possible, one increasing discards and the other decreasing discards. Trips that would continue fishing for other species would discard skates once its landings reach the skate possession limit. Although reducing skate mortality through survival of discards, vessels fishing for other species would increase skate discards.

Another set of vessels, or trips, that require skate landings to be profitable are less likely to continue fishing once the skate landings reach the possession limit. Some may change their fishing method or location to target other species. Other vessels may return to port on shorter trips. In this latter case, the vessel presumably will have skate discards associated with its catch, from both undersized (or oversized in the case of the bait fishery which has a maximum size limit) and from prohibited species (barndoor skate, smooth, and thorny skates). If as a result of the possession limit, the vessel reduces the amount of fishing effort targeting skates, skate discards is likely to decline.

Figure 18. **Possession limit model results by trip, derived from 2007 VTR data for trips using trawls and landing skates in RI. The adjusted landings represent a proposed trip limit.**



Although the model estimates the amount of surviving skate discards at various possession limits, there is not sufficient information currently available to estimate the discard reduction caused by less skate fishing. There are many difficult-to-predict factors that will come into play as the fishermen change the way they fish in response to a skate possession limit.

The net effect on discards can however be generalized with respect to various potential possession limits. Higher possession limits are least likely to affect trips that are targeting other species and would continue fishing after the skate landings equal the possession limit. Modest decreases in skate discards could be expected from vessels that fish less for skates as a result of the possession limit.

As the skate possession limit becomes more restrictive, however, it would more frequently affect trips that are relying less on skate landings to be profitable. In this case, skate discards would be expected to increase, but some mortality reduction would be expected through surviving discards.

The skate possession limits will affect various numbers of vessels and trips; potentially reducing trip length, landings, and revenue for trips that rely on skate landings to be profitable. Vessels and ports that rely on trips targeting skates will of course be affected by the possession limits much more than vessels and ports that land skates from trips targeting other species. For vessels that target skates and end trips early due to a skate possession limit, revenue from skates and non-skate species will decline as well as total fishing costs due to changes in the consumption of fuel, ice, food and other variable expenses. Reductions in fishing costs from the predicted reduction in fishing activity are about 31% of lost revenue for the wing fishery and 26-29% of lost revenue for the whole/bait fishery.

At the lowest wing possession limit for any of the alternatives, the top three ports affected by the skate possession limit would be New Bedford (48.3% of revenue from trips landing skates), Boston (25.4%), and Chatham (33.6%). Impacts on revenue at the rest of the ports landing skates are estimated to be less than 10% of total revenue on trips landing skates. At a higher wing limit, the ports with the most impacts would be New Bedford (24.5% of revenue from trips landing skates), Boston (12.1%), and Chatham (8.7%). The effects are relatively less at the higher possession limit in Chatham, because vessels there tend to take shorter trips when landing skates than at other ports.

7.6.4 Effect of allowing landings of skate carcasses for the bait market, on trips targeting and processing skate wings

Relative to No Action, this measure is anticipated to have no additional biological impacts on target, non-target, or protected species. There would also be no additional impacts on habitat. This measure would not affect the amount of skates being harvested, or influence any change in fishing effort. It only promotes more complete utilization of skate resources already being harvested under existing Skate FMP management measures.

The measure may result is minor positive economic and social impacts, relative to No Action. By design, the measure is intended to make it easier for skate vessels to retain skate carcasses that they would normally discard, and sell them for bait. It promotes more complete utilization of skate resources and may provide additional opportunities for skate vessels to marginally increase their skate revenues. Table 39 provides some examples of the additional revenue that may be achieved per trip, under a range of possession limit alternatives.

Table 39. **Estimated additional trip-level revenue from landing skate carcasses for bait under a range of possession limits. Assumes a dock price of $0.11 per lb (average FY 2010 skate bait price).**

Possession Limit (lbs wing wt.)	Max. Carcass wt. (lbs)	Projected Carcass Revenue
500	635	$69.85
1,900	2,413	$265.43
3,100	3,937	$433.07
5,000	6,350	$698.50

7.6.5 Processors and Dealers

Impacts on processors and dealers are expected to be distributed mainly according to the major product categories of whole/bait or wings. Economic data for individual dealers processors are not available and therefore it is not possible to estimate the range of impacts on dealers and processors because they will depend on what percentage of their revenues are derived from skates.

7.6.6 Geographical Distribution of Impacts

The major impacts will be on the ports of New Bedford, MA, Chatham, MA and Point Judith, RI in that order. Other port areas that also will be impacted in their order of importance are Tiverton, RI, Newport, RI, Boston, MA, Stonington, CT, Gloucester, MA, Barnegat, NJ and Hampton, VA (Figure 7). Port areas that will be more impacted because they handle a higher proportion of wings than whole skates are New Bedford, Chatham, Boston, Gloucester, Barnegat and Hampton. Rhode Island ports and Stonington, CT have historically contributed to the majority of whole skate (i.e. bait) landings. Although the above summary tables show the estimated average effect of the proposed alternatives on total revenue derived from trips landing skates, local and individual vessel impacts will be much greater than the coast-wide averages. Some vessels and ports may experience revenue reductions of as much as 40-50% annually.

7.7 Social Impact Assessment

The major impacts would be on (in order of highest to lowest level of impacts): New Bedford, Chatham and Point Judith, and secondarily Tiverton, Newport, Boston, Stonington, Gloucester, Barnegat Light and Hampton (VA).

7.7.1 Combined Factors for Vulnerability

Some towns show up in multiple indices of vulnerability; others in only one. Communities with multiple elements of vulnerability are generally more at risk for potential negative impacts. Those with fewer are generally likely to have more positive outcomes. We must, however, remember that some factors have a stronger impact than others. One very strong impact factor may equal several smaller impacts. Nonetheless, by simple count of factors Chatham and New Bedford, MA and Point Judith, RI are the most at risk.

Taking geographic closeness into account, we can see that communities with 5 or more factors tend to cluster in four areas, 1) Cape Cod (Chatham and Provincetown), 2) the southern shore of Massachusetts (New Bedford, Gloucester, Boston), 3) Rhode Island (Point Judith, Tiverton and Newport) and Connecticut (Stonington) and 4) New Jersey (Barnegat Light/Long Beach).

Risks to individuals and families include job loss, family disruption and damage to long-standing social networks. On the industry side, there is the threat to fishermen, dealers and especially processors of losing workforce locally and market share abroad that may be difficult to regain at a later point in time, as other providers establish new relationships with buyers.

Table 40. Number of combined vulnerability factors per town among the profiled communities

ST	PORT	Number of Factors
MA	Chatham	11
MA	New Bedford	10
RI	Point Judith/Narragansett	10
MA	Boston	8
MA	Gloucester	7
NJ	Barnegat Light/Long Beach	6
RI	Newport	6
RI	Tiverton	6
MA	Provincetown	5
NY	Montauk	5
CT	Stonington	4
MA	Fall River	4
NJ	Sea Isle City	4
ME	Portland	4
NY	Hampton Bays/Shinnecock	3
NJ	Belford/Middletown	2
NJ	Cape May	2
NJ	Point Pleasant/Point Pleasant Beach	2
RI	Little Compton	2
MD	Ocean City/West Ocean City	1
VA	Hampton	1

7.7.2 Discussion of Specific Conservation Elements of the Alternatives

Material in this section is based on the information above plus 37 interviews with NMFS port agents, skate vessel owners, lobster vessel owners, fishing association staff, dealers and processors throughout the region. One overarching issue for many involved in the skate fishery is a question of how good the science is. Given that wings versus whole skates have only been distinguishable since 2004, and that there is some question of confusion between juvenile little and winter skates, and that fishermen are seeing a lot of skates out on the grounds, there is concern over the accuracy of assessments. This may to some degree undermine any provisions implemented. Others feel that it is not the time to implement new skate regulations, given that there's move afoot to create a skate sector but that this cannot be in place before 2010 even if it is implemented. "Why not wait for the sector?" they ask. There is concern that too quick and drastic action may make it difficult for skate fishermen to adapt economically.

Some wonder why the increasing restriction on groundfish DAS and the fact that the lobster fishery has been cutting back on traps over the past few years aren't enough to ease pressure on the resource. Some processors have already cut back their hours, e.g., from 5am-5pm down to 8am-1pm. Some lobstermen are already having trouble getting bait. If the availability of bait skate is cut dramatically then SNE lobster vessels will have to turn to the herring and menhaden, and the redfish and cod racks, that are more commonly used in ME and northern New England, putting greater pressure on these species. Already ME lobstermen are being required to cut back on herring bait use due to restrictions in Gulf of Maine herring

fishing, leaving little opportunity for increased use of herring by Southern New England lobster fishermen.

Several processors noted that if they could not get steady product at sufficient levels they would go the way of many recent dogfish processors and shut down at least their skate division and in some cases their entire facility.

The current economy does not make it any easier for fishermen who are already stressed, though recent drops in fuel prices help to some degree. Some fishermen note that in areas where skate cluster there are few other species in the catch, so it is easy to target or avoid.

7.7.2.1 Trip Limits

Universally, fishermen (both those who target skate and those who catch it as a bycatch), dealers and processors emphasize that 2500 lbs of skate wings per trip would put large numbers of people out of business. Day fishermen like gillnetters seem to see 4800 lbs skate wings per trip as perhaps possible, though 6,800lbs would be better. Trip boats like draggers in New Bedford are currently bringing in 15-20,000lbs and see a drop to 12-14,000lbs as more feasible.

7.8 Summary and comparison of impacts

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8.0 Other Laws and Executive Orders

8.1 Endangered Species Act

Section 7 of the Endangered Species Act requires federal agencies conducting, authorizing or funding activities that affect threatened or endangered species to ensure that those effects do not jeopardize the continued existence of listed species. The NEFMC has concluded, at this writing, that the proposed framework adjustment and the prosecution of the multispecies fishery is not likely to jeopardize any ESA-listed species or alter or modify any critical habitat, based on the discussion of impacts in this document. NMFS has already concurred on that action.

The Council does acknowledge that endangered and threatened species may be affected by the measures proposed, but impacts should be minimal especially when compared to the prosecution of the fishery prior to implementation of the FMP for the NE Skate Complex and Amendment 13 to the NE Multispecies FMP (which governs the amount of effort and types of gear that may be used to fish for skates in areas east of 72°30' W longitude. The NEFMC is now seeking the concurrence of the National Marine Fisheries Service with respect to Amendment 3 to the Skate FMP.

For further information on the potential impacts of the fishery and the proposed management action on listed species, see Section **Error! Reference source not found.**.

8.2 Marine Mammal Protection Act

The NEFMC has reviewed the impacts of the Proposed Action on marine mammals and has concluded that the proposed management actions are consistent with the provisions of the MMPA. Although they are likely to affect species inhabiting the skate management unit, the measures will not alter the effectiveness of existing MMPA measures, such as take reduction plans, to protect those species based on overall reductions in fishing effort that have been implemented through the FMP and through the NE Multispecies, Scallop, and Monkfish FMPs which determine the total amount of fishing effort that may be used to target those species as well as skates.

For further information on the potential impacts of the fishery and the proposed management action on marine mammals, see Section **Error! Reference source not found.**.

8.3 Coastal Zone Management Act

Section 307(c)(1) of the Coastal Zone Management Act (CZMA) of 1972, as amended, requires that all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. The CZMA provides measures for ensuring stability of productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. It is recognized that responsible management of both coastal zones and fish stocks must involve mutually supportive goals. The Council has developed this amendment document and will submit it to NMFS; NMFS must determine whether this action is consistent to the maximum extent practicable with the CZM programs for each state (Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware,

Maryland, Virginia, and North Carolina). Letters documenting NMFS' determination will be sent to the coastal zone management program offices of each state.

8.4 Administrative Procedure Act

This action was developed in compliance with the requirements of the Administrative Procedures Act, and these requirements will continue to be followed when the proposed regulation is published. Section 553 of the Administrative Procedure Act establishes procedural requirements applicable to informal rulemaking by Federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process, and to give the public adequate notice and opportunity for comment. At this time, the Council is not requesting any abridgement of the rulemaking process for this action.

8.5 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 Amendment 3. 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.

8.6 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.

8.7 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. The authority to manage information and recordkeeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

The proposed action for Amendment 3 contains no new collection of information requirements subject to the PRA. The proposed program for ACL monitoring will rely on existing systems to collect data on landings and discards, which have already met PRA requirements. Supporting documents have been

submitted to and approvals have been obtained from the Office of Management and Budget (OMB) in association with previous fishery management actions.

8.8 Regulatory Impact Review (EO 12866)

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 8.11.2 of this document represents the RIR, which includes an assessment of the costs and benefits of the Proposed Action, in accordance with the guidelines established by E.O. 12866. The analysis included in the RIR shows that this action is a not "significant regulatory action" because it will not affect in a material way the economy or a sector of the economy.

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

- 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;

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

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

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

Of these four criteria, the discussion to follow focuses only on the expected magnitude and duration of the economic impacts of the Proposed Action. The Proposed Action would implement a suite of measures that have been designed to would meet the conservation objectives of the FMP for the NE Skate Complex and of the Magnuson-Stevens Fishery Conservation and Management Act. These regulatory changes would promote increases in biomass to restore conditions to produce MSY, promote rebuilding of overfished thorny skate, and reduce the risk of overfishing, assuring that the long term economic benefits of rebuilding will be realized.

The Proposed Action would implement a number of regulatory measures some of which would reduce effort on stocks of concern while minimizing impacts and providing flexibility to the skate fishery which supplies bait to the lobster fishery. The Proposed Action would have a direct affect on commercial fishing vessels, but not on recreational anglers. The Proposed Action would also have indirect impacts on the regional economy through changes in purchases by fishing vessels, seafood dealers, and processors as well as changes in purchased by affected

households. These impacts, detailed in Section **Error! Reference source not found.**, are summarized below.

Executive Order 12886 of 1993 is intended to limit the promulgation of regulations to those that are required by law, or are made compelling public need. In the latter category are the failure of private markets to protect and improve the health and safety of the public, the environment or the well-being of the American people. Selection of the ways and means of regulation is to require, where practical, an assessment of all costs and benefits of available regulatory alternatives including the alternative of not regulating. In choosing among alternatives, agencies are instructed to select approaches that maximize net benefits, unless a statute requires another regulatory approach. Net benefits are to include potential economic, environmental, public health and safety, and other advantages such as distributive and equity impacts. The Regulatory Principles state a dozen Principles to which agencies should adhere. They are:

(1) Each agency shall identify in writing the specific market failure (such as externalities, market power, lack of information) or other specific problem that it intends to address (including, where applicable, the failures of public institutions) that warrant new agency action, as well as assess the significance of that problem, to enable assessment of whether any new regulation is warranted.

(2) Each agency shall examine whether existing regulations (or other law) have created, or contributed to, the problem that a new regulation is intended to correct and whether those regulations (or other law) should be modified to achieve the intended goal of regulation more effectively.

(3) Each agency shall identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.

(4) In setting regulatory priorities, each agency shall consider, to the extent reasonable, the degree and nature of the risks posed by various substances or activities within its jurisdiction.

(5) When an agency determines that a regulation is the best available method of achieving the regulatory objective, it shall design its regulations in the most cost-effective manner to achieve the regulatory objective. In doing so, each agency shall consider incentives for innovation, consistency, predictability, the costs of enforcement and compliance (to the government, regulated entities, and the public), flexibility, distributive impacts, and equity.

(6) Each agency shall assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.

(7) Each agency shall base its decisions on the best reasonably obtainable scientific, technical, economic, and other information concerning the need for, and consequences of, the intended regulation or guidance document.

(8) Each agency shall identify and assess alternative forms of regulation and shall, to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt.

(9) Wherever feasible, agencies shall seek views of appropriate State, local, and tribal officials before imposing regulatory requirements that might significantly or uniquely affect those governmental entities. Each agency shall assess the effects of Federal regulations on State, local, and tribal governments, including specifically the availability of resources to carry out those mandates, and seek to minimize those burdens that uniquely or significantly affect such governmental entities, consistent with achieving regulatory objectives. In addition, as appropriate, agencies shall seek to harmonize Federal regulatory actions with related State, local, and tribal regulatory and other governmental functions.

(10) Each agency shall avoid regulations and guidance documents that are inconsistent, incompatible, or duplicative with its other regulations and guidance documents or those of other Federal agencies.

(11) Each agency shall tailor its regulations and guidance documents to impose the least burden on society, including individuals, businesses of differing sizes, and other entities (including small communities and governmental entities), consistent with obtaining the regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations.

(12) Each agency shall draft its regulations and guidance documents to be simple and easy to understand, with the goal of minimizing the potential for uncertainty and litigation arising from such uncertainty.

8.8.1 Principle 1: Problems addressed

This Principle requires that, "*Each agency shall identify in writing the specific market failure (such as externalities, market power, lack of information) or other specific problem that it intends to address (including, where applicable, the failures of public institutions) that warrant new agency action, as well as assess the significance of that problem, to enable assessment of whether any new regulation is warranted."*

In the context of fish harvesting, market failures have been a problem five decades. The basis of the failure is biological (a finite, renewable resource), and institutional; however, the reason for proposed action is based on the biological need to end overfishing and rebuild several skate stocks. The multispecies nature of the vessels and gear that harvest skates, the geographical and seasonal differences and the (species correlated) differences in product markets between skate species, complicate attainment of this desirable conservation objective.

The ideas of species-specific, quantitative limits, or non-global input restrictions (e.g. Multi species days at sea), inevitably encounter difficulties when every species is to be maintained at some high level. An alternative might be based on revenue metrics such as revenue quotas of revenue days at sea. However, while these approaches might allow increased flexibility and reduce discards, their effects on particular low valued species is threatening under certain circumstances. The fact that they reduce the incentives to high grade and discard, also may mean increased catches of low-valued, high CPUE species; regardless of stock status.

The economic analysis has quantified the economic effects of the measures by a sensitivity analysis of alternative percentage reductions in skate landings. The measures used were economic surpluses of

buyers and sellers. These included a Buyers Surplus to skate marketers, Sellers' Surplus to skate harvesters, and a Buyers Surplus to the RI lobster industry. Changes in these surpluses were estimated for percentage reductions in skate landings fro zero percent (the status quo), to 50 percent. The following Figure 19 shows graphically how Economic Surpluses decline in all three sectors when skate landings fall. The largest surplus (and reduction thereof), is in the marketing of skates. The declines are linear when plotted against percent skate reduction. The total economic surplus declines range from zero at the status quo, to $568 thousand when skate landings are halved. Not only is the decrease largest for the marketing sector; the rate of decline is steeper. (It should be noted that the horizontal axis is percent decrease, not a in decrease in quantity of skate landings.) This is equivalent to a logarithmic scale. That is because, for example, a 10 percent decline from a base of 100pounds is a 10-pound reduction, but a 10 percent decline from a base of 20 pounds is only a 2-pound change.

8.8.2 Principle 2: Existing regulations

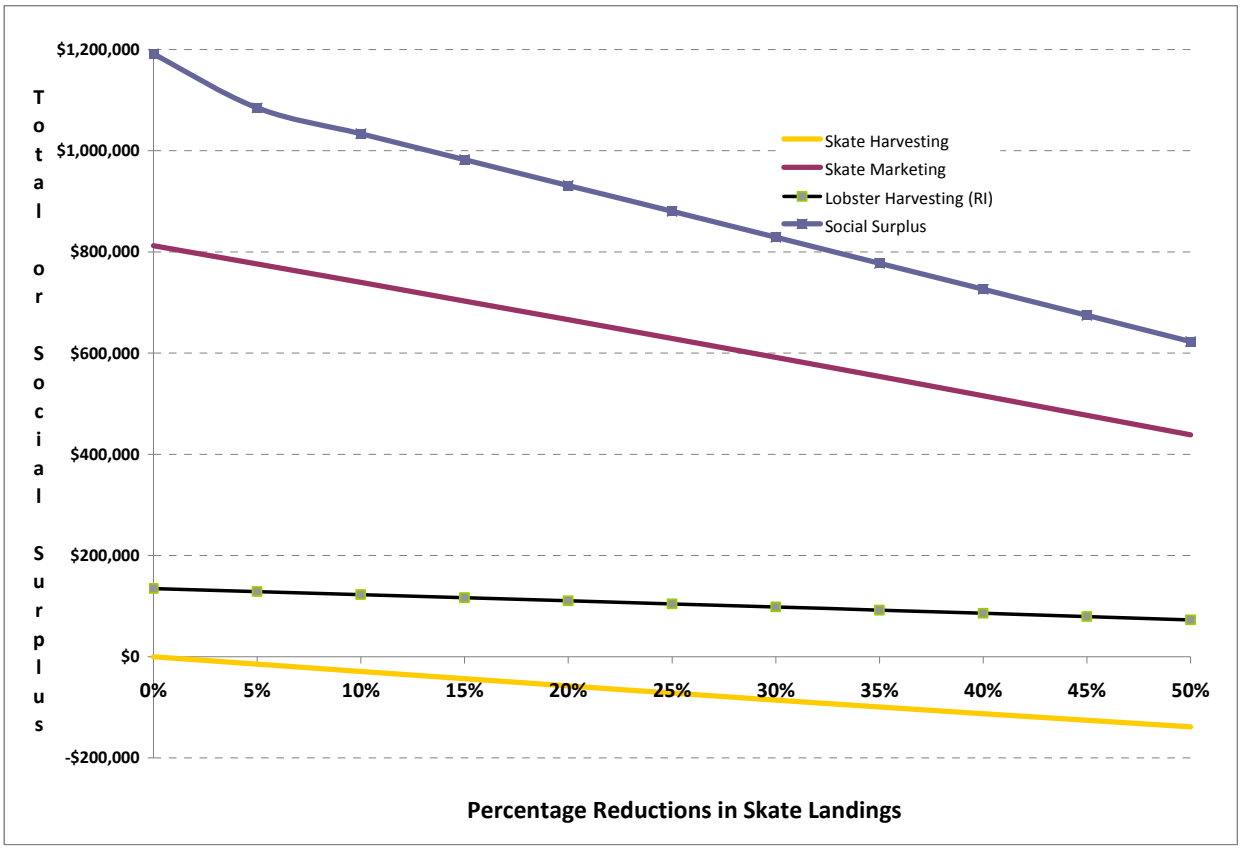
It is possible that existing regulations in the Multispecies fishery may have contributed to increased harvest of skates. However, DAS limits appear not to have been limiting in recent years (pers. Comm., E.Thunberg, NEFSC). Also, the statistical analyses of supply and demand show no patterns in recent years that could reasonably be imputed to existing regulations. An important factor has been increased export demand, undoubtedly encouraged by favorable exchange rates for US exports.

8.8.3 Principle 3: Alternatives

The Plan Development Team (PDT) for skates identified the following three area management options for analysis:

(1) Time/area closures that apply to vessels that target skate species
(2) Seasonal gear restricted areas that could apply to vessels fishing with any of the following gears: Trawls (small and large mesh), gillnets, scallop dredges, and hook gear.
(3) Seasonal gear restricted areas as above, but implemented as an in-season accountability measure (AM) triggered when catch exceeds a specified threshold.

Figure 19. Predicted change in economic surpluses by sector in response to lower skate landings.



8.8.4 Principle 4: Risks

No significant change in risks is expected.

8.8.5 Principle 5: Cost effectiveness

The incidence or distribution of economic surpluses between states is presumably related to the distribution of landings which was presented in Table 3 which was presented and discussed earlier. Note particularly the economic surplus decrease associated with the RI lobster fishery where small skates are used as bait. However, this is much the smaller of the measured surplus changes.

The enforceability of the options (repeated under Principle 3, above), appears reasonable. The three options are consistent with past regulations by the NEFMC. Incentives remain for innovation; indeed, concern is expressed that the supply curve may drift upward which would further diminish economic surpluses even if conservation objectives are realized.

8.8.6 Principle 6: Benefits and Costs

The costs (reductions in benefits) have been estimated for regulatory actions that reduce skate landings. The costs are measured by reduced economic surpluses as discussed earlier. Additional costs for monitoring and compliance have not been estimated but are not expected to be high since the proposed action would entail modifications to restrictions already in place. Estimation of benefits requires a projection of stock recovery rates. At present, biological knowledge of the various skate species is insufficient to permit such a projection.

8.8.7 Principle 7: Best Available Information

The FMP is based on the best available information.

8.8.8 Principle 8: Performance Objectives

The performance objective is stock recovery.

8.8.9 Principle 9: Views of Appropriate State, Local and Tribal Officials

The views of appropriate officials will be contained in public hearings and comments on the draft FMP.

8.8.10 Principle 10: Avoidance of Regulations that are Inconsistent, Incompatible or Duplicative

Avoidance is attained via the processes of Plan Development, Council and its advisory committees and the public review and comment process. In particular, the Skate FMP relies on regulations in other FMPs to the extent practicable to achieve its goals, because nearly all skate fishing must occur on a multispecies, monkfish, or scallop DAS trip. Thus, the Skate FMP avoids duplicate or incompatible regulations which apply to vessels permitted in these fisheries.

8.8.11 Principle 11: Least Burden on Society

The FMP for skates is based on rather minimal extension of similar regulations used in the Multispecies fishery whose vessels account for most of skate landings. The ideas of species-specific, quantitative limits, or non-global input restrictions (e.g. Multispecies DAS), inevitably encounter difficulties when every species is to be maintained at some high level. An alternative might be based on revenue metrics such as revenue quotas of revenue DAS. However, while these approaches might allow increased flexibility and reduce discards, their effects on particular low valued species is threatening under certain circumstances. The fact that they reduce the incentives to high grade and discard, also may mean increased catches of low-valued, high CPUE species; regardless of stock status.

8.8.12 Principle 12: Simplicity

The options proposed are simple and familiar, by example, to fishermen and regulators and should minimize uncertainty and litigation.

8.8.13 Summary and Conclusions

The proposed regulations would result in reductions in economic surpluses of $0-$568 thousand on an annual basis. A present value analysis was not done because the rates of recovery of skate stocks are unknown. These reductions in surpluses consist of reductions in (1)Buyers surplus (in skate marketing), Sellers' Surplus (in skate harvesting) and Buyers' Surplus (in the RI lobster fishery). The largest of these reductions in economic surplus is in Buyers' Surplus and amounts to two-thirds of the total.

The major regulatory question with the options proposed is their efficacy in achieving stock recovery. This question arises from uncertainties about the behavioral responses of fishermen and the available biological knowledge. It is reasonable to assert that, while uncertain in their effectiveness, the options presented are potentially more conservative than doing nothing. To the extent that the regulations are less than fully successful in reducing skate harvests, the projected reductions in economic surpluses will be correspondingly less.

8.8.13.1 Summary of Recreational Fishing Impacts

The proposed action has no effect on recreational fishing.

8.8.13.2 Mitigating Measures

No mitigation is necessary, since the environmental impacts

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8.9 COMPLIANCE WITH THE INFORMATION QUALITY ACT (IQA)

Pursuant to NMFS 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 information (including statistical information) disseminated by Federal agencies. The following paragraphs address these requirements.

8.9.1 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. The intended users of the information contained in this document include individuals involved in the skate fishery, (e.g., fishing vessels, fish processors, fish processors, fishery managers), and other individuals interested in the management of the skate fishery. The information contained in this document will be

helpful and beneficial to owners of vessels holding skate permits since it will notify these individuals of potential changes in skate management and applicable possession limits. This information will enable these individuals to adjust their management practices and make appropriate business decisions based upon this revision to the FMP.

Until a proposed rule is prepared and published, this EIS/RIR/IRFA 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 information contained in this document includes detailed and relatively recent information on the skate resource and, therefore, represents an improvement over previously available information. For example, the Affected Human Environment section of the EIS updated the information contained in the most recent (FY2002) Stock Assessment and Fishery Evaluation (SAFE Report) for the skate fishery (included in the EIS for the FMP). In addition, this document includes applicable information from the most recent skate stock assessment (July 2006). This EIS/RIR/IRFA will be subject to public comment through proposed rulemaking, as required under the Administrative Procedure Act and, therefore, may be improved based on comments received.

This document is available in several formats, including printed publication, and online through the NEFMC's web page (www.nefmc.org). The Federal Register notice that announces the proposed rule and the final rule and implementing regulations will be made available in printed publication, on the website for the Northeast Regional Office (www.nero.noaa.gov), and through the Regulations.gov website. The Federal Register documents will provide metric conversions for all measurements.

8.9.2 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 Service adheres to the standards set out in Appendix III, "Security of Automated Information Resources," of OMB Circular A-130; the Computer Security Act; and the Government Information Security Act. All confidential information (e.g., dealer purchase reports) is safeguarded pursuant to the Privacy Act; Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business, and financial information); the Confidentiality of Statistics provisions of the Magnuson-Stevens Act; and NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics.

8.9.3 Objectivity

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

This information product uses information of known quality from sources acceptable to the relevant scientific and technical communities. Several sources of data were used in the development of Amendment 3. These data sources included, but were not limited to, historical and current landings data from the Commercial Dealer Weighout database, vessel trip report (VTR) data, effort data collected through the multispecies/monkfish/scallop DAS programs (including VMS), fisheries independent data collected through the NMFS bottom trawl surveys, and the July 2006 skate stock assessment. Therefore,

the analyses contained in this document were prepared using data from accepted sources. Furthermore, these analyses have been reviewed by members of the Skate Plan Development Team.

Despite current data limitations, the conservation and management measures proposed for this action were selected based upon the best scientific information available. The analyses conducted in support of the proposed action were conducted using information from the most recent fishing years through FY2007. Specialists (including professional members of plan development teams, technical teams, committees, and Council staff) who worked with these data are familiar with the most current analytical techniques and with the available data and information relevant to the skate fishery. In addition, this action utilizes information from the July 2006 skate stock assessment updated with the 2006 and 2007 fisheries surveys, which are considered the best and most recent scientific information available concerning the status of the skate resource.

The policy choices are clearly articulated, in Section **Error! Reference source not found.**, as the management alternatives considered in this action. The supporting science and analyses, upon which the policy choices are based, are summarized and described in Section **Error! Reference source not found.**. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency.

The review process used in preparation of this document involves the responsible Council (the NEFMC), the Northeast Fisheries Science Center (Center), the Northeast Regional Office (NERO), and NMFS Service Headquarters. The Center's technical review is conducted by senior level scientists with specialties in population dynamics, stock assessment methods, demersal resources, population biology, and the social sciences. The Council review process involves public meetings at which affected stakeholders have opportunity to provide comments on the document. Review by staff at the Regional Office is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. Final approval of any proposed regulatory action, including any implementing regulations, is conducted by staff at NMFS Service Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget. In addition, the information contained in this document concerning skate stock status (Northeast "Data Poor" Stocks Working Group: Skate) was peer reviewed according to standard methodology (Stock Assessment Review Committee; SARC). A future review by this group is planned in December 2008.

8.10 Glossary of Terms and Acronyms

ABC – "Acceptable biological catch" means a level of a stock or stock complex's annual catch that accunts 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.)

$\mathbf{F_{0.1}}$ – 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.

$\mathbf{F_{MSY}}$ – 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.

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

$\mathbf{F_{target}}$ – 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.

$\mathbf{F_{threshold}}$ – 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.

TL – Total length of a fish, measured from the tip of the 'nose' to the most posterior point of the tail, often recorded in centimeters (cm).

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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