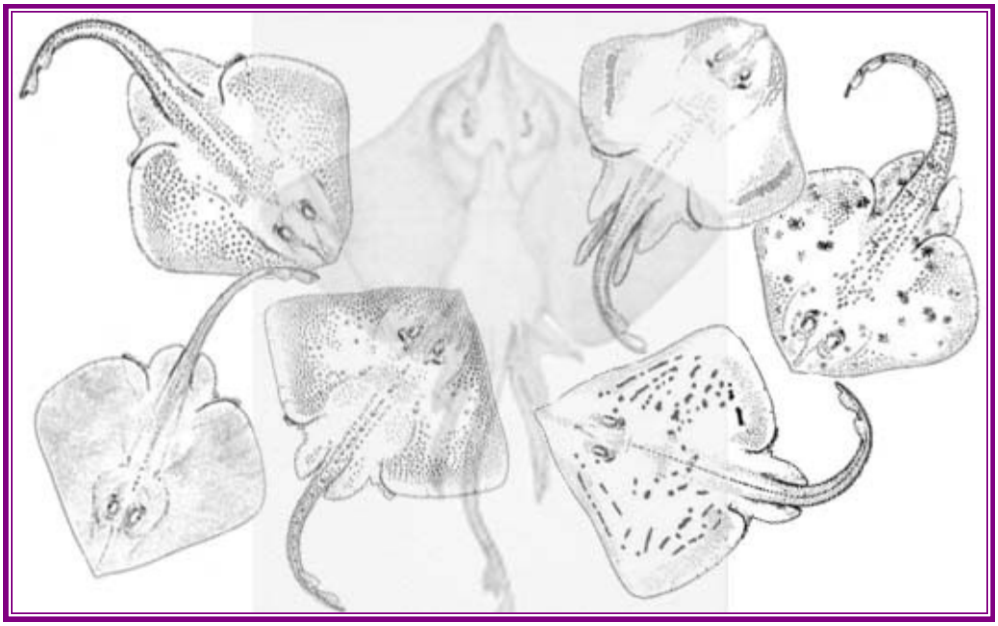
# FRAMEWORK ADJUSTMENT 1

# TO THE FISHERY MANAGEMENT PLAN

# FOR THE NORTHEAST SKATE COMPLEX

Including an Environmental Assessment and an Initial Regulatory Flexibility Analysis



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

*Initial Council Meeting: November 16-18, 2010*
*Final Council Meeting: January 25-27, 2011*
*Submission Date: March 23, 2011*

# 1.0 EXECUTIVE SUMMARY

The purpose of the framework adjustment is to propose modifications to current management plan for the new skate fishery 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 is likely during the current 2010– 2011 fishing year.

- 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).

**Background**

In July 2010, as part of the management program implemented through Amendment 3 to the Skate Complex FMP, total allowable landings (TAL) for vessels landing skate wings was set at 9,209 mt (20.302 million lbs.) live weight for the 2010-2011 fishing year, about 29% below landings in 2008 and 2009. To achieve this greatly reduced landings target, the possession/landing limit for vessels landing skate wings was dramatically lowered from 20,000 lbs. (wing weight) to 5,000 lbs. However, this reduction in the possession limit was not implemented until July 16, 2010, about 2-1/2 months into the fishing year which began on May 1. Consequently, landings were very high in the early part of the year and 80% of the TAL was reached on September 2, triggering a further reduction in the possession limit to 500 lbs. for the remaining eight months of the fishing year. As a result, it was no longer economically feasible for many vessels to make fishing trips that depended on skates for a major part of their revenue and many vessels either had to move to other fisheries or simply not fish. The almost complete shutdown of the skate wing fishery in September 2010 also had serious economic consequences for processors, wholesalers and distributors of skate wings, their employees and to shore-side businesses supporting the harvesting and marketing of skate wings. Wholesalers and distributers also reported that they were in danger of permanently losing buyers because the future supply of wings from the northeast U.S. might be unreliable. Consequently fishermen, processors and dealers requested the New England Fishery Management Council (Council) to take action to lessen their economic hardship. More specifically, these groups asked the Council to consider increasing the skate wing TAL if possible and if not, to implement a lower possession limit for the next fishing year, 2011-2012. The reason for the lower possession limit in the future is to allow vessels to fish longer under the targeted wing possession limit before the TAL trigger is reached and the targeted wing possession limit must be reduced to the incidental possession limit that in effect ends the targeted wing fishery.

In response to requests from skate fishermen and processors, the Council, at its meeting on November 17, 2010, initiated a framework adjustment to change the 2011 trip limit to maximize the duration of the 2011 skate wing fishery. With additional input from the fishing industry, this approach was later expanded to include consideration several types of adjustments to possession and landing regulations both to lengthen the season and to allow vessels that process skate wings at sea also to land skate carcasses for sale into the bait market (without counting the carcass landings against the TAL).

To meet the first objective of maximizing the duration of the targeted wing fishery, the Council proposes changing the targeted wing possession limit, the TAL trigger that reduces the targeted possession limit to the incidental limit and the amount of the incidental skate wing possession limit.

To meet the second objective, the Council proposes to modify landings regulations to allow skate carcasses to be landed along with skate wings subject to the restriction that the carcasses may only be landed in proportion to the amount of wing landings. The alternatives considered by the Council and the No Action alternative are summarized in Table 1 below. The proposed/preferred alternatives also are noted in the table. If approved the proposed action would be implemented on or as close to May 1, 2011 as possible and remain in effect until April 30, 2012.

**Table 1. Synopsis of proposed alternative in Section 4.0**

| **Skate wing possession limit alternatives** | **Proposed measure** | **Rationale** |
|---|---|---|
| 1 No Action<br>(Section 4.2.1.1) | 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 Preferred alternative – Proposed action<br>(Section 4.2.1.2) | Skate Wing Possession Limit 2,600 lbs. (5,902 lbs. whole weight) from May 1 to August 31; 4,100 lbs. (9,307 lbs. whole weight) September 1 to April 30 | This possession limit alternative would balance the impacts of a 2,600 lb. and 4,100 lb. limit and also allow more skates to be landed when market demand is high in the fall. |
| 3<br>(Section 4.2.1.3) | 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. |
| 4<br>(Section 4.2.1.4) | 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. |

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| 5<br>(Section 4.2.1.5) | 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. |
| **In-season possession limit triggers** | | |
| 1 No action<br>(Section 4.2.2.1) | 80% of TAL Trigger for Skate Wings | The 80% TAL trigger allowed the fishery to land the entire TAL in 2010 and is likely to do so in 2011 and future years. |
| 2 Preferred alternative – proposed action<br>(Section 4.2.2.3) | 85% of TAL Trigger for Skate Wings | Would allow a greater amount of skate directed fishing and enable the fishery to more easily achieve optimum yield, without an unacceptable risk of appreciably exceeding the skate wing TAL |
| 3 (Section 4.2.2.3) | 75% of TAL Trigger for Skate Wings | Would have lower risk of triggering other accountability measures caused by annual landings being over five percent above the TAL. |
| **Incidental skate possession limit** | | |
| 1 No action<br>(Section 4.2.3.1) | 500 lb. skate wing possession limit | A low limit reduces the risk that the TAL and possibly ABC will be exceeded. Increases discards, but reduces incentive to target skates after trigger reached. |
| 2 Preferred alternative – proposed action<br>(Section 4.2.3.3) | 1,250 lb. skate wing possession limit | Estimated to reduce discards by 21% compared to No Action. May cause TAL to be exceeded by small amount. |

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| 3 (Section 4.2.3.2) | 750 lb. skate wing possession limit | Estimated to reduce discards by 8% compared to No Action. Intermediate in affect compared to No Action and proposed action. |
| **Skate landings monitoring alternatives** | | |
| 1 No Action monitoring (Section 4.2.4.1) | 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 Preferred alternative – proposed action (Section 4.2.4.2) | 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 | Help promote more complete and efficient utilization of skate resources. |

**Summary of Environmental Consequences of the Proposed Action**

As detailed in Section 6.0, Environmental Consequences, the impacts of the proposed action on the human environment is expected to be positive compared to taking no action. Impacts with respect to target species, non-target species, protected species and habitat, including essential fish habitat, are expected to be neutral.

As noted in the EIS for Amendment 3, the skate fishery is managed under annual catch limits ACLs) and accountability measures (AMs) that will provide robust controls on fishing effort and prevent overfishing. This framework action will adjust possession limits and landings regulations within the ACLs and AMs already approved in Amendment 3 to achieve more positive economic and social benefits.

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## *2.1 List of Tables*

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## *2.3 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 purpose of this action is to extend the length of the targeted skate wing fishery to improve the economic benefits derived from the skate fishery. The need for the action was demonstrated by the reduction in the targeted skate wing possession limit to the incidental possession limit, which effectively ended the targeted wing fishery, less than three months after the implementation of Amendment 3 to the Fishery Management Plan for the Northeast Skate Complex on July 16, 2010.

Landings of skate wings approached the 2010 TAL trigger (80% of the annual wing landings limit or TAL) very early in the fishing year which ends on April 30. As a result, it TAL probably would have been exceeded by the end of the fishing year causing the Regional Administrator reduced the skate wing possession limit to 500 lbs. on September 3. This action reportedly caused severe disruption to the harvesting, processing and distribution sectors of the skate fishery and markets. 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 enable the skate wing fishery to reach the TAL later in the fishing year than it did in 2010.

Part of the problem was caused by delayed implementation of the 5,000 lb. skate wing possession limit on July 16, 2010 rather than at the May 1 start of the fishing year and landings nearly doubled from 2009 while the former 20,000 lb. skate wing possession limit was in effect during that period. 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** | *Leucoraja* | Inshore and offshore | Large | • **Big Skate** |

| | | | | |
|---|---|---|---|---|
| **Skate** | *ocellata* | GB and SNE with lesser amounts in GOM or MA | (> 100 cm) | • **Spotted Skate**<br>• **Eyed Skate** |
| **Barndoor Skate** | *Dipturus laevis* | Offshore GOM (Canadian waters), offshore GB and SNE (very few inshore or in MA region) | Large (> 100 cm) | |
| **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**<br>• **Starry Skate**<br>• **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**<br>• **Prickly Skate** |
| **Little Skate** | *Leucoraja erinacea* | Inshore and offshore GB, SNE, and MA (lower abundance in GOM) | Small (< 100 cm) | • **Common Skate**<br>• **Summer Skate**<br>• **Hedgehog Skate**<br>• **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 5.5.1.

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 30$^{th}$ 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 2004[1]. 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 Amendment[2] was implemented on February 27, 2008.

In the Scallop FMP[3], 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

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.

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).

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. 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 overfishing[4].

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.

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 Workshop changed the status determinations for smooth 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 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 Skate FMP 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.

#### 3.2.2.1 Fishery and Management Actions in 2010

This framework document was developed in the middle of the 2010 fishing year, therefore any data for this fishing year 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.

Landings and discards for 2009 were however updated and included in this document in Sections 0 and 5.5.1.7. While the 20,000 lb. skate wing possession limit was effective before July 16, 2010 the skate wing landings nearly doubled compared to the same period in 2009. Furthermore, the daily landings of skate wings only declined by 19% when the 5,000 lb. skate wing possession limit was in effect from July 16 to September 3, 2010, compared to the same time period in 2009. Once the 500 lbs. incidental skate wing limit became effective on September 3, 2010 the daily wing landings dropped and it appears that the skate wing TAL will be exceeded only by a small amount, despite the high landings under the 20,000 lb. possession limit early in the fishing year. Discards on some trips have undoubtedly increased, but the reduced possession limit will prevent boats from making trips to target skates, the reduced mortality possibly offsetting most or all of this anticipated increase in discards on trips targeting non-skate species. Therefore the effect on total discards is unknown at this point.

At this time, it appears that skate bait landings have remained stable and slightly higher than 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, which yield wings that are too small to be generally marketable. This size limit 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, its 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 considered, but not used in the 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 gear calibrations had not been completed.

As a result of this re-analysis and update of skate fishery and resource characteristics, the Council approved new specifications, shown in the table below, for the 2010 and 2011 fishing years.

**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 |

## *3.3 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

| | 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 |

**These values take into account the 2005-2007 discard rate using DPWS catch data using the selectivity ogive method to assign species to catch[5].**

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

## *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. 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.

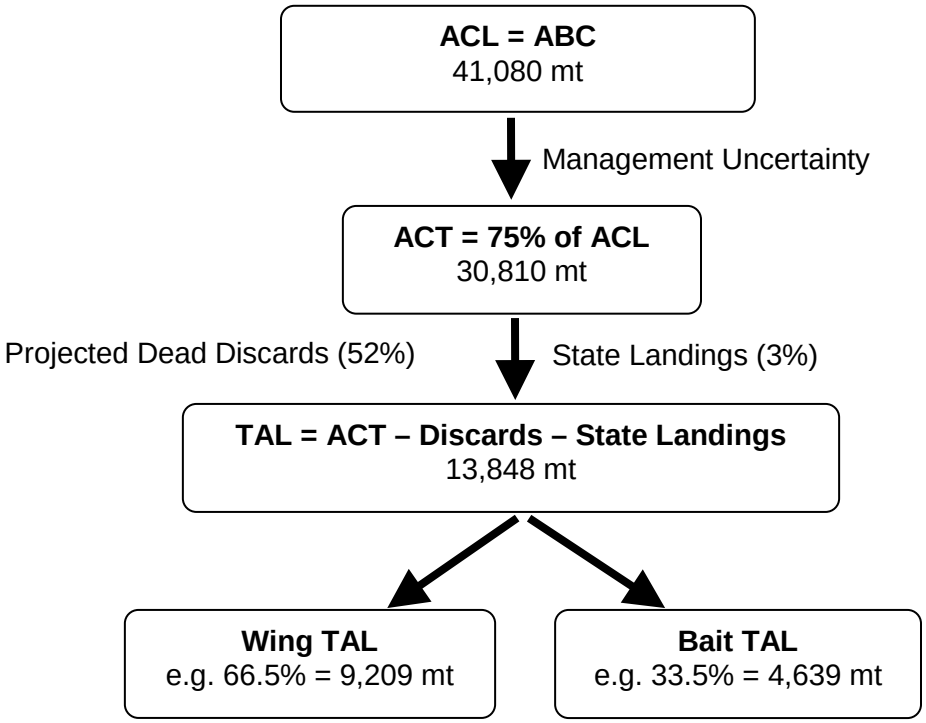
**Table 5. Exploitation ratios and survey values for managed skates, with estimates of annual catch limits, annual catch targets, and total allowable landings**. (The ACL/ABC, ACT and TAL take into account the 2007-2009 discard rate, compared to MSY values when skate biomass is at the target.)

| | 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 |

## *3.5 ABC and ACL specifications*

At current skate biomass (2006-2008), the 2010-2011 an annual catch target (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 historical catches that were less than this ratio, more frequently than not (i.e. > 50% of the time), were 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 of 13,848 mt that 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.




## *3.6 Stock status*

See Section 5.2.1.

## *3.7 Essential Fish Habitat (EFH)*

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

This 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 Preferred alternative – proposed action*

This section summarizes the alternatives that comprise the proposed action. For ease of reference, these alternatives also are repeated in Section 4.2 together with the other alternatives considered by the Council.

### 4.1.1 Skate wing possession limit - 2,600 lbs. May-Aug; 4,100 lbs. after Sep 1

2,600 lbs. (5,902 lbs. whole weight) from May 1 to August 31; 4,100 lbs. (9,307 lbs. whole weight) September 1 until in-season incidental possession limit trigger is reached

The skate wing possession limit would be lowered from 5,000 lbs. (11,350 lbs. whole weight) to 2,600 lbs. (5,902 lbs. whole weight) beginning on May 1, 2011 or as soon as practicable thereafter and would remain in effect until no later than August 31, 2011. On September 1, 2011, the skate wing possession limit would increase to 4,100 lbs. (9,307 lbs. whole weight) until the end of the fishing year or until the TAL trigger caused the Regional Administrator to reduce the skate wing possession limit to the incidental skate wing possession limit. The skate wing possession limit would automatically adjust on these same dates in subsequent fishing years.

**Rationale**: The split season possession limit would reduce the incentive for derby fishing early in the fishing year, when skate wing prices are comparatively low. More skate would be landed after September 1 when there is more demand for skate wings, prices are higher, and product quality is better. The split season possession limit also would increase the time before the 85% TAL trigger would be reached and therefore increase the chance of enabling the mixed skate and monkfish gillnet fishery in the spring.

These possession limits would extend the season longer than had occurred in 2010 with a 5,000 lbs. skate wing possession limit, but is not expected to last the entire fishing year unless the 2011 TAL is raised.

### 4.1.2 In-season possession limit trigger - Skate Wing TAL Trigger – 85%

When the wing fishery harvests 85% of its TAL, the Regional Administrator will have the authority to reduce the wing possession limit to the incidental skate wing possession limit for the remainder of the fishing year. The decision to reduce the skate wing possession limit will require a determination that absent such action, the skate wing fishery would exceed the TAL by the end of the fishing year.

When the bait fishery harvests 90% of its seasonal quota, the Regional Administrator also would have the authority to reduce the possession limit for the bait fishery to the whole-weight equivalent of the wing fishery limit for the rest of that quota period, assuming the wing fishery is also open. If the wing fishery is closed, the possession limit would be reduced to 2,838 lbs. whole weight for the remainder of the quota period.

For example, if the bait fishery has a trip limit of 20,000 lb. whole weight, and the wing fishery has a trip limit of 4,100 lb. wing weight (9,307 lb. whole weight), when the bait fishery harvests 90% of its TAL (or seasonal quota), its trip limit would be reduced to 9,307 lb. whole weight for the remainder of the year (or season). This would reduce fishing in the directed skate bait fishery, while still allowing some bait landings. It would also reduce the incentive for bait vessels to land whole skates, and have the landings

applied to the wing TAL. Subsequently, when the wing fishery harvests 85% of its TAL, the possession limit for both fisheries would be reduced to the incidental level of 1,250 lb. wing weight (2,838 lb. whole weight).

**Rationale**: Increasing the wing fishery TAL trigger by 5% would extend the targeted wing season somewhat without compromising the purpose of the trigger point AM, which is to constrain overall landings to the TAL. The extended season would provide economic benefits to fishermen, dealers, processors and fishing communities. The FMP includes accountability measures which will be implemented if the landings exceed the TAL by more than five percent.

### 4.1.3 Incidental skate wing possession limit - 1,250 lbs. skate wing possession limit (2,838 lbs. whole weight)

When the skate wing landings reach the TAL trigger and the Regional Administrator determines that the skate fishery would otherwise exceed the TAL by the end of the fishing year, the skate wing possession limit will be reduced to 1,250 lbs. of skate wings (2,838 lbs. whole weight), except for vessels fishing for skates under a Skate Bait Letter of Authorization unless the skate bait fishery has also landed its TAL trigger.

**Rationale**: The Council chose this alternative because it was calculated to reduce discards by 21 percent compared with discards calculated to occur with the No Action incidental skate wing possession limit (See **Table 35**). Even though the directed skate wing fishery was estimated to close around January with the lowered skate wing possession limits in the final alternative, analysis of the 2010 daily landings rates the total annual landings by the skate wing fishery would not greatly exceed the existing 2011 TAL.

The additional landings compared to the No Action incidental possession limit of 500 lbs. may also help support skate markets while the directed fishing is curtailed and may allow the spring monkfish fishery to take place in SNE in which incidental landings skate wings to augment revenue from monkfish landings are needed to make trips economically feasible.

### 4.1.4 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 lbs. of skate wings x 2.27 = 227 lbs. 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 lbs. 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 prohibited.

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 this measures it to allow more complete utilization of the skate resource.

Under the proposed measure, 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.

## *4.2 Management alternatives considered by the Council*

### 4.2.1 Changes to the Skate Wing Possession Limit

#### 4.2.1.1 No Action – Skate Wing Possession Limit to Remain at 5,000 Pounds (11,350 lbs. whole weight)

Beginning on May 1, 2011 until the skate wing TAL is reached, 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.

**Rationale**: Although the skate wing TAL trigger was met on September 3, 2010, daily skate wing landings occurred at a much higher rate (+67%) than in 2009, while the 20,000 lbs. skate wing possession limit remained in effect until July 16, 2010. By then, 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 from May 1 until July 2010 probably would not have occurred and the skate wing possession limit might not have been reduced to the incidental 500 lb. skate wing limit until much later in the fishing year. However, 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 similar to the levels 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 lb. 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 3, 2010, 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.

#### 4.2.1.2 Preferred alternative (Proposed action) - 2,600 lbs. (5,902 lbs. whole weight) from May 1 to August 31; 4,100 lbs. (9,307 lbs. whole weight) from September 1 until in-season incidental possession limit trigger is reached

The skate wing possession limit would be lowered from 5,000 lbs. (11,350 lbs. whole weight) to 2,600 lbs. (5,902 lbs. whole weight) beginning on May 1, 2011 or as soon as practicable thereafter and would remain in effect until no later than August 31, 2011. On September 1, 2011, the skate wing possession limit would increase to 4,100 lbs. (9,307 lbs. whole weight) until the end of the fishing year or until the TAL trigger caused the Regional Administrator to reduce the skate wing possession limit to the incidental

skate wing possession limit. The skate wing possession limit would automatically adjust on these same dates in subsequent fishing years.

**Rationale**: The rationale for this alternative is provided above in Section 4.1.1.

#### 4.2.1.3 Alternative 1: 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 the TAL trigger 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 the incidental skate wing possession limit 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 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 "greater risk in exceeding the ABC due to unaccounted discards and would be "more likely to cause the in-season 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.

#### 4.2.1.4 Alternative 2: 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 the TAL trigger 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 the skate wing possession limit 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.

#### 4.2.1.5 Alternative 3: 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 the TAL trigger 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 the incidental skate wing possession limit 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.

### 4.2.2 In-season possession limit triggers

Although the Magnuson Fishery Conservation and Management Act requires Councils to establish accountability measures to ensure that catches do not exceed the ABC, this is difficult to implement proactively (i.e. in the same fishing year) without real time monitoring and estimation of discards, which causes the majority of skate mortality.

#### 4.2.2.1 No action: Skate Wing TAL Trigger – 80%

The skate wing fishery TAL trigger would remain at 80% of the annual TAL, administered as it was in the 2010 fishing year, but at a different date that reflects the actual pace of skate wing landings.

When the wing fishery harvests 80% of its TAL, the Regional Administrator will have the authority to reduce the incidental wing possession limit for the remainder of the fishing year. The decision to reduce the skate wing possession limit will require a determination that absent such action, the skate wing fishery would exceed the TAL by the end of the fishing year.

When the bait fishery harvests 90% of its seasonal quota, the Regional Administrator will also have the authority to reduce the possession limit for the bait fishery to the whole-weight equivalent of the wing fishery limit for the rest of that quota period, assuming the wing fishery is also open. If the wing fishery

is closed, the possession limit will be reduced to 2,838 lbs. whole weight for the remainder of the quota period.

For example, if the bait fishery has a trip limit of 20,000 lb. whole weight, and the wing fishery has a trip limit of 4,100 lb. wing weight (9,307 lb. whole weight), when the bait fishery harvests 90% of its TAL (or seasonal quota), its trip limit would be reduced to 9,307 lb. whole weight for the remainder of the year (or season). This would reduce fishing in the directed skate bait fishery, while still allowing some bait landings. It would also reduce the incentive for bait vessels to land whole skates, and have the landings applied to the wing TAL. Subsequently, when the wing fishery harvests 85% of its TAL, the possession limit for both fisheries would be reduced to the incidental level of 1,250 lb. wing weight (2,838 lb. whole weight).

**Rationale**: The 80% TAL trigger allowed the fishery to land the entire TAL in 2010 and is likely to do so in 2011 and future years.

#### 4.2.2.2 Alternative 1: Skate Wing TAL Trigger - 75%

When the wing fishery harvests 75% of its TAL, the Regional Administrator will have the authority to reduce the wing possession limit to the incidental skate wing possession limit for the remainder of the fishing year. The decision to reduce the skate wing possession limit will require a determination that absent such action, the skate wing fishery would exceed the TAL by the end of the fishing year.

When the bait fishery harvests 90% of its seasonal quota, the Regional Administrator will also have the authority to reduce the possession limit for the bait fishery to the whole-weight equivalent of the wing fishery limit for the rest of that quota period, assuming the wing fishery is also open. If the wing fishery is closed, the possession limit will be reduced to 2,838 lbs. whole weight for the remainder of the quota period.

For example, if the bait fishery has a trip limit of 20,000 lb. whole weight, and the wing fishery has a trip limit of 4,100 lb. wing weight (9,307 lb. whole weight), when the bait fishery harvests 90% of its TAL (or seasonal quota), its trip limit would be reduced to 9,307 lb. whole weight for the remainder of the year (or season). This would reduce fishing in the directed skate bait fishery, while still allowing some bait landings. It would also reduce the incentive for bait vessels to land whole skates, and have the landings applied to the wing TAL. Subsequently, when the wing fishery harvests 85% of its TAL, the possession limit for both fisheries would be reduced to the incidental level of 1,250 lb. wing weight (2,838 lb. whole weight).

**Rationale**: This alternative would be safer and have lower risk of triggering other accountability measures caused by annual landings being over five percent above the TAL. Also, a greater proportion of the TAL would be reserved for incidental landings by vessels targeting other species, thereby reducing discards, especially when combined with a higher incidental skate wing possession limit. A five-percent reduction in the trigger would cause the directed skate fishery to close about two weeks earlier than the under No Action.

#### 4.2.2.3 Preferred Alternative (Proposed Action): In-season possession limit trigger - Skate Wing TAL Trigger – 85%

When the wing fishery harvests 85% of its TAL, the Regional Administrator will have the authority to reduce the wing possession limit to the incidental skate wing possession limit for the remainder of the fishing year. The decision to reduce the skate wing possession limit will require a determination that absent such action, the skate wing fishery would exceed the TAL by the end of the fishing year.

When the bait fishery harvests 90% of its seasonal quota, the Regional Administrator will also have the authority to reduce the possession limit for the bait fishery to the whole-weight equivalent of the wing fishery limit for the rest of that quota period, assuming the wing fishery is also open. If the wing fishery is closed, the possession limit will be reduced to 2,838 lbs. whole weight for the remainder of the quota period.

For example, if the bait fishery has a trip limit of 20,000 lb. whole weight, and the wing fishery has a trip limit of 4,100 lb. wing weight (9,307 lb. whole weight), when the bait fishery harvests 90% of its TAL (or seasonal quota), its trip limit would be reduced to 9,307 lb. whole weight for the remainder of the year (or season). This would reduce fishing in the directed skate bait fishery, while still allowing some bait landings. It would also reduce the incentive for bait vessels to land whole skates, and have the landings applied to the wing TAL. Subsequently, when the wing fishery harvests 85% of its TAL, the possession limit for both fisheries would be reduced to the incidental level of 1,250 lb. wing weight (2,838 lb. whole weight).

**Rationale**: The rationale for this alternative is provided above in Section 4.1.2.

### 4.2.3 Incidental skate wing possession limit

The purpose of the incidental skate possession limit is to curtail directed skate fishing when landings approach allowable limits, without causing excessive discarding by vessels that target other species by catch and land a limited amount of skates. The incidental limit is also intended to allow a limited amount of non-targeted skate landings without causing the fishery landings to exceed the TAL, or especially trigger a future accountability measure.

When the fishing year landings from the skate wing fishery reach the TAL trigger, the Skate FMP authorizes the Regional Administrator to reduce the skate possession limit to the incidental level for the remainder of the fishing year, if it appears that the fishery would otherwise exceed the TAL by the end of the year. This limit then applies to all vessels landing skates, unless they are fishing under a Skate Bait Letter of Authorization. If the skate bait fishery also has had landings that exceed the TAL trigger and the Regional Administrator has also suspended the 20,000 lbs. whole skate possession limit for vessels with a Letter of Authorization, then the incidental skate possession limit would apply to all vessels that land skates.

Amendment 3 established a 500 lbs. skate wing possession limit (1137 lbs. whole) for this purpose, raised from an original 220 lbs. skate wing possession limit (500 lbs. whole) in the draft amendment. Landings met the 80% skate wing TAL trigger on September 3, 2010 and will remain in place for the fishing year. Fishermen report however that this low limit was insufficient to maintain markets, particularly overseas, and caused excessive discarding.

#### 4.2.3.1 No action: 500 lb. skate wing possession limit (1,137 lbs. whole weight)

When the skate wing landings reach the TAL trigger and the Regional Administrator determines that the skate fishery would otherwise exceed the TAL by the end of the fishing year, the skate wing possession limit will be reduced to 500 lbs. of skate wings (1,135 lbs. whole weight), except for vessels fishing for skates under a Skate Bait Letter of Authorization unless the skate bait fishery has also landed its TAL trigger.

**Rationale**: A low possession limit reduces the risk that the skate fishery will go over the landings limits and possibly exceed the TAL. Many vessels historically landed less than 500 lbs. of skate wings (or 1,137 lbs. of whole skates) while targeting other species. A low incidental skate wing possession limit also reduces the incentive to partially target skates while the directed fishery is meant to be closed.

#### 4.2.3.2 Alternative 1: 750 lb. skate wing possession limit (1,703 lbs. whole weight)

When the skate wing landings reach the TAL trigger and the Regional Administrator determines that the skate fishery would otherwise exceed the TAL by the end of the fishing year, the skate wing possession limit will be reduced to 750 lbs. of skate wings (1,703 lbs. whole weight), except for vessels fishing for skates under a Skate Bait Letter of Authorization unless the skate bait fishery has also landed its TAL trigger.

**Rationale**: Raising the incidental skate wing possession limit would reduce skate discards by 8 percent compared to No Action (Section 6.1.1.2 ) and have fewer economic effects on vessels and ports assuming that the TAL trigger does not change. The additional landings may also help support skate markets while the directed fishing is curtailed.

An intermediate limit could have these effects without increasing the incentive to target skates on day trips or partially target skates on mixed species trips, an effect that could trigger additional accountability measures if landings significantly exceed the TAL or the catch exceeds the ABC. An increase in the limit compared to No Action also may help reduce discards, particularly in the spring monkfish fishery which incidentally landings skate wings to augment revenue from monkfish landings.

#### 4.2.3.3 Preferred Alternative (Proposed Action): 1,250 lbs. skate wing possession limit (2,838 lbs. whole weight)

When the skate wing landings reach the TAL trigger and the Regional Administrator determines that the skate fishery would otherwise exceed the TAL by the end of the fishing year, the skate wing possession limit will be reduced to 1,250 lbs. of skate wings (2,838 lbs. whole weight), except for vessels fishing for skates under a Skate Bait Letter of Authorization unless the skate bait fishery has also landed its TAL trigger.

**Rationale**: The rationale for this alternative is provided above in Section 4.1.3.

### 4.2.4 Possession of carcasses in the wing fishery

#### 4.2.4.1 No Action

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**: No Action 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.

#### 4.2.4.2 Preferred Alternative (Proposed action): 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**: The rationale for this alternative is provided above in Section 4.1.4.

## *4.3 CONSIDERED AND REJECTED ALTERNATIVES*

### 4.3.1 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 AFFECTED ENVIRONMENT (EA)

Since the Council prepared an Affected Environment description as part of Amendment 3, which was implemented in July 2010, 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.

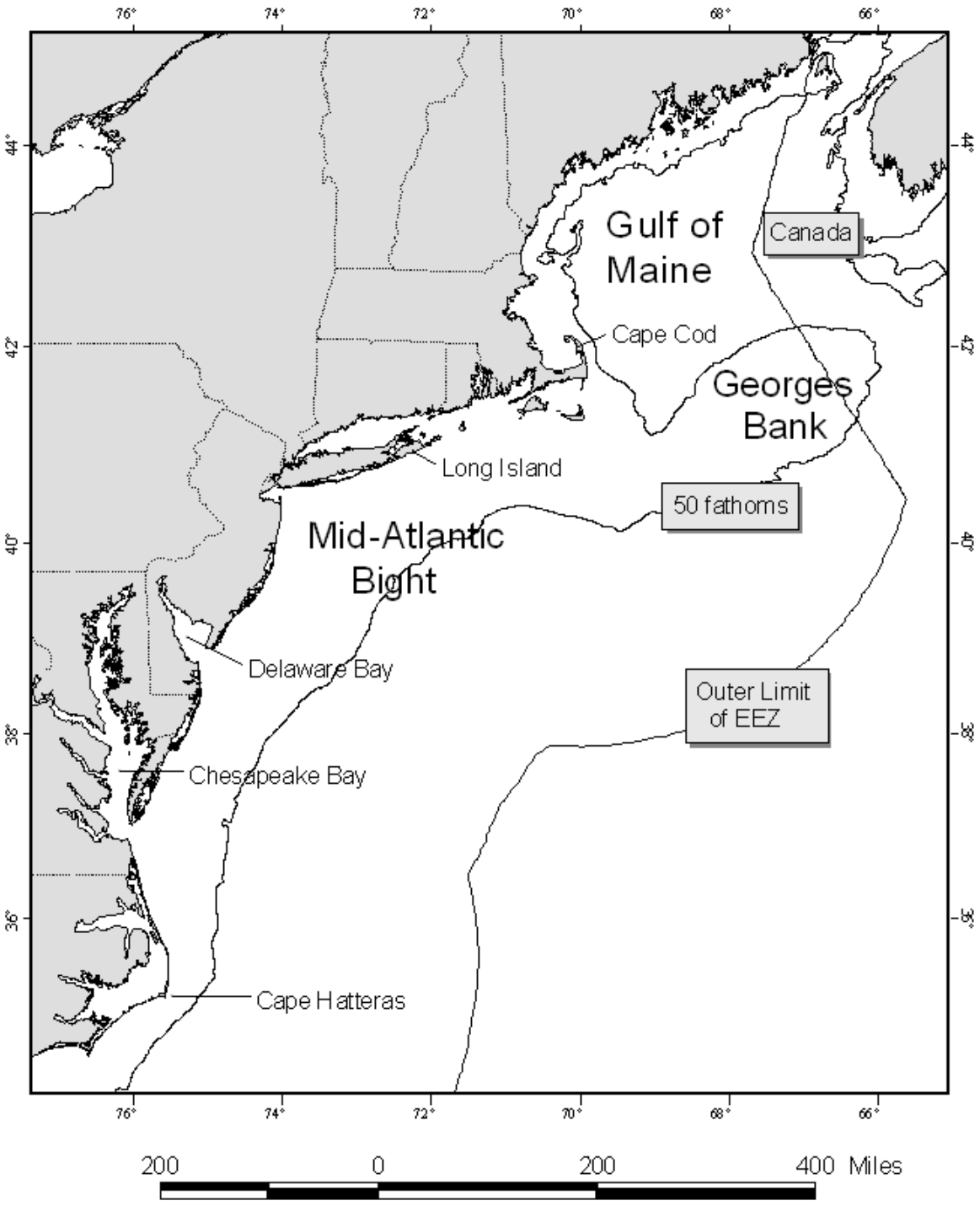
## *5.1 Physical Environment*

The Northeast U.S. Shelf Ecosystem has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream (Map 1). 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.

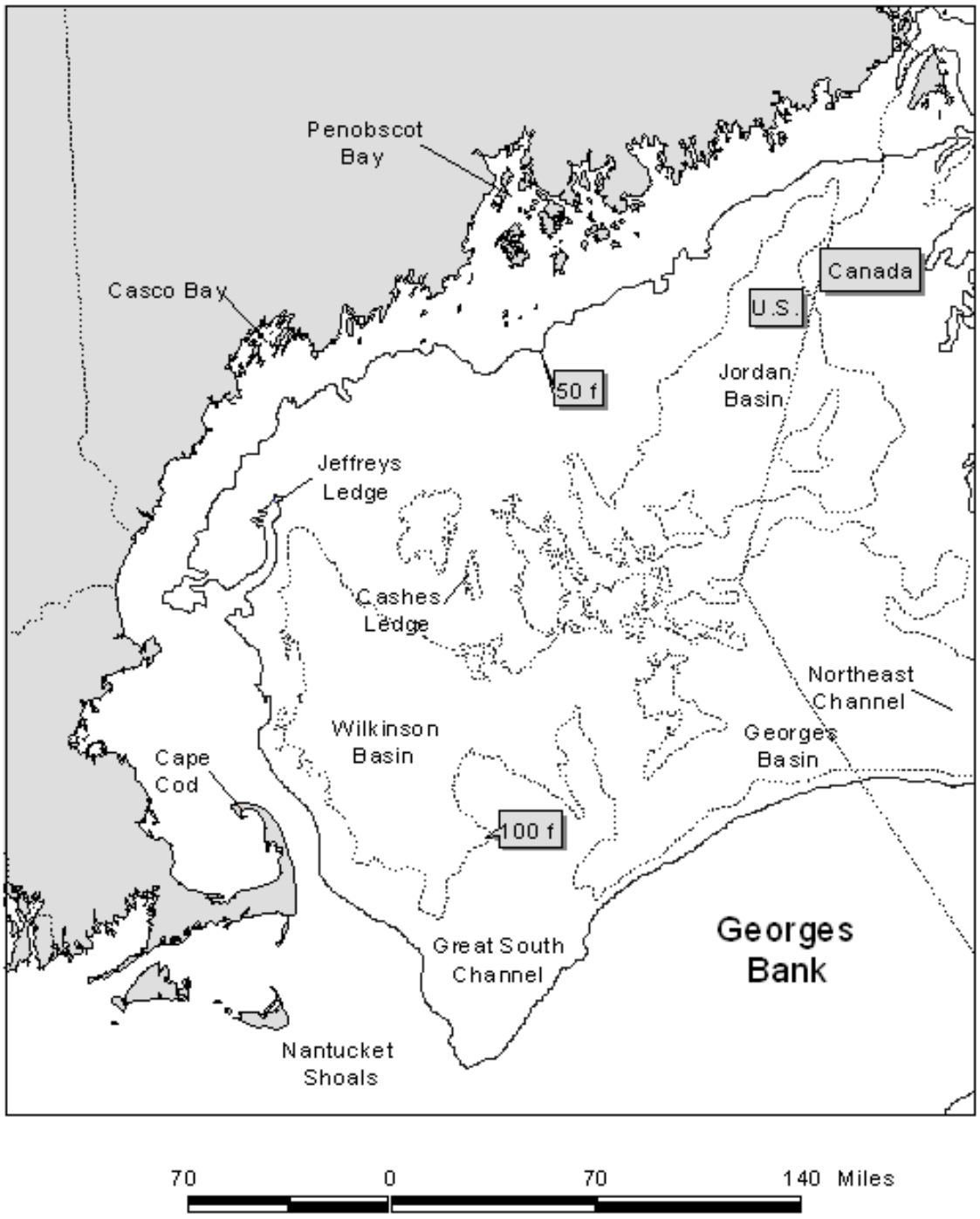
The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types (Map 2). Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is fairly homogenous, with exceptions at the shelf break, some of the canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom.

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

**Map 1 Northeast Shelf Ecosystem**



Map 2 Gulf of Maine



Gulf of Maine

Although not obvious in appearance, the Gulf of Maine (GOM) is actually an enclosed coastal sea, bounded on the east by Browns Bank, on the north by the Nova Scotian (Scotian) Shelf, on the west by the New England states, and on the south by Cape Cod and Georges Bank (Figure 2). The GOM was glacially derived, and is characterized by a system of deep basins, moraines and rocky protrusions with limited access to the open ocean. This geomorphology influences complex oceanographic processes that result in a rich biological community.

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

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

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

Georges Bank

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

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

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

The area west of the Great South Channel, known as Nantucket Shoals (Figure 2), is similar in nature to the central region of the Bank. Currents in these areas are strongest where water depth is shallower than 50 m. This type of traveling dune and swale morphology is also found in the Mid-Atlantic Bight, and further described in that section of the document. The Great South Channel separates the main part of Georges Bank from Nantucket Shoals. Sediments in this region include gravel pavement and mounds, some scattered boulders, sand with storm generated ripples, and scattered shell and mussel beds. Tidal and storm currents range from moderate to strong, depending upon location and storm activity (Valentine, pers. comm.).

Mid-Atlantic Bight

The Mid-Atlantic Bight includes the shelf and slope waters from Georges Bank south to Cape Hatteras, and east to the Gulf Stream (Figure 1). Like the rest of the continental shelf, the topography of the Mid-Atlantic Bight was shaped largely by sea level fluctuations caused by past ice ages. The shelf's basic morphology and sediments derive from the retreat of the last ice sheet, and the subsequent rise in sea level. Since that time, currents and waves have modified this basic structure.

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

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

extensive deposition at a cape or estuary mouth. Massifs were also formed as estuaries retreated across the shelf.

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

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

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

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

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

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

## *5.2 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 6 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 6. 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<br>Males: 73 cm<br>85 cm | Big Skate<br>Spotted Skate<br>Eyed Skate |
| Barndoor Skate | *Dipturus laevis* | Offshore GOM (Canadian waters), offshore GB and SNE (very few inshore or in MA region) | Males (GB): 108cm<br>Females (GB): 116 cm | |
| Thorny Skate | *Amblyraja radiate* | Inshore and offshore GOM, along the 100 fm edge of GB (very few in SNE or MA) | Males (GOM): 87 cm<br>Females (GOM): 88 cm<br><br>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<br>Prickly Skate |
| Little Skate | *Leucoraja erinacea* | Inshore and offshore GB, SNE and MA (very few in GOM) | 40-50 cm | Common Skate<br>Summer Skate<br>Hedgehog Skate<br>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.*

### 5.2.1 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 first published in a working paper (Miller et al. 2009) which was peer reviewed special Stock Assessment Workshop meeting in August 2009. Calibration coefficients using more data for more species were later published (Miller et al 2010), but peer review of how these calibrations were applied were left to individual SAW assessments.

On January 13, 2011, the Council was informed by the NEFMC of updated skate status determinations, which utilize the 2009 and 2010 survey data collected with the new survey gear using the FSV Bigelow. These data were calibrated using coefficients estimated in Miller et al 2010, based on methods that were peer reviewed in a special SAW review in August 2009. At the time of the review, only calibration coefficient estimates for little and winter skate were calculated and the report recommended more detailed review of the calibrations in future assessments.

Nonetheless the current preliminary calibrations were updated using the length-aggregated calibration coefficients. Using these data (Table 8), there are no skate species where overfishing is occurring (Table 7) according to the FMP definition of overfishing (see NEFMC 2010). In fact considerable increases in skate biomass appear to have occurred in 2009 and 2010 for little and winter skates (Table 8). Barndoor skate is in a rebuilding program and biomass has stabilized near 1.1 kg/tow, in between the minimum biomass threshold (0.81 kg/tow) and the target (1.61 kg/tow). Clearnose, little, and winter skate biomasses are at or above their biomass targets[6]. Rosette skate biomass has slipped below the biomass target somewhat, but survey catches are infrequent and this variation is just random noise.

Smooth and thorny skates were both overfished and are both in a rebuilding program established by Amendment 3. Smooth skate biomass continues to vary without trend around the minimum biomass threshold (0.145 kg/tow). In 2010, using preliminary calibrations, the biomass is slightly above the minimum biomass threshold and is therefore no longer overfished, although the margin between the threshold and the current value is also probably just random noise. The overfished status of smooth skate could easily change if different calibration methods are peer reviewed and adopted.

Overfishing of thorny skate was technically occurring in 2009, but is not occurring in 2010. Since overfishing is defined as a rate of biomass change, the overfishing status is often ephemeral and simply reflects the slope of the decline. Thorny skate biomass continues to decline and remains overfished, i.e. below the minimum biomass threshold of 2.06 kg/tow (Table 8). The current 3 year moving average declined from 0.42 in 2007 to 0.25 kg/tow in 2010. The current status of thorny skate is therefore overfished, but overfishing is not occurring (Table 7).

Winter skate biomass was 2.93 kg/tow in 2007 (Table 8), slightly above the 2.8 kg/tow minimum biomass threshold that was updated and re-specified in Amendment 3. Although it had been previously classified as overfished using old reference points, the updated reference points indicate that winter skate had not been overfished and Amendment 3 used this updated status determination that was the result of the DPWS assessment. Since then, winter skate biomass has skyrocketed to 9.64 kg/tow, well above the

6. Clearnose, little, and winter skates were never overfished (i.e. below the minimum biomass threshold), so they are not technically “rebuilt”.

biomass target. Although the cause of this abrupt increase are unknown, it first appeared in the 2008 survey and appeared mainly in winter skates of intermediate size, suggesting to the Skate PDT that the increase was due to migration, which was previously observed (Frisk et al 2006) in the early 1980s, rather than growth of existing skates in US waters or recruitment.

For some skates, it is apparent that catch efficiency varies between the two survey gears by size of fish (and possibly bottom type, area, and/or depth). 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. These methods will be peer reviewed by the SSC and will be used to set planned specifications for 2012-2013.

Nonetheless, using the length-aggregate calibration coefficients for six of the seven managed skates (there are 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.

Table 7. History and synopsis of barndoor, smooth, thorny, and winter status determinations during and since the development of Skate Amendment 3.

| Timeline<br>Survey data used<br>Action trigger | Amendment 3 development | Status determination<br>**Barndoor**<br>OFD < 0.81 kg/tow<br>OF 3YMA > 30% decline | **Smooth**<br>Old OFD < 0.16 kg/tow<br>New OFD < 0.14 kg/tow<br>OF 3YMA > 30% decline | **Thorny**<br>Old OFD < 2.2 kg/tow<br>New OFD < 2.06 kg/tow<br>OF 3YMA > 20% decline | **Winter**<br>Old OFD < 3.43 kg/tow<br>New OFD < 2.80 kg/tow<br>OF 3YMA > 20% decline |
|---|---|---|---|---|---|
| **FMP implementation to 2006**<br>2002 survey data<br>Barndoor and thorny skates overfished | FMP submitted in 2002 and implemented in 2003 to address barndoor and thorny skate status | **Overfished**<br>(34% below threshold)<br>No overfishing | Not overfished<br>(19% above threshold)<br>No overfishing | **Overfished**<br>(76% below threshold)<br>No overfishing | Not overfished<br>(4.62 kg/tow; 72% of MSY)<br>Overfishing occurred ONLY in 2005 |
| **December 2008**<br>2007 survey data, new reference points<br>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<br>(62% of MSY)<br>No overfishing | **Overfished**<br>(1% below new threshold)<br>No overfishing | **Overfished**<br>(79% below new threshold)<br>Overfishing occurring | Not overfished<br>(2.93 kg/tow; 5% above new threshold)<br>No overfishing |
| **April 2009**<br>2008 survey data<br>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<br>(63% of MSY)<br>No overfishing | **Overfished** (8% below new threshold)<br>No overfishing | **Overfished**<br>(80% below new threshold)<br>No overfishing | Not overfished<br>(5.23 kg/tow; 93% of MSY!!!)<br>No overfishing |
| **January 2011**<br>Preliminary calibration data applied to 2009 and 2010 FSV Bigelow survey results | Council develops Framework Adjustment 1 and begins specification process for 2012-2013 | No change | Not overfished<br>No overfishing | **Overfished**<br>(88% below new threshold)<br>No overfishing | Not overfished<br>(9.64 kg/tow; 72% above MSY proxy!!!)<br>No overfishing |

Table 8. Survey biomass trends and skate status determinations as of 2010. FSV Bigelow survey data for 2009 and 2010 are converted using preliminary calibration coefficients.

| | 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 |
| 2010 prelim | 1.10 | 0.68 | 10.56 | 0.03 | 0.18 | 0.28 | 8.09 |
| 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 |
| 2008-2010, prelim. 3-year average | 1.11 | 1.10 | 8.15 | 0.04 | 0.16 | 0.25 | 9.64 |
| 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 2008-2010 compared to 2007-2009, prelim. | 10 | -5 | 33 | -24 | 23 | -5 | 18 |
| 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; Not Rebuilt; Overfishing is Not Occurring | Not Overfished Overfishing is Not Occurring | Not Overfished Overfishing is Not Occurring | Not Overfished Overfishing is Not Occurring | Not Overfished; Not Rebuilt; Overfishing is Not Occurring | Overfished Overfishing is Not Occurring | Not Overfished Overfishing is Not Occurring |

## 5.3 Essential Fish Habitat

EFH descriptions and maps for the skate species can be found in the FMP for the Skate Complex and for the other NEFMC-managed species in the NEFMC's 1998 Omnibus EFH amendment.

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

An up-dated summary of gear effects research studies that are relevant to the NE region will be included in the revised gear effects section of the NEFMC Omnibus EFH Amendment 2 (Phase 2), which is currently being developed. A short summary of fishing effects on EFH is provided in Section 6.6.8.

## 5.4 Marine Mammals and Endangered Species (Protected Species)

There are numerous protected species that inhabit the environment within the Skate FMP management unit (Table 9). These species are afforded protection under the Endangered Species Act of 1973 (ESA; i.e., for those designated as threatened or endangered) and/or the Marine Mammal Protection Act of 1972 (MMPA), and are under NMFS' jurisdiction. Thirteen of these species are classified as endangered or threatened under the ESA and one is proposed for listing, while the remainder are protected by the provisions of the 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/.

Candidate species are those petitioned species that are actively being considered for listing as endangered or threatened under the ESA, as well as those species for which NMFS has initiated an ESA status review that it has announced in the Federal Register. Atlantic sturgeon, Atlantic bluefin tuna, and cusk are known to occur within the action area of the skate fishery and have documented interactions with types of gear used by vessels landing skates. In addition, two additional species of pinnipeds, ringed seal (Phoca hispida) and the bearded seal (Erignathus barbatus), are listed as candidate species under the ESA, although the Northeastern U.S. is at the southern tip of the habitat range for both of these species. These species are rarely sighted off the northeastern U.S., although a few stranding records have been recorded in the Northeast Region, and sightings are rare in the Northeast Atlantic.

At this time Atlantic sturgeon has been proposed for listing under the ESA. A status review for Atlantic sturgeon was completed in 2007. NMFS concluded that the U.S. Atlantic sturgeon spawning populations comprise five Distinct Population Segments (DPSs) (ASSRT, 2007). The Gulf of Maine DPS of Atlantic sturgeon is proposed to be listed as threatened, and the New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon are proposed as endangered. On October 6, 2010 (75 FR 61872 and 75 FR 61904), NMFS proposed listing five populations of Atlantic sturgeon along the U.S. East Coast as either threatened or endangered species. A final listing rule is expected by October 6, 2011.

Atlantic sturgeon from any of the five populations could occur in areas where the skate fisheries operate, and the species has been captured in gear targeting skate (Stein et al. 2004a, ASMFC 2007). (Bottom trawl and gillnet gear are common to both the multispecies and the directed skate fisheries). The proposed action to modify the skate fishery is expected to be completed before the anticipated date of a final listing determination for Atlantic sturgeon. However, the conference provisions of the ESA apply to actions proposed to be taken by federal agencies once a species is proposed for listing (50 CFR 402.10). Therefore, this EA includes information on the anticipated effects of the action on Atlantic sturgeon.

Candidate species, such as Atlantic bluefin tuna and cusk, receive no substantive or procedural protection under the ESA; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed project. NMFS has initiated review of recent stock assessments, bycatch information, and other information for these candidate and proposed species. The results of those efforts are needed to accurately characterize recent interactions between fisheries and the candidate/proposed species in the context of stock sizes. Any conservation measures deemed appropriate for these species will follow the information reviews. Note that once a species is proposed for listing the conference provisions of the ESA apply (see 50 CFR 402.10). As the listing status for this species may change, NMFS recommends updated status information is obtained from NMFS prior to the submission of any permit applications.

**Table 9 Species Protected Under the Endangered Species Act and/or Marine Mammal Protection Act that May Occur in the Operations Area for Vessels Landing Skates**

| ***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 |
| Cusk *(Brosme brosme)* | Candidate |
| Atlantic sturgeon *(Acipenser oxyrinchus)* | Proposed |

Atlantic Bluefin Tuna (*Thunnus thynnus)* Candidate

**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 Skate 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.

#### 5.4.1.1 Species Not Likely to be Affected

Interactions between gear and a given species occur when fishing gear overlaps both spatially and trophically with the species' niche. Spatial interactions are more "passive" and involve unintentional interactions with fishing gear. Trophic interactions are more "active" and occur when protected species attempt to consume prey caught in fishing gear and become entangled in the process. Spatial and trophic interactions can occur with various types of fishing gear used by the skate fishery through the year. Large and small cetaceans and sea turtles are more prevalent within the operations area during the spring and summer, relatively abundant during the fall, and some are still present in winter. The potential for entanglements to occur is assumed to be higher in areas where more gear is set and in areas with higher concentrations of protected species.

The NEFMC believes that the action being considered in the EA (i.e., approval of the Framework 1) is not likely to adversely affect shortnose sturgeon, the Gulf of Maine distinct population segment (DPS) of Atlantic salmon, hawksbill sea turtles, blue whales, or sperm whales, all of which are listed as endangered species under the ESA. The NEFMC also believes that the action being considered is not expected to adversely affect critical habitat that has been designated for North Atlantic right whales and the Gulf of Maine DPS of Atlantic salmon, which occur within the action are. Shortnose sturgeon and salmon belonging to the Gulf of Maine DPS of Atlantic salmon occur within the general geographical areas fished by the skate fishery, but they are unlikely to occur in the area where the fishery would operate given their numbers and distribution. Therefore, none of these species are likely to be affected by the skate fishery. The following discussion provides the rationale for these determinations. Additional non-ESA listed species that may occur in the operations area that are not known to interact with the specific gear types that would be used by the skate fishery will not be discussed in this assessment.

#### 5.4.1.2 Species Potentially Affected

It is expected that the sea turtle, cetacean, and pinniped species discussed below have the potential to be affected by the operation of the skate fishery, which primarily occurs as a sub-component of (i.e., incidental to) the NE multispecies fishery and the monkfish fishery. Atlantic sturgeon from any of the five DPSs could occur in areas where the skate fishery operates, and the species has been captured in gear targeting skate (Stein et al. 2004a, ASMFC 2007). The proposed action to modify the skate fishery is expected to be completed before the anticipated date of a final listing determination for Atlantic sturgeon. However, the conference provisions of the ESA apply to actions proposed to be taken by Federal agencies once a species is proposed for listing (50 CFR 402.10). Therefore, this EA includes information on the anticipated effects of the proposed action on Atlantic sturgeon, and indicates that NMFS has initiated conference procedures under the ESA as part of the conferencing on the monkfish fishery, which includes gathering more information to better assess potential impacts of the skate fishery on Atlantic sturgeon and develop measures to reduce those impacts.

Candidate species receive no substantive or procedural protection under the ESA; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed project. The Protected Resources Division of the NMFS Northeast Regional Office has initiated review of recent stock assessments, bycatch information, and other information for the two candidate species--Atlantic bluefin tuna and cusk--which will be incorporated in the status review reports for both candidate species. The results of those efforts are needed to accurately characterize recent interactions between fisheries and the candidate species in the context of stock sizes. Any conservation measures deemed appropriate for these species will follow the information from these reviews. Please note that the conference provisions requirement applies only if a candidate species is proposed for listing (and thus, becomes a proposed species) (see 50 CFR 402.10).

##### 5.4.1.2.1 Sea Turtles

Loggerhead, leatherback, Kemp's ridley, and green sea turtles occur seasonally in southern New England and Mid-Atlantic continental shelf waters north of Cape Hatteras. In general, turtles move up the coast from southern wintering areas as water temperatures warm in the spring (James *et al*. 2005; Morreale and Standora 2005; Braun-McNeill and Epperly 2004; Morreale and Standora 1998; Musick and Limpus 1997; Shoop and Kenney 1992; Keinath *et al.* 1987). The trend is reversed in the fall as water temperatures cool. By December, turtles have passed Cape Hatteras, returning to more southern waters for the winter (James *et al*. 2005; Morreale and Standora 2005; Braun-McNeill and Epperly 2004; Morreale and Standora 1998; Musick and Limpus 1997; Shoop and Kenney 1992; Keinath *et al.* 1987). Hard-shelled species are typically observed as far north as Cape Cod whereas the more cold-tolerant leatherbacks are observed in more northern Gulf of Maine waters in the summer and fall (Shoop and

Kenney 1992; STSSN database).

Sea turtles are known to be captured in gillnet and trawl gear; gear types that are used in the skate fishery. According to the monthly reports on the NEFSC website for March 2006 – February 2008, one loggerhead turtle was taken in observed groundfish trips by a bottom trawl, and none were observed in sink gillnets.

The loggerhead sea turtle is listed as threatened throughout its worldwide range. On July 12, 2007, NMFS and USFWS (Services) received a petition from Center for Biological Diversity and Turtle Island Restoration Network to list the ''North Pacific populations of loggerhead sea turtle'' as an endangered species under the ESA. In addition, on November 15, 2007, the Services received a petition from Center for Biological Diversity and Oceana to list the ''Western North Atlantic populations of loggerhead sea turtle'' as an endangered species under the ESA. NMFS published notices in the Federal Register, concluding that the petitions presented substantial scientific information indicating that the petitioned actions may be warranted (72 FR 64585, November 16, 2007; 73 FR 11849; March 5, 2008). In 2008, a Biological Review Team (BRT) was established to assess the global population structure to determine whether Distinct Population Segments (DPSs) exist and, if so, the status of each DPS. The BRT identified nine loggerhead DPSs, distributed globally (Conant et al. 2009). On March 16, 2010, the Services announced 12-month findings on the petitions to list the North Pacific populations and the Northwest Atlantic populations of the loggerhead sea turtle as DPSs with endangered status and published a proposed rule to designate nine loggerhead DPSs worldwide, seven as endangered (North Pacific Ocean DPS, South Pacific Ocean DPS, Northwest Atlantic Ocean DPS, Northeast Atlantic Ocean DPS, Mediterranean Sea DPS, North Indian Ocean DPS, and Southeast Indo-Pacific Ocean DPS) and two as threatened (Southwest Indian Ocean DPS and South Atlantic Ocean DPS). On March 22, 2011, the timeline for the final determination was extended for six months until September 16, 2011 (76 FR 15932).

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

#### 5.4.1.2.2 Large Cetaceans

The most recent Marine Mammal Stock Assessment Report (SAR) (Waring et al. 2009) reviewed the current population trend for each of these large cetacean species within U.S. EEZ waters, as well as providing information on the estimated annual human-caused mortality and serious injury, and a description of the commercial fisheries that interact with each stock in the U.S. Atlantic. Information from the SAR is summarized below.

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke) follow a general annual pattern of migration from high latitude summer foraging grounds, including the Gulf and Maine and Georges Bank, and low latitude winter calving grounds (Perry et al. 1999, Kenney 2002). However, this is an oversimplification of species movements, and the complete winter distribution of most species is unclear (Perry et al. 1999, Waring et al. 2009). Studies of some of the large baleen

whales (right, humpback, and fin) have demonstrated the presence of each species in higher latitude waters even in the winter (Swingle et al. 1993, Wiley et al. 1995, Perry et al. 1999, Brown et al. 2002).

For North Atlantic right whales, the available information suggests that the population is increasing at a rate of 1.8 percent per year between 1990 and 2003, and the total number of North Atlantic right whales is estimated to be at least 323 animals in 2003 (Waring et al. 2009). The minimum rate of annual human-caused mortality and serious injury to right whales averaged 3.8 per year during 2002 to 2006 (Waring et al. 2009). Of these, an average of 1.4 per year resulted from fishery interactions. Recent mortalities included six female right whales, including three that were pregnant at the time of death (Waring et al. 2009).

The North Atlantic population of humpback whales is estimated to be 11,570, although the estimate is considered to be low (Waring et al. 2009). The best estimate for the Gulf of Maine stock of humpback whales is 847 whales (Waring et al. 2009). The population trend was considered positive for the Gulf of Maine population, but there are insufficient data to estimate the trend for the larger North Atlantic population. Based on data available for selected areas and time periods, the minimum population estimates for other western north Atlantic whale stocks are 2,269 fin whales, 207 sei whales, 4,804 sperm whales, and 3,312 minke whales (Waring et al. 2009). No recent estimates are available for blue whale abundance. Insufficient data exist to determine trends for any other large whale species.

Gillnet gear is known to pose a risk of entanglement causing injury and death to large cetaceans. Right whale, humpback whale, and minke whale entanglements in gillnet gear have been documented (Johnson et al. 2005; Waring et al. 2009). However, it is often not possible to attribute the gear to a specific fishery.

The ALWTRP was recently revised with publication of a new final rule (72 FR 57104, October 5, 2007) that is intended to continue to address entanglement risk of large whales (right, humpback, fin, and acknowledges benefits to minke whales) in commercial fishing gear and to reduce the risk of death and serious injury from entanglements that do occur.

#### 5.4.1.2.3 Small Cetaceans

Numerous small cetacean species (dolphins; pilot whales; and harbor porpoise) occur within the area from Cape Hatteras through the Gulf of Maine, and are known to interact with the types fishing gear used in the skate fishery. Seasonal abundance and distribution of each species in Mid-Atlantic, Georges Bank, and/or Gulf of Maine, Georges Bank, and southern New England/Mid-Atlantic waters varies with respect to life history characteristics. Some species primarily occupy continental shelf waters (e.g., white sided dolphins, harbor porpoise), while others are found primarily in continental shelf edge and slope waters (e.g., Risso's dolphin), and still others occupy all three habitats (e.g., common dolphin, spotted dolphin). Information on the western North Atlantic stocks of each species is summarized in Waring et al. (2009). Small cetaceans are known to interact with gillnet and trawl gear (Waring *et al*. 2009).

With respect to harbor porpoise specifically, the most recent Stock Assessment Reports show that the number of harbor porpoise takes is increasing, moving closer to the Potential Biological Removal level calculated for this species (610 animals/year from 2001-2005) rather than declining toward the long-term Zero Mortality Rate Goal (ZMRG), which is 10 percent of PBR (approximately 75 animals). Observer information collected from January 2005 to June 2006 has indicated an increase in porpoise bycatch throughout the geographic area covered by the Harbor Porpoise Take Reduction Plan (HPTRP) in both the Gulf of Maine and Mid-Atlantic regions and in monkfish gear specifically (NMFS, Discussion Paper on Planned Amendments to the Harbor Porpoise TRP 2007). The Harbor Porpoise Take Reduction Team developed options to reduce takes, and NMFS published a proposed rule on July 21, 2009 (74 *Federal*

*Register* 36058) with four alternatives including no action. The comment period on this rule ended on August 20, 2009 and the final rule was published on February 19, 2010 (75 *Federal Register* 7383).

The following changes were implemented in the 2010 amendments to the HPTRP:

**New England**

- Expand the size of the Massachusetts Bay Management Area, as well as pinger use to include November;
- Establish the Stellwagen Bank Management Area and require pingers from November 1 through May 31;
- Establish the Southern New England Management Area where pingers are required from December 1 through May 31; and
- Establish the Cape Cod South Expansion Consequence Closure Area and Coastal Gulf of Maine Consequence Closure Area. These areas would be closed to gillnetting for two to three months if harbor porpoise bycatch levels are too high.

**Mid-Atlantic**

- Establish the Mudhole South Management Area, with a seasonal closure and gear modifications for large and small mesh gear;
- Modify the northern boundary of the waters off New Jersey Management Area to intersect with the southern shoreline of Long Island, NY at 72° 30' W longitude; and
- Modify tie-down spacing requirement for large mesh gillnets in all Mid-Atlantic management areas (waters off New Jersey, Mudhole North and South, and Southern Mid-Atlantic Management Areas).

The Atlantic Trawl Gear Take Reduction Team (ATGTRT) was organized in 2006 to implement a plan to address the incidental mortality and serious injury of long-finned pilot whales, short-finned pilot whales, common dolphins, and Atlantic white-sided dolphins in several trawl gear fisheries. In lieu of a TRP, the ATGTRT agreed to develop an Atlantic Trawl Gear Take Reduction Strategy (ATGTRS). The ATGTRS identifies informational and research tasks as well as education and outreach needs the ATGTRT believes are necessary to provide the basis for achieving the ultimate MMPA goal of achieving ZMRG. The ATGTRS also identifies several potential voluntary measures that can be adopted by certain trawl fishing sectors to potentially reduce the incidental capture of marine mammals. These voluntary measures are as follows:

- Reducing the numbers of turns made by the fishing vessel and tow times while fishing at night; and
- Increasing radio communications between vessels about the presence and/or incidental capture of a marine mammal to alert other fishermen of the potential for additional interactions in the area.

#### 5.4.1.2.4 Pinnipeds

Of the four species of seals expected to occur in the area, harbor seals have the most extensive distribution with sightings occurring as far south as 30° N (Katona et al. 1993, Waring et al. 2009). Gray seals are the second most common seal species in U.S. EEZ waters, occurring primarily off New England (Katona et al. 1993; Waring et al. 2009). Pupping for both species occurs in both U.S. and Canadian waters of the western north Atlantic with the majority of harbor seal pupping likely occurring in U.S. waters and the majority of gray seal pupping in Canadian waters, although there are at least three gray seal pupping colonies in U.S. waters as well. Harp and hooded seals are less commonly observed in U.S. EEZ waters. Both species form aggregations for pupping and breeding off eastern Canada in the late winter/early spring, and then travel to more northern latitudes for molting and summer feeding (Waring et

al. 2009). Both species have a seasonal presence in U.S. waters from Maine to New Jersey, based on sightings, stranding, and fishery bycatch (Waring et al. 2009). All four species of seals are known to interact with gillnet and/or trawl gear (Waring *et al*. 2009).

Although harbor seals may be more likely to occur in the operations area between fall and spring, harbor and gray seals are year-round residents; therefore, interactions could occur year-round. The uncommon occurrences of hooded and harp seals in the operations area are more likely to occur during the winter and spring, allowing for an increased potential for interactions during the winter.

#### 5.4.1.2.5 Atlantic Sturgeon DPSs

Atlantic sturgeon is an anadromous species that spawns in relatively low salinity, river environments, but spends most of its life in the marine and estuarine environments from Labrador, Canada to the Saint Johns River, Florida (Holland and Yelverton 1973, Dovel and Berggen 1983, Waldman et al. 1996, Kynard and Horgan 2002, Dadswell 2006, ASSRT 2007). Tracking and tagging studies have shown that sub-adult and adult Atlantic sturgeon that originate from different rivers mix within the marine environment, utilizing ocean and estuarine waters for life functions such as foraging and overwintering (Stein et al. 2004a, Dadswell 2006, ASSRT 2007, Laney et al. 2007, Dunton et al. 2010). Fishery-dependent data as well as fishery-independent data demonstrate that Atlantic sturgeon use relatively shallow inshore areas of the continental shelf; primarily waters less than 50 m (Stein et al. 2004b, ASMFC TC 2007, Dunton et al. 2010). The data also suggest regional differences in Atlantic sturgeon depth distribution with sturgeon observed in waters primarily less than 20 m in the Mid-Atlantic Bight and in deeper waters in the Gulf of Maine (Stein et al. 2004b, ASMFC TC 2007, Dunton et al. 2010). Information on population sizes for each Atlantic sturgeon DPS is very limited. Based on the best available information, NMFS has concluded that bycatch, vessel strikes, water quality and water availability, dams, lack of regulatory mechanisms for protecting the fish, and dredging are the most significant threats to Atlantic sturgeon. Final determinations on the proposed listings are expected by October 6, 2011.

Atlantic sturgeon are known to be captured in sink gillnet, drift gillnet, and otter trawl gear (Stein et al. 2004a, ASMFC TC 2007). Of these gear types, sink gillnet gear poses the greatest known risk of mortality for sturgeon (ASMFC TC 2007). Sturgeon deaths were rarely reported in the otter trawl observer dataset (ASMFC TC 2007). However, the level of mortality after release from the gear is unknown (Stein et al. 2004a). A review of the NMFS Observer Database for the years 2001-2006 indicated sturgeon bycatch occurred in statistical areas abutting the coast from Massachusetts (statistical area 514) to North Carolina (statistical area 635) (ASMFC TC 2007). Based on the available data, participants in an ASMFC bycatch workshop concluded that sturgeon encounters tended to occur in waters less than 50 m throughout the year, although seasonal patterns exist (ASMFC TC 2007). Stein et al (2004a), based on a review of the NMFS Observer Database from 1989-2000, found clinal variation in the bycatch rate of sturgeon in sink gillnet gear with lowest rates occurring off of Maine and highest rates off of North Carolina for all months of the year.

In an updated analysis, the NEFSC was able to use data from the NEFOP database to provide updated estimates for the 2006 to 2010 timeframe. Data were limited by observer coverage to waters outside the coastal boundary (fzone>0) and north of Cape Hatteras, NC. The Atlantic sturgeon included in the data set were those identified by Federal observers as Atlantic sturgeon, as well as those categorized as unknown sturgeon. The frequency of encounters on observed trips were expanded by total landings recorded in vessel trip reports (VTR) rather than dealer data, since the dealer data does not include information on mesh sizes. Generally the VTR data represents greater than 90 percent of total landings. Originally the data were to be evaluated by year, month, 3-digit statistical area, gear type and mesh size. Unfortunately the level of observer coverage did not support that degree of partitioning in the data. Therefore, data were combined into divisions (identified as the first 2 digits in area codes), quarter, gear

type (otter trawl, fish and sink gillnet) and mesh categories. Mesh sizes were categorized for otter trawl as small (<5.5") or large (greater than or equal to 5.5") and small (<5.5"), large (between 5.5" and 8") and extra large (>8") in sink gillnets.

Skates are predominantly harvested incidentally in other fisheries, such as the NE multispecies and monkfish fisheries, and, to a much smaller degree, the Atlantic sea scallop fishery. Although there are no specific mesh requirements for the skate fishery, vessels must adhere to the more restrictive NE multispecies regulations and/or monkfish regulations when fishing in various areas. Under the skate fishing regulations, skate wings (the only component of the skate fishery affected by this action) may only be harvested and retained while the vessel is fishing on a NE multispecies DAS, a monkfish DAS, or a sea scallop DAS. Therefore, the regulations affecting and controlling the use of those DAS programs also serve to control the skate fishery. Any changes implemented under one of those FMPs (NE Multispecies, Monkfish, and/or Sea Scallops) would also affect fishing effort for skates by virtue of the direct link between the skate fishery and the use of a DAS. For the years 2005-2009, an average of 42 percent of skate wing landings were caught using gillnet gear, and 51 percent of skate wing landings were caught in bottom otter trawls (see Table 14). Skate landings primarily occur on Georges Bank, in the Gulf of Maine north of Cape Cod, the Great South Channel, and off Southern New England.

Based on 2007 VTR and VMS data, Figures 34 and 35 in Amendment 3 to the Skate FMP graphically display how otter trawl and sink gillnet effort is distributed relative to landings of skates. As indicated in Figure 34 of Amendment 3, the majority of skate otter trawl effort in the Southern New England region occurs in statistical areas 537 and 539 off Rhode Island and southern Massachusetts, and tends to occur in relatively shallow nearshore waters. There is also significant otter trawl fishing effort on Georges Bank in statistical areas 526, 525, 522, and 521. Given that nearly all observed takes of Atlantic sturgeon in large mesh otter trawl gear during the 2006-2010 time period occurred in statistical areas 612 and 621 (Table 1) off New York and New Jersey, it is highly unlikely that these vessels were fishing for skates. Conversely, directed sink gillnet effort in the Southern New England region occurs primarily in the inshore waters of statistical areas 537, 539, 612, 613, and 615 (Southern Massachusetts, Rhode Island, New York and New Jersey). Observed takes associated with extra large mesh sink gillnet gear during this time period were distributed across several inshore statistical areas across Southern New England and the Mid-Atlantic regions (Table 2). Thus, it is highly likely that the majority of these observed takes occurred in sink gillnet gear targeting monkfish, and that any skate landings were incidental to the monkfish fishery. As a result, the analyses contained in the Addendum to Amendment 5 to the Monkfish FMP account for and address the impacts to Atlantic sturgeon associated with extra large sink gillnet gear.

Table 1. Sturgeon encounters in observed large mesh otter trawl trips, 2006-2010.

Large mesh otter trawl

| | month | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| area | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 464 | 0 | | 0 | | 0 | | | | | 0 | 0 | |
| 465 | 0 | | 0 | 0 | | 0 | 0 | | | | 0 | 0 |
| 511 | 0 | | 0 | 0 | | | | | | | | 0 |
| 512 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 513 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 514 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 515 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 521 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 522 | 0 | 0 | | | 0 | | | 0 | 0 | 0 | 0 | |
| 525 | | | | 0 | 0 | | | 0 | | | | |
| 526 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 537 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 538 | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 539 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 562 | | | | | 0 | | | 0 | | | | |
| 611 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 612 | | **1** | | 0 | **25** | **5** | **5** | 0 | **33** | **1** | 0 | 0 |
| 613 | 0 | 0 | 0 | **1** | 0 | 0 | | 0 | 0 | 0 | 0 | 0 |
| 614 | | | | **1** | 0 | 0 | 0 | | 0 | | | |
| 615 | 0 | | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| 616 | 0 | 0 | 0 | 0 | | | | | | 0 | 0 | 0 |
| 621 | 0 | 0 | 0 | | 0 | **2** | 0 | 0 | **18** | 0 | 0 | 0 |
| 622 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 |
| 623 | | | 0 | 0 | | | | | | | | |
| 625 | | | | | | | 0 | | | 0 | 0 | 0 |
| 626 | 0 | 0 | 0 | 0 | | | | | | | 0 | 0 |
| 627 | | | | 0 | | | | | | | | |
| 631 | 0 | **2** | | | | | | | | | | 0 |
| 632 | | 0 | | | | | | | | | | |
| 635 | 0 | | | | | | | | | | | 0 |

Table 2. Sturgeon encounters in observed extra large mesh sink gillnet trawl trips, 2006-2010.

**X-large sink gillnet**

| | month | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **area** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| 464 | | | | | | | | | | | | 0 |
| 512 | | | | | | | | | | 0 | | |
| 513 | | | | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 514 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 515 | | | | | 0 | | 0 | | 0 | 0 | 0 | 0 |
| 521 | **1** | | | 0 | 0 | 0 | **1** | 0 | **1** | **1** | **2** | **1** |
| 522 | | | | 0 | | | 0 | | | | | 0 |
| 526 | | 0 | 0 | 0 | 0 | | | | | | | |
| 537 | **1** | 0 | **1** | **1** | **5** | 0 | 0 | 0 | 0 | **1** | 0 | **1** |
| 538 | | | | | 0 | | | | | | | |
| 539 | 0 | 0 | | 0 | **4** | 0 | 0 | | 0 | 0 | 0 | 0 |
| 611 | | | | | 0 | **1** | | | | | | |
| 612 | **5** | 0 | 0 | 0 | **1** | **3** | 0 | | | 0 | 0 | **1** |
| 613 | 0 | 0 | | 0 | **2** | **1** | | 0 | 0 | 0 | **7** | 0 |
| 614 | 0 | | | 0 | **5** | 0 | | | | | 0 | |
| 615 | 0 | 0 | 0 | 0 | **2** | **2** | 0 | | | 0 | 0 | **1** |
| 616 | 0 | | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| 621 | | 0 | 0 | 0 | **2** | | | | | | 0 | |
| 622 | | | | | 0 | | | | | | | |
| 625 | | **2** | **2** | **2** | **4** | 0 | | | | | **1** | **3** |
| 626 | 0 | 0 | 0 | **1** | **5** | | | | | | 0 | 0 |
| 631 | **2** | **6** | **1** | **5** | | | | | | 0 | 0 | **2** |
| 635 | 0 | | **58** | **69** | | | | | | | | |

Understanding the potential impacts of skate fishing effort on Atlantic sturgeon populations requires an assessment of the relative fishing effort to which skate fishing is incidental. As noted above, the skate fishing regulations require that in order to possess skate wings, a fishing vessel must be fishing under a NE multispecies DAS, a monkfish DAS, or a scallop DAS. As demonstrated in Table 39, for the years 2000-2007, 95 percent of all skate landings, on average, were made while the vessel was fishing under a NE multispecies DAS, and only 5 percent of skate landings, on average, were made while the vessel was fishing under a monkfish-only DAS. Fourteen percent of skate landings were made while vessels were fishing under a combination monkfish/multispecies DAS, so there is a small overlap between these two fisheries (this is due to the requirement for vessels that possess both limited access DAS multispecies and monkfish permits to fish DAS concurrently until all multispecies DAS are used). Thus, while Table 14 indicates that 42 percent of skate wing landings were caught using gillnets, it is likely that only a small proportion of those landings were made by vessels directing on monkfish using extra-large mesh gillnet gear.

Table 3. 2006-2010 Estimated Atlantic Sturgeon Encounters in Extra Large Mesh Sink Gillnet Gear based upon NEFOP Data.

| | Total Encounters | Dead Encounters | Percent Dead |
|---|---|---|---|
| 2006 | 299 | 180 | 60% |
| 2007 | 493 | 273 | 55% |
| 2008 | 200 | 131 | 66% |
| 2009 | 628 | 226 | 36% |
| 2010 | 132 | 6 | 5% |

As noted, there are no total population size estimates for any of the five Atlantic sturgeon DPSs at this time. However, there are two estimates of spawning adults per year for two river systems (e.g., 870 spawning adults per year for the Hudson River, and 343 spawning adults per year for the Altamaha River). These estimates represent only a fraction of the total population size as Atlantic sturgeon do not appear to spawn every year and additionally, these estimates do not include sub-adults or early life stages. Between 2006 and 2009, an average of 203 Atlantic sturgeon mortalities occurred in all extra large mesh sink gillnet gear. This includes mortalities in all areas. The terminal year of 2010 was excluded from this average due to the fact that the low mortality rate for this year likely represents incomplete data. Based on the available information, it is not possible at this time to attribute these mortalities to the DPS(s) from which these fish originated. However, given the migratory nature of sub-adult and adult Atlantic sturgeon, it is expected that these mortalities represent takes from multiple DPSs. This conclusion is supported by preliminary genetic mixed stock analyses undertaken by Dr. Isaac Wirgin from New York University and Dr. Tim King from the U.S. Geological Survey. Wirgin and King's (unpublished) mixed stock analysis of Atlantic sturgeon samples taken by NMFS observers from Maine to North Carolina indicate that Atlantic sturgeon originated predominantly from the New York Bight DPS, with large components from the Southeast Atlantic, Chesapeake Bay, and Gulf of Maine DPSs as well. The number of fish originating from the Carolina DPS was low.

Based on additional results from the aforementioned mixed stock analysis (Wirgin and King, unpublished), the majority of the Atlantic sturgeon caught in areas off of Long Island (an area where bycatch in monkfish fisheries is higher) originated from the New York Bight DPS, and these samples are predominantly comprised of fish from the Hudson River. However, some fish originated from the Delaware River as well. The bycatch of Atlantic sturgeon from the Delaware River population of the New York Bight DPS is of particular concern given the very low level of that population. Fish from the other four DPSs represented a smaller component of the catch from this area. Off of North Carolina, where bycatch of Atlantic sturgeon is also higher, the majority of the fish from this area originated from the Chesapeake Bay DPS, with significant components from the New York Bight and Southeast DPSs as well. Fish caught in this location originated predominantly from the James, Ogeechee, Savannah, and Hudson Rivers with several fish from the Delaware River as well.

One of the factors cited in NMFS' proposed listing for the five DPSs of Atlantic sturgeon is bycatch. The ASMFC analysis concluded that to remain stable or grow, populations of Atlantic sturgeon can sustain only very low anthropogenic sources of mortality. It is apparent, therefore, that should the proposed listing be finalized, reductions in bycatch mortality may be required in order to recover Atlantic sturgeon. Final listing determinations for the Atlantic sturgeon DPSs are expected by October 6, 2011. If final listing rules are published, they will likely become effective 30 days after publication. With the publication of a final listing rule, a Section 7 consultation would be required. Through that consultation process, the effects of the skate fishery on Atlantic sturgeon populations primarily as a sub-component of (i.e., incidental to) the NE multispecies and monkfish fisheries, would be estimated and analyzed. At this

point, while Atlantic sturgeon remains a proposed species, the question is whether the proposed action to modify regulations governing the skate fishery is likely to jeopardize the continued existence of the proposed species. Atlantic sturgeon is a proposed species only until a final listing determination is made. When a final listing determination is made, the proposed rules will either be withdrawn or final listing rules will be published. The NEFMC has considered whether the skate fishery, as a sub-component of (i.e., incidental to) the NE multispecies and monkfish fisheries, including implementation of Framework 1, is likely to jeopardize the proposed Atlantic sturgeon DPSs and has concluded that it is not. While it is possible that there may be interactions between Atlantic sturgeon and fishing gear used in the skate fishery, the number of interactions that will occur between now and the time a final listing determination will be made is not likely to cause an appreciable reduction in survival and recovery.

Serious injuries and mortalities of Atlantic sturgeon in commercial fishing gear are a likely concern for the long term persistence and recovery of the DPSs, and was a primary reason cited for the proposals to list the DPSs under the ESA. If final listing determinations are issued, the existing Section 7 consultation for the skate fishery would be reinitiated consistent with the requirement to reinitiate formal consultation where discretionary Federal agency involvement or control of the action has been retained and a new species is listed that may be affected by the action. During the re-initiation, the effects of the skate fishery on the five DPSs would be fully examined.

## *5.5 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 6.3.2.2, 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.

### 5.5.1 Description of Directed Skate Fisheries

#### 5.5.1.1 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.

#### 5.5.1.1.1 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 increased 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 (pogie) prices vary between $50 – $70 per barrel ($56 per 30 gallon 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.

#### 5.5.1.1.2 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 5.5.1.3.5 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.

#### 5.5.1.1.3 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 targeting monkfish and catching larger skates. Southern New England fishermen have reported increased catches of barndoor skates in the last few years.

#### 5.5.1.1.4 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. Most 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 deep-water trawl fishery.

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 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.

#### 5.5.1.1.5 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 July 31, and the second season from August 1 through October 31. 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 November 1 through 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.

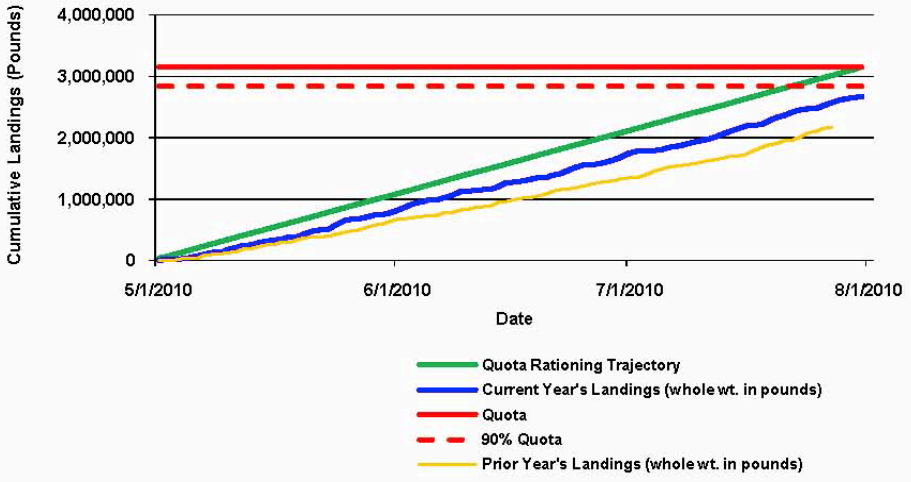


**Figure 2.** Weekly skate bait landings report for Season II, August 1, 2010 to October 31, 2010.

## 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.

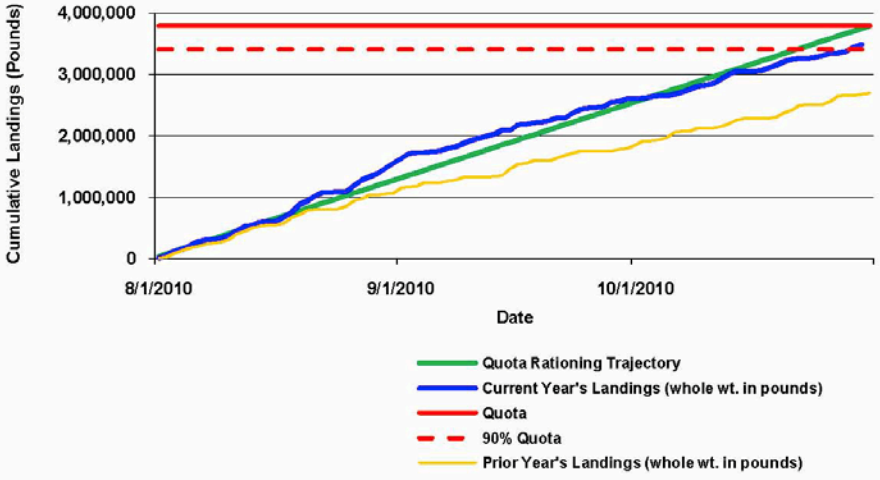


**Figure 3.** Weekly skate bait landings report for Season III, November 1, 2010 thru January 1, 2011.

# Northeast Skate Complex Bait Fishery Weekly Report

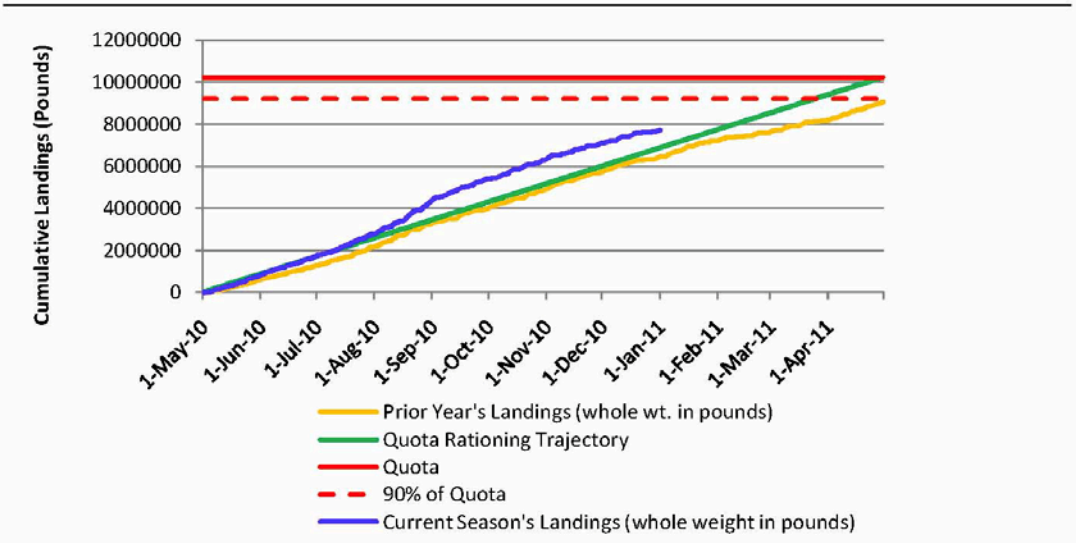
| | |
|---|---|
| For week ending: | January 1, 2011 |
| For data reported through: | January 6, 2011 |
| **Quota Period:** | Annual |
| **Quota Period Dates:** | 05/01/10 to 04/30/11 |

| 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.



### 5.5.1.2 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 5.5.1.3.5 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).

5.5.1.2.1 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 |

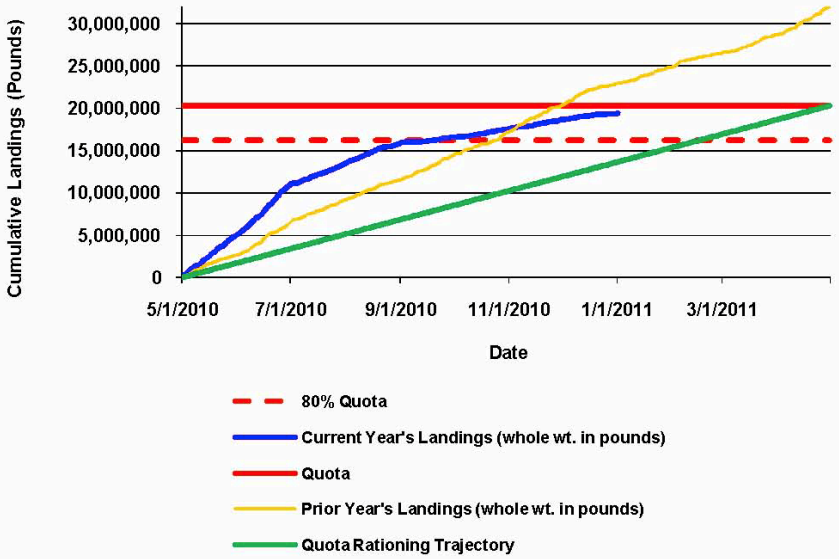
| Previously Reported Landings (Whole Pounds) | Previous Weeks' Updates (Whole Pounds) | Current Week's Landings (Whole Pounds) | Cumulative Landings (Whole Pounds) | Quota (Whole Pounds) | Percent of Quota (%) |
|---|---|---|---|---|---|
| 19,254,341 | 58,668 | 76,155 | 19,389,164 | 20,302,370 | 96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



### 5.5.1.3 Commercial Fishery Landings

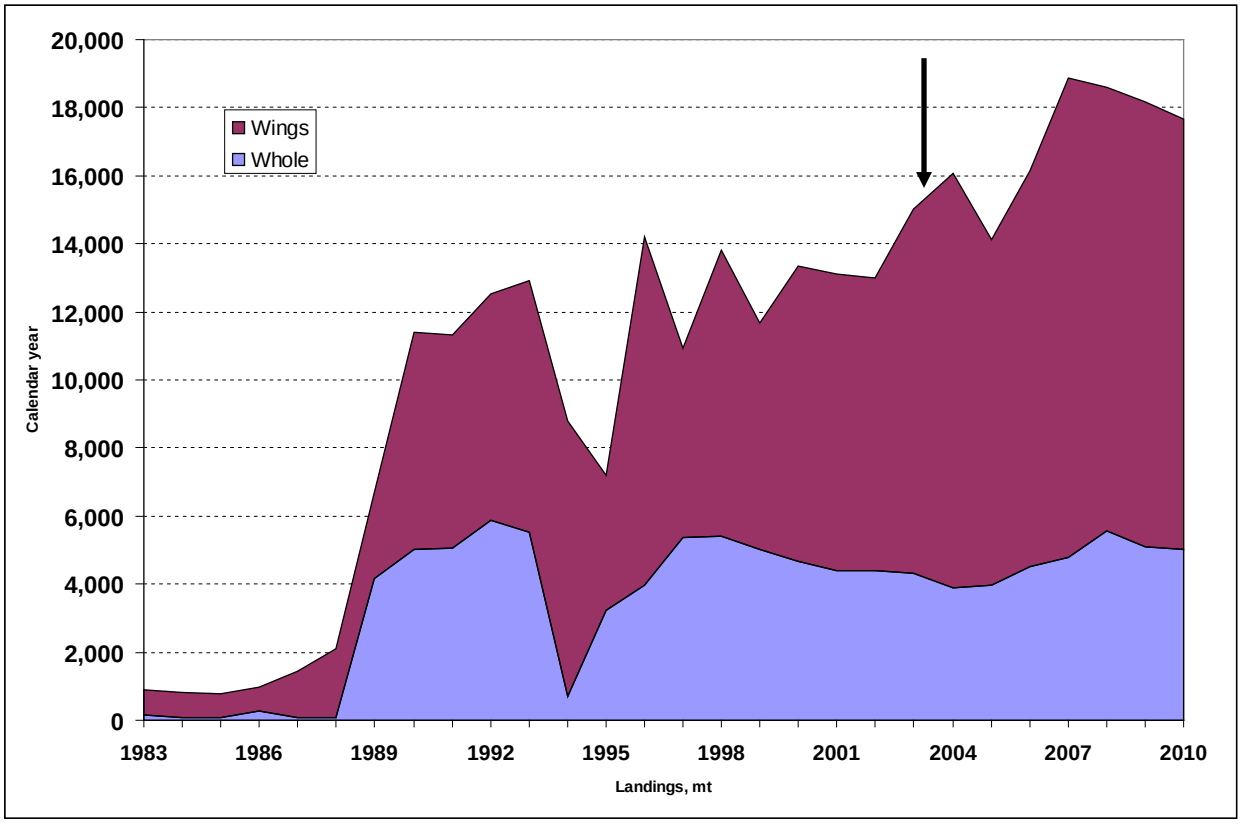
This section presents available commercial landings information for the northeast region skate complex from 2000-2007. This includes total annual landings; landings by market category; landings by state, gear type, port, and area fished; Canadian skate landings; and recreational skate landings. For data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

Note that NMFS estimates commercial skate landings from the dealer 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).

#### 5.5.1.3.1 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).




5.5.1.3.2 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 |

5.5.1.3.3 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 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 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 database since 2003.

| 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 |

Note: Big skate is an alternative common name for winter skate (Leucoraja ocellata), and does not indicate the Pacific big skate (Raja binoculata).

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

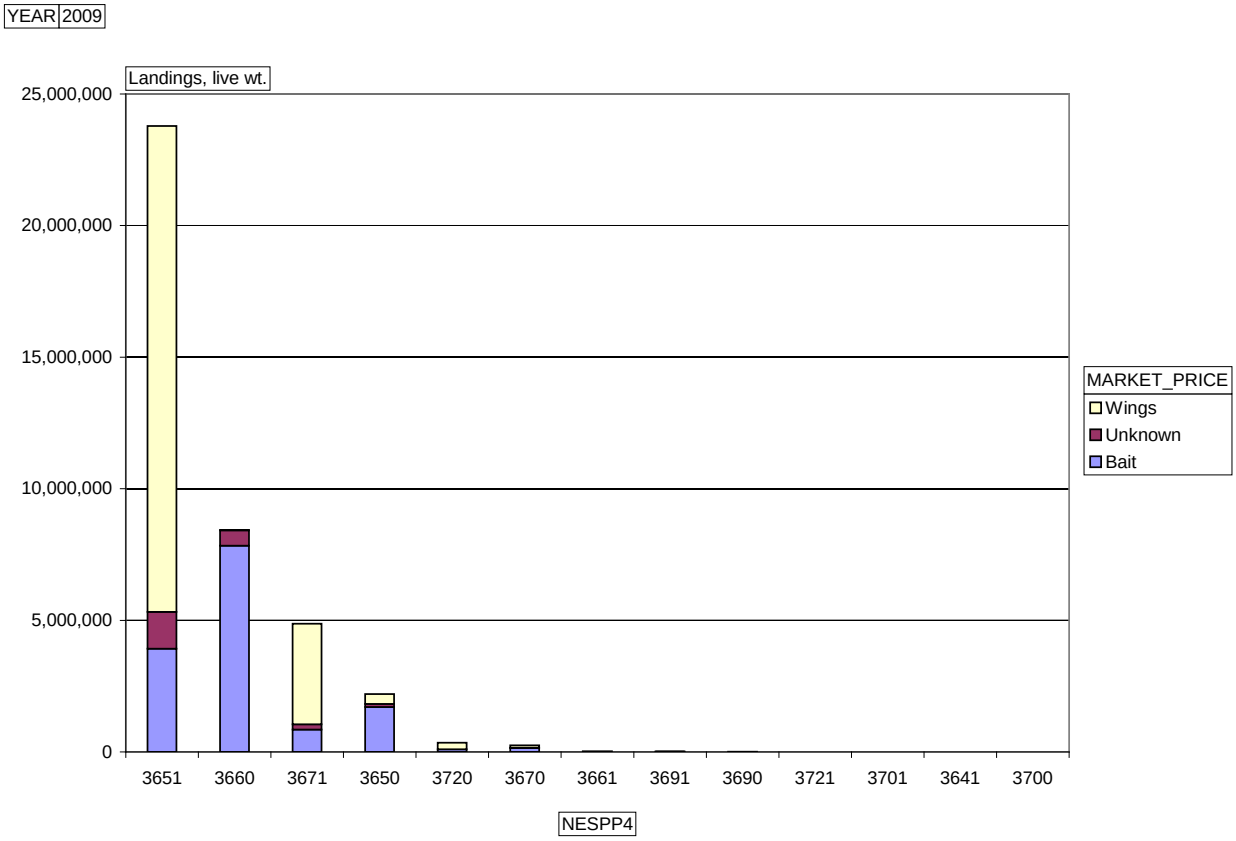


Table 13. Total Annual Landings and Revenue of Skates by Market Category (2002-2009).
*Source: Dealer Database, NMFS*
Revenues are generated from landed pounds.

| 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 |

5.5.1.3.4 Landings by Gear

Table 14 presents annual skate landings (2002-2009) from the dealer 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 Database, NEFSC*

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

*Hook 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 |

5.5.1.3.5 Landings by Port

Table 15 and Figure 7 present annual skate landings (from the dealer 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).

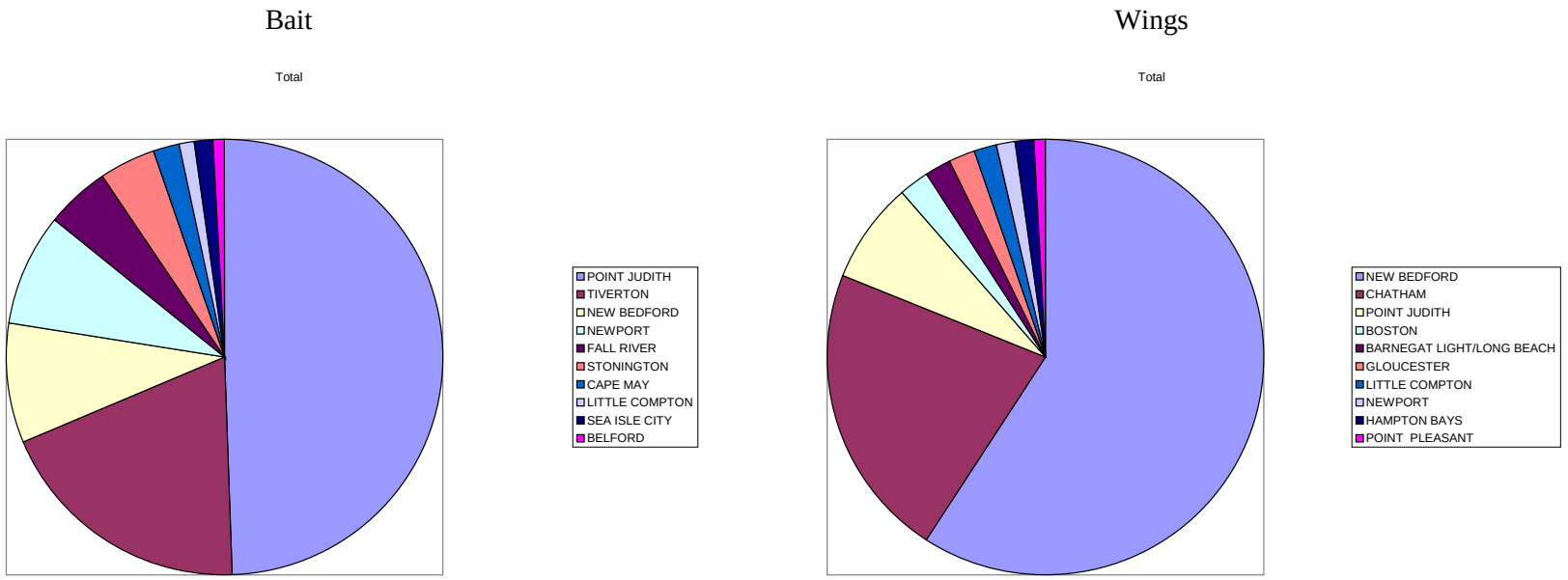
Table 15. Annual Skate Landings (Live Weight, thousands lbs) for Top 10 Ports by Market Category and as a Percentage of Total Skate Landings (2002-2009).

*Source: Dealer 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.



5.5.1.3.6 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.

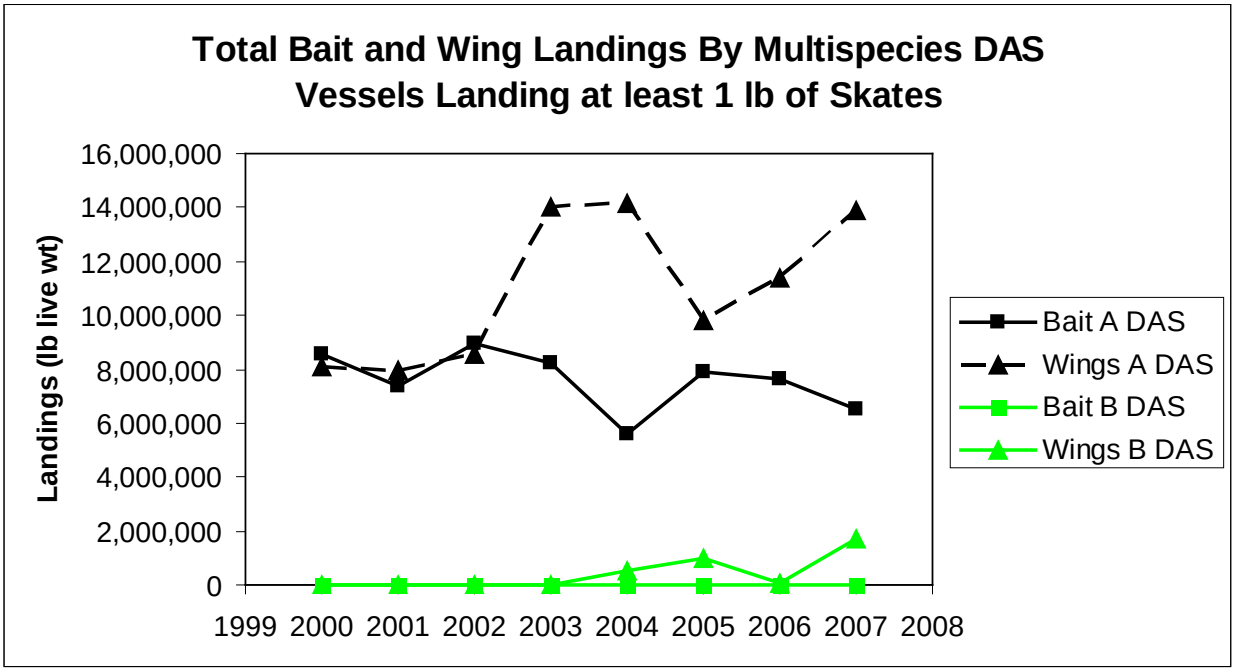



Figure 9. Skate Wing landings by gear type on Multispecies A DAS, 2000-2007

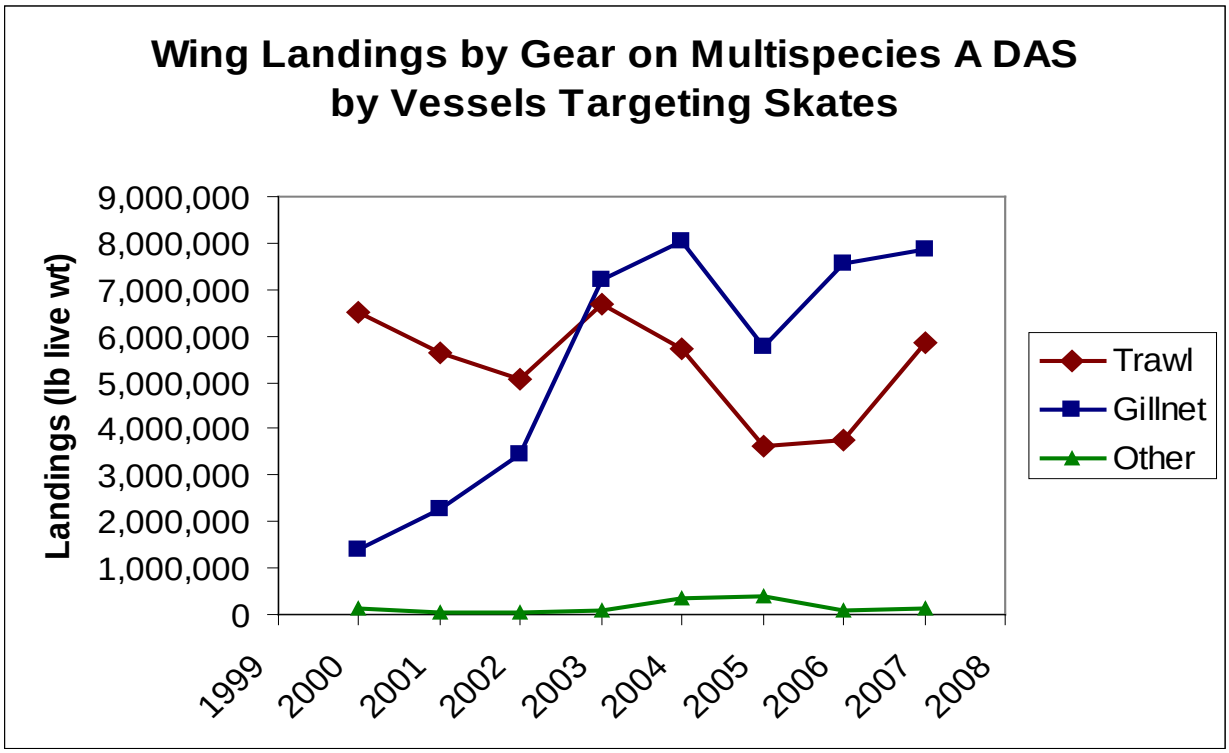
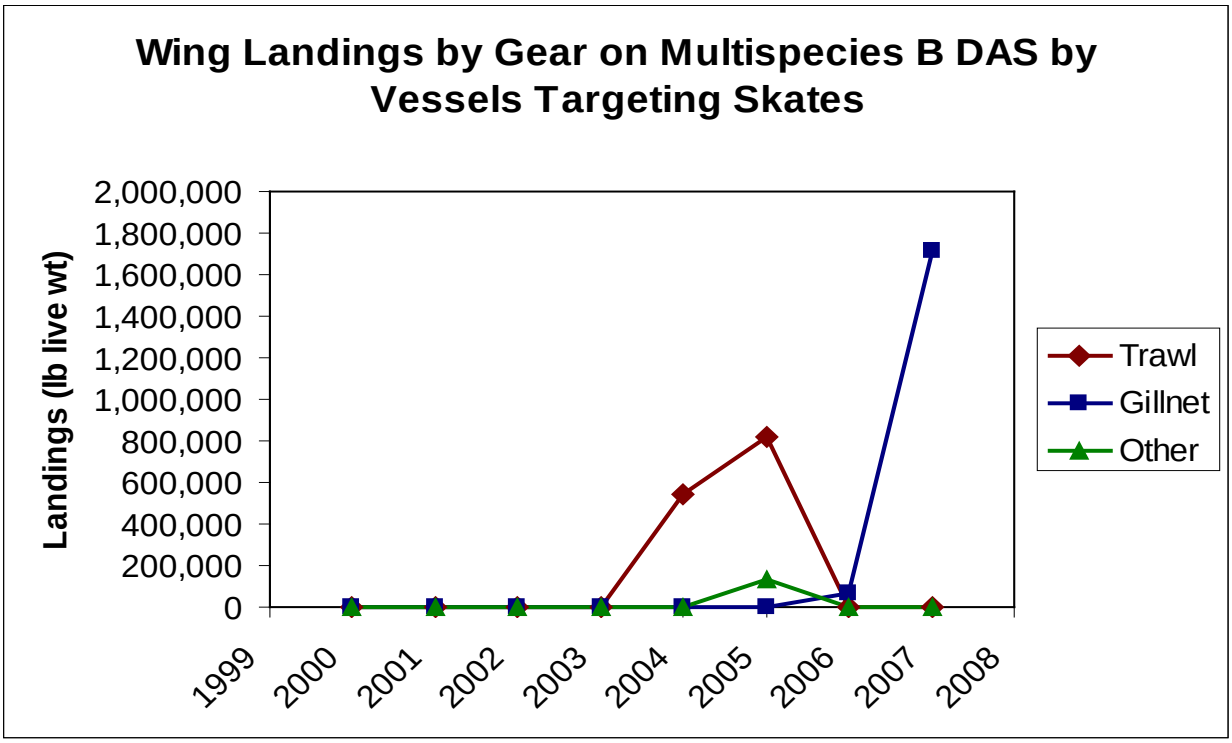


Figure 10. Skate Wing landings by gear type on Multispecies B DAS, 2000-2007.




### 5.5.1.4 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.

### 5.5.1.5 Canadian Landings of Skates

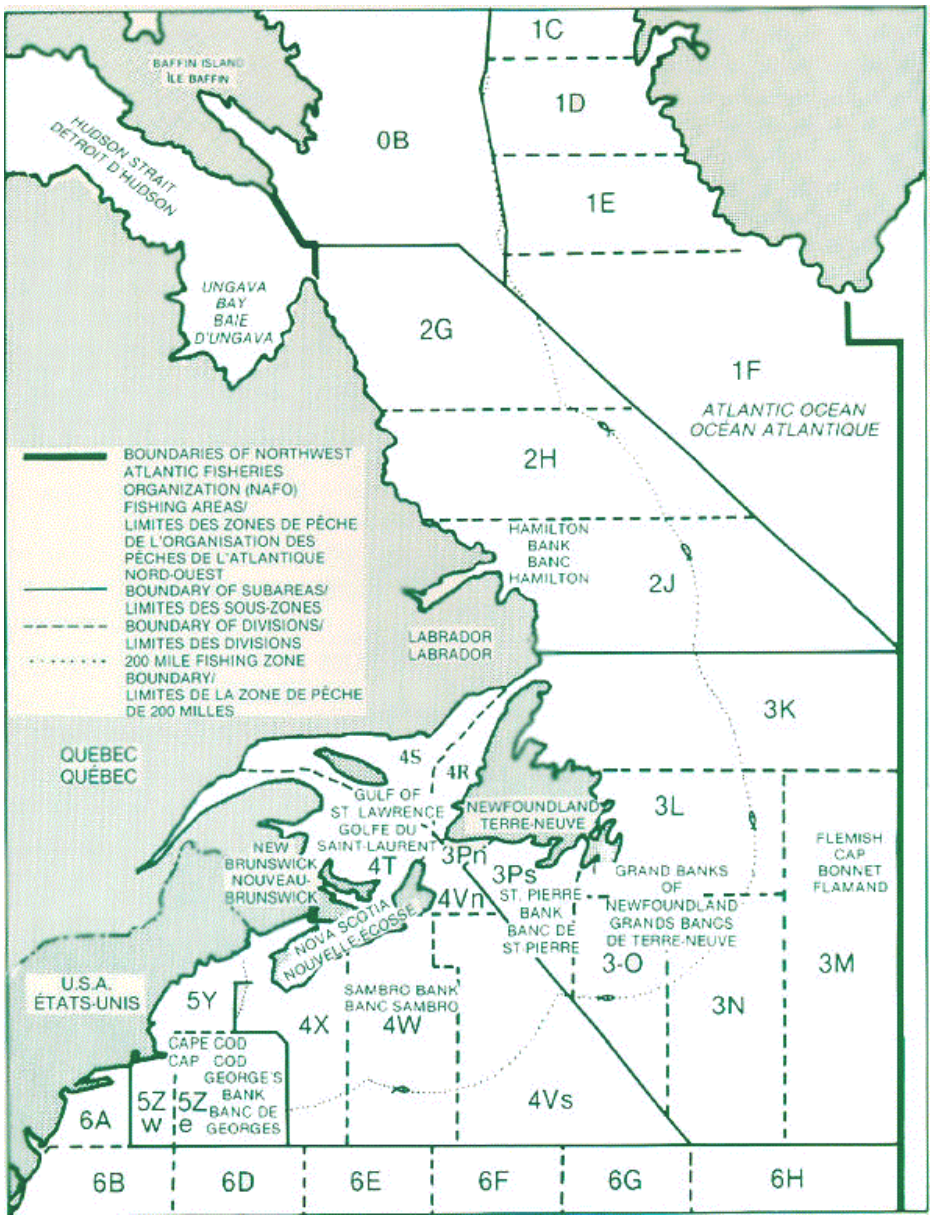
Historical information on Canadian skate fisheries and management was described in the 2000 SAFE Report for skates, and can also be found in Swain et al. (2006) and Kulka et al. (2007). Prior to 1994,

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 3) 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 3. 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 Map1. Table 18 summarizes the skate landings from these areas. Since 1998, the gears used in this fishery have been evenly distributed between gillnet, logline, 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)*

### 5.5.1.6 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*

### 5.5.1.7 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 21). 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% |

### 5.5.2 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 currently are 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 about 510 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 and then abandoned. U.S. Customs does not track the exports, and no census data exists specific to skate exports.

### 5.5.3 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.

### 5.5.4 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.

#### 5.5.4.1 Dockside Prices for Skates

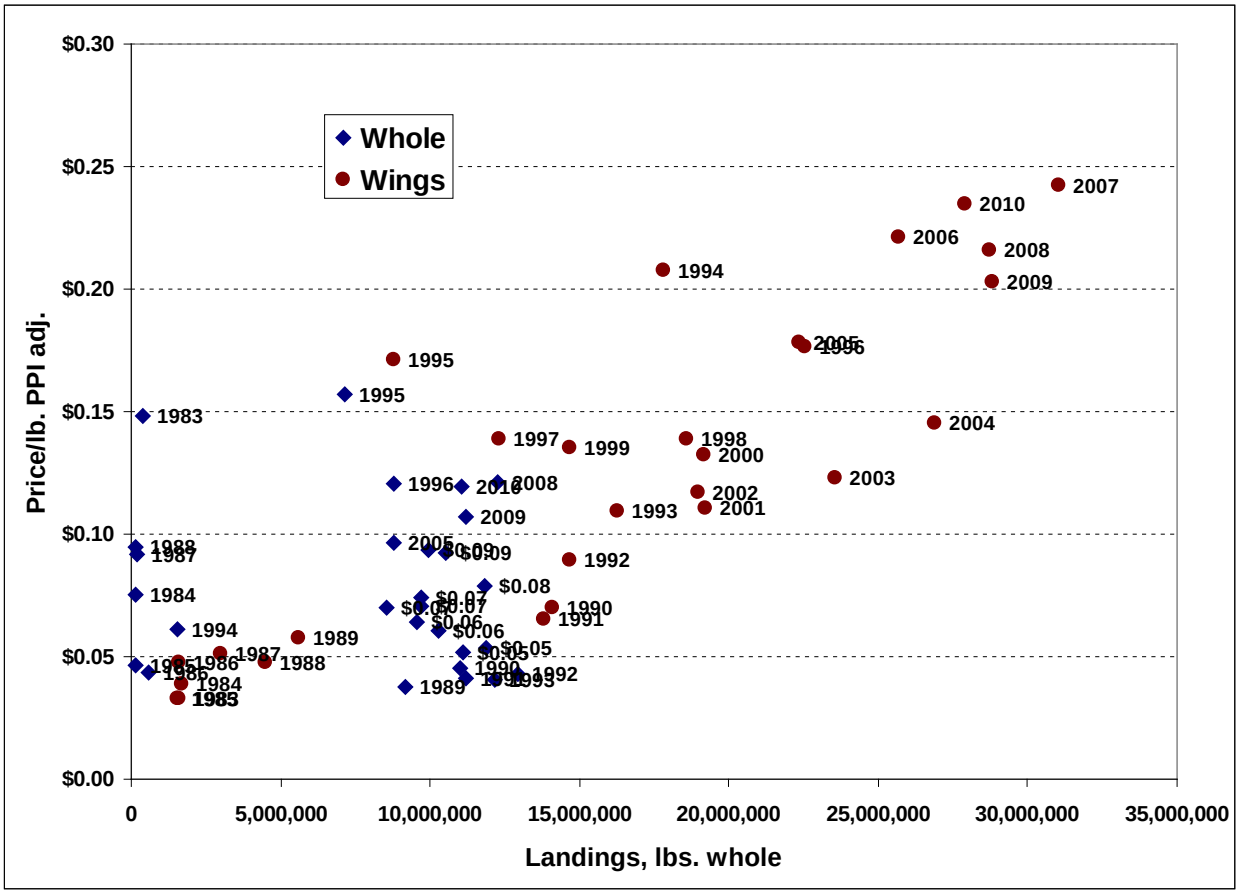
Prices reveal important information about the economic benefits and costs of fishery regulations. An overview and analysis of skate prices, including supply and demand were included in the 2008 SAFE Report, Section 7 of Amendment 3.

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.[7] 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.

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 years [8], 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).




## 5.5.4.2 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.

7. 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.

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

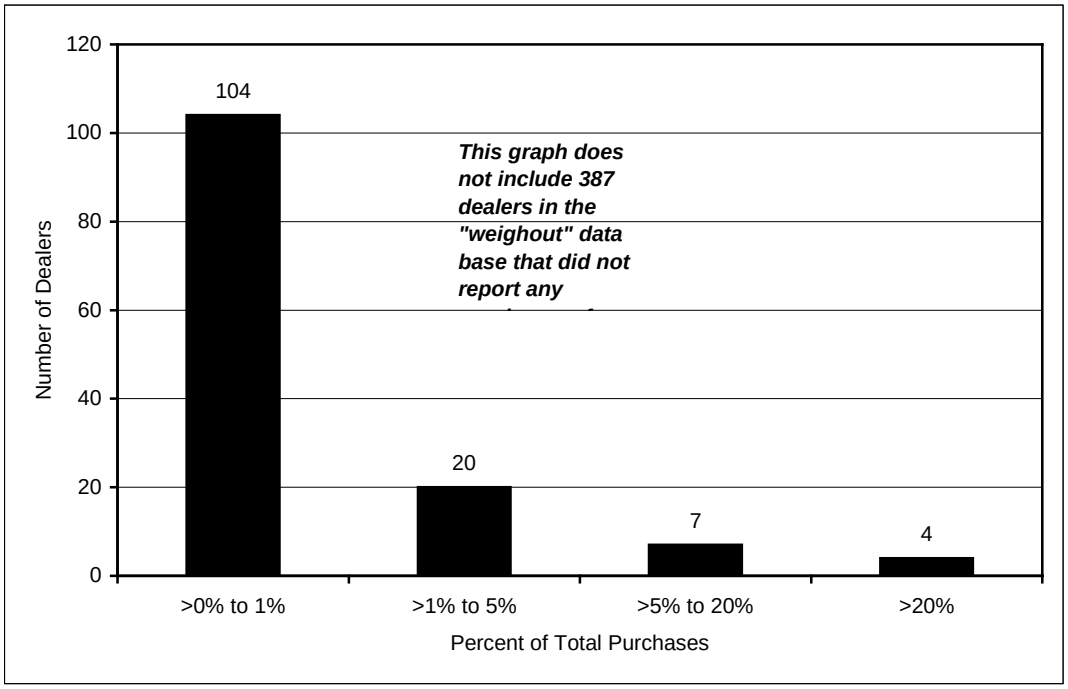
### 5.5.4.3 Skate Vessels

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). There might be some changes in vessel participation that have occurred due to and since implementation of Skate FMP Amendment 3 and Multispecies FMP Amendment 16. These changes and their effects will be analyzed and summarized for the SAFE Report later in 2011, once the 2010 data become available for analysis.

### 5.5.4.4 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: percent of total purchases of raw fish



# 6.0 ENVIRONMENTAL CONSEQUENCES

## *6.1 Biological Impacts*

### 6.1.1 Impacts on skates and the skate fishery

This framework adjusts possession limits and landings regulations within the TAL for the targeted wing fishery. The alternatives considered in developing this framework adjustment have little or no impact on the skate resource. Catch and fishing effort for skates are almost entirely determined by the ABC/ACL and TALs under the Skate FMP and similar management reference points in the Northeast Multispecies and Scallop FMPs. Skate Wing Possession Limit. Also, it is not possible to provide measures of statistical confidence for models that try to predict the outcomes, biological or economic, of the different management alternatives.

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.

In response to the short directed fishery season that occurred in 2010, the Council recognized the need to take action to extend the duration of the fishery. Although the 2011 ABC and TALs could rise once analysis of newly peer reviewed data is available, extending the duration of the directed skate wing fishery is important. An extended closure creates a loss of international market share, reduces shore-side employment, and causes discarding when the fishery is closed or the possession limit is lowered to an incidental level.

As a result, most of the differences are economic and social, rather than biological. The exception to this generalization is that with high possession limits and extended directed skate fishery closures, a greater proportion of skate landings occur on trips that target other species. To the extent that this affects fishing behavior, may increase or decrease biological effects on other species. Likewise, vessels that would otherwise use DAS to target skates could use them for other purposes, which could also have a biological effect.

Conversely, with lower skate wing possession limits, a greater proportion of skate landings would occur on trips actually targeting skates. It might also induce vessels fishing for skates to take trips closer to shore even though the skate catch rates could be lower, while taking more frequent trips to compensate. In this case, while the economic effects could be favorable, the biological effects on skates and other species that occur closer to shore could be adversely affected while those on offshore species could be favorably affected (i.e. less mortality and discarding).

In general, the biological tradeoffs are very complex and beyond the scope of this analysis to estimate. Nonetheless, the effects on overfished thorny and smooth skate (which was overfished and in a rebuilding management program, and whose biomass is slightly above the minimum biomass threshold) should be marginally positive if fewer skate trips are taken offshore, responding to the lower possession limit. These two species tend to occur in deeper waters of the Gulf of Maine and fewer offshore skate trips could reduce fishing pressure on them.

The effect of various skate possession limits on the skate 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 of Amendment 3. 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 trip[9]. 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 13, 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 was 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). 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.

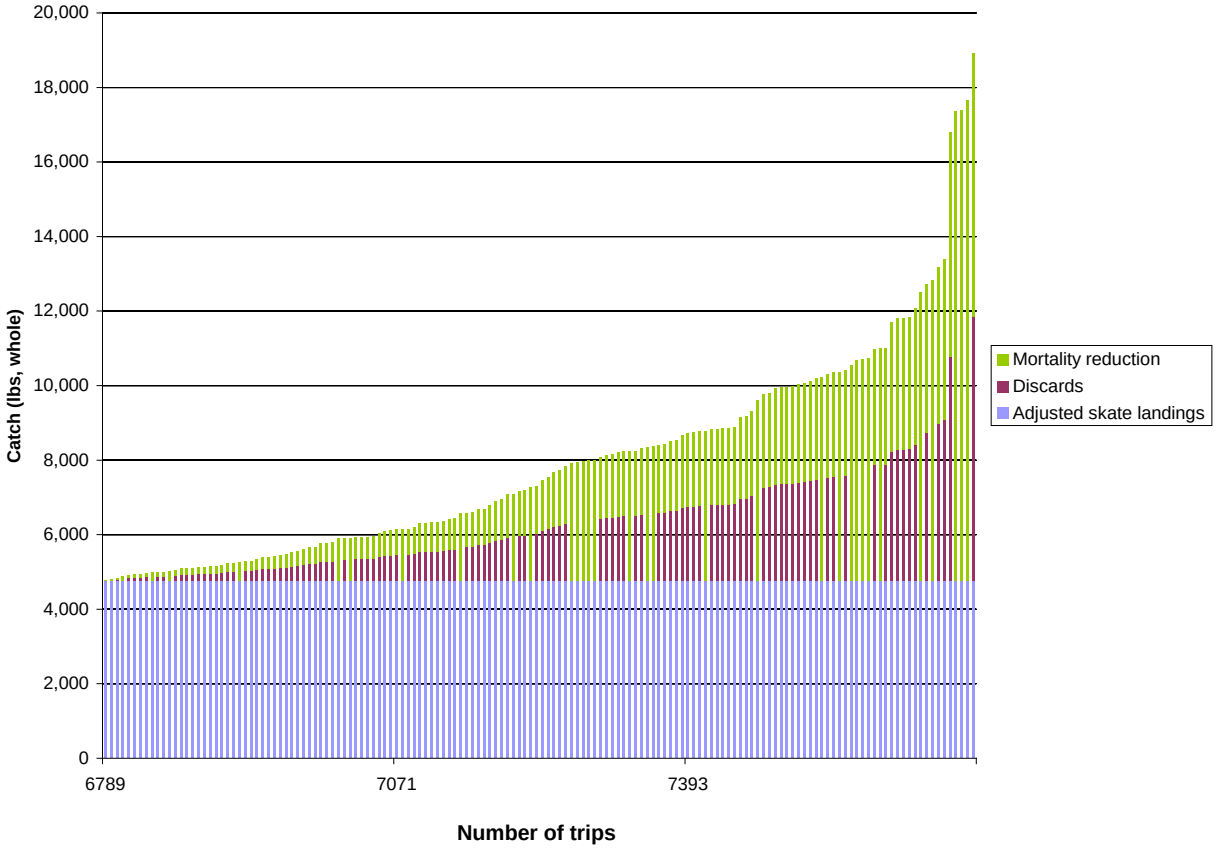
**Effect on discards by skate possession limits**

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.

9. 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.

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 13).

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

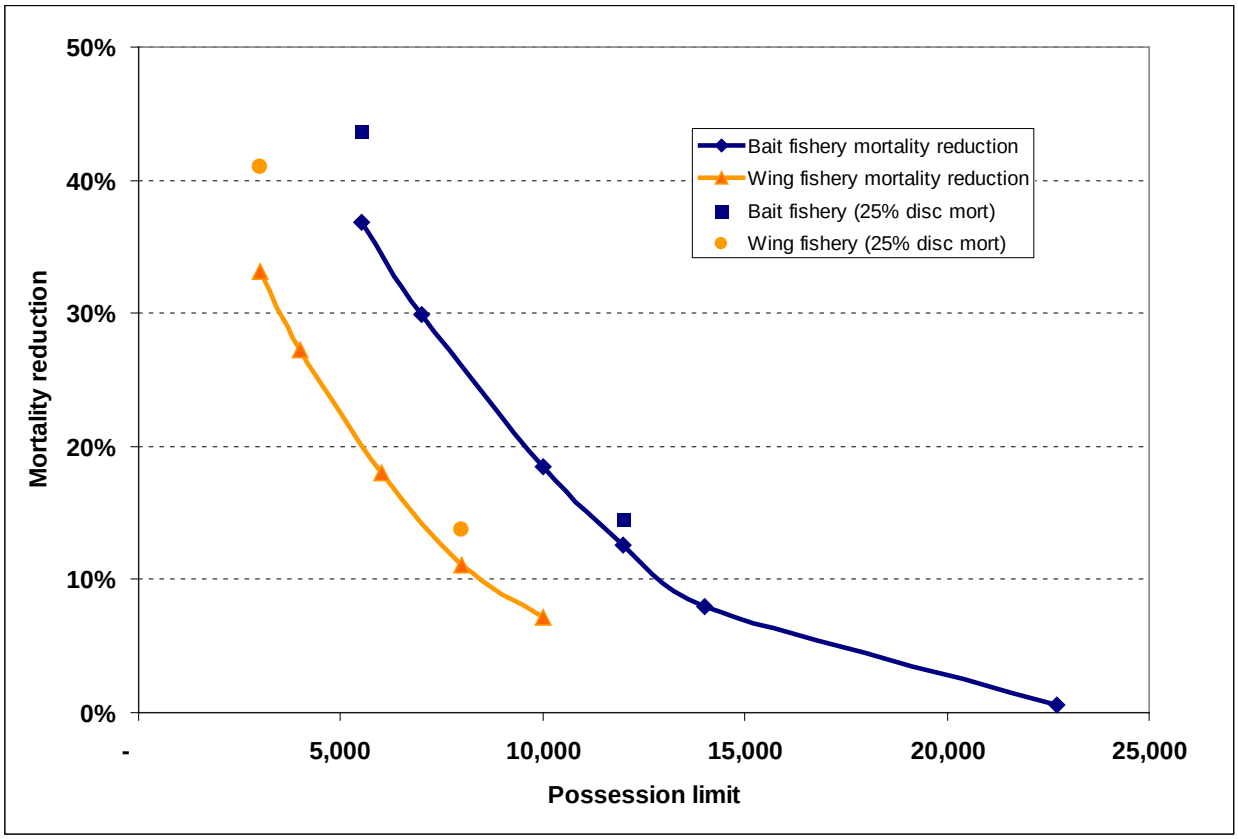
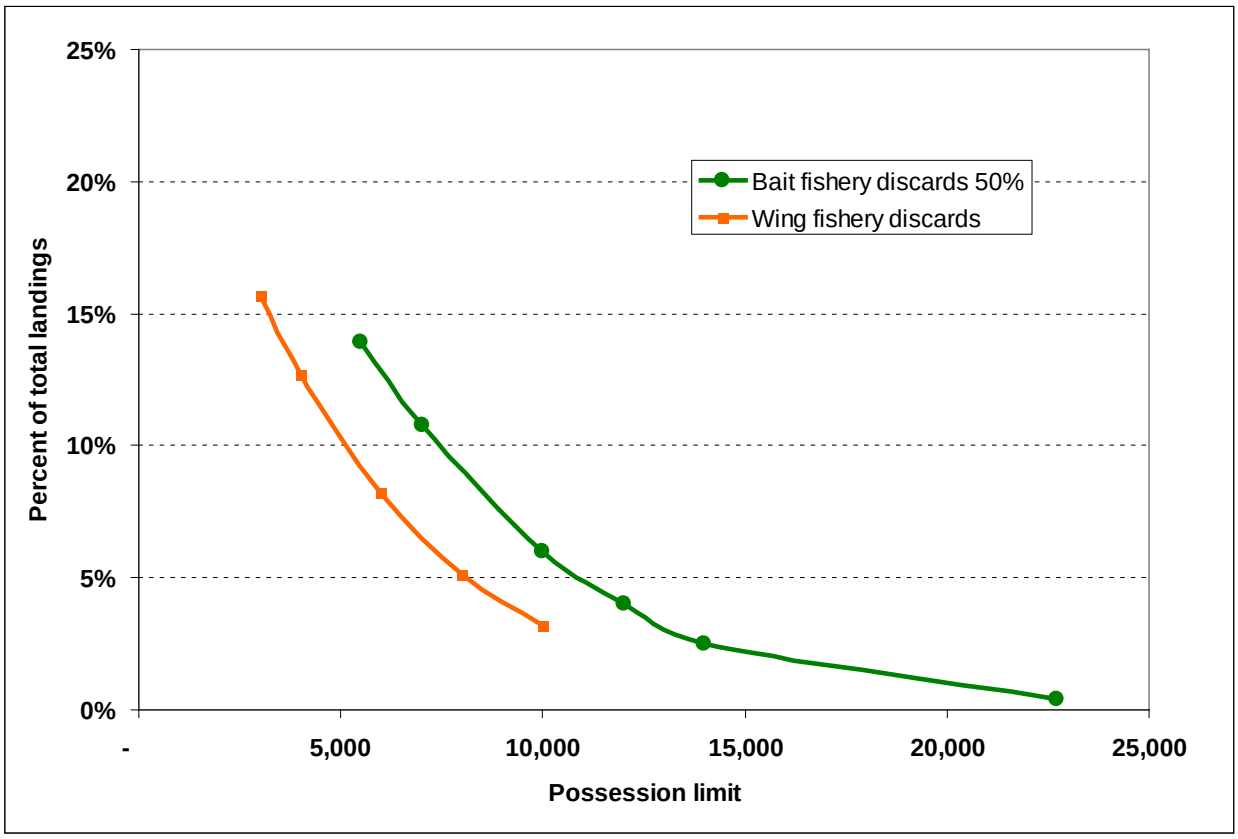


**Figure 15. Additional skate discards as a fraction of original landings by fishery vs. a skate possession limit**

**The model assumes a 50% skate discard mortality and that trips do not re-direct on other species or take compensatory trips.**




6.1.1.1.1 No Action - Skate Wing Possession Limit to Remain at 5,000 Pounds

No additional biological impacts are expected from taking no action.

6.1.1.1.2 Preferred alternative (Proposed action) - 2,600 lbs. from May 1 to August 31; 4,100 lbs. from September 1 until the in-season incidental possession limit trigger is reached

As described above, the different alternatives for skate wing possession limits are not expected to have any differences in biological impacts. Although different possession limits may cause the ratio of landings and discards to change, the total catch (landings plus discards) of skate is set through an annual catch limit that is periodically adjusted to not exceed the overfishing level. This alternative is estimated to increase the discard rate by 0.5% and 1.7% on targeted skate wing trips compared to the No Action alternative based on Table 24. This alternative would result in higher discards when the possession limit is at its lowest during the first four months of the fishing year and to a lesser extent when it is only marginally below the 5,000 lb. possession limit in the No Action alternative.

6.1.1.1.3 Alternative 1: Reduce skate wing possession limit to 4,100 pounds

This alternative is estimated to increase the discard rate only by 0.5% on targeted skate wing trips compared to the No Action alternative based on Table 24. It would cause discards to be marginally lower than under the preferred alternative but as explained earlier, no net biological impacts on the skate fishery are expected.

#### 6.1.1.1.4 Alternative 2: Reduce skate wing possession limit to 3,200 pounds

This alternative is estimated to increase the discard rate only by 1.1% on targeted skate wing trips compared to the No Action alternative based on Table 24. It would cause discards to be about the same as under the preferred alternative because it is between the high and low possession limits in the preferred alternative but as explained earlier, no net biological impacts on the skate fishery are expected.

#### 6.1.1.1.5 Alternative 3: Reduce Skate Wing Possession Limit to 2,600 Pounds (5,902 lbs. whole weight)

This alternative is estimated to increase the discard rate only by 1.7 % on targeted skate wing trips compared to the No Action alternative based on Table 24. It would cause discards to be marginally lower than under the preferred alternative but as explained earlier, no net biological impacts on the skate fishery are expected.

### 6.1.1.2 In-season incidental skate wing possession limit triggers

The main effects of the skate wing trigger alternatives (ranging between 75 and 85 percent of the annual TAL) are mainly distributional and economic. Although there is a higher risk that the TAL could be exceeded at a higher trigger level and with a higher incidental skate wing possession limit, the estimate using 2010 daily landings rates in Section 0 show that the risk is modest and not likely to exceed the ACL. Also, there is an acceptably small risk that it would later invoke an accountability measure due to an overage.

#### 6.1.1.2.1 No action: Skate Wing TAL Trigger – 80%

This alternative would have no adverse biological impact. Skate landings are not projected to exceed the TAL by more than 5%. It is expected that the large buffer between the ACT and ACL/ABC will prevent the ACL/ABC from being exceeded.

#### 6.1.1.2.2 Alternative 1: Reduce Skate Wing TAL Trigger to 75%

Although this alternative might slightly reduce the risk of exceeding the TAL, because the targeted wing possession limit would be reduced to the incidental skate wing possession limit sooner, it would result in more skate, and perhaps slightly more discards than under a higher trigger.

#### 6.1.1.2.3 Preferred Alternative (Proposed Action): Increase Skate Wing TAL Trigger to 85%

Similar to the other, lower trigger levels the proposed action is not expected to have an adverse impact on the skate resource. Although there is a slightly higher risk that the TAL could be exceeded if coupled with a higher incidental possession limit, it is expected that the large buffer between the ACT and ACL/ABC will prevent the ACL/ABC from being exceeded.

### 6.1.1.3 Incidental skate wing possession limit

While skates are thought to be more resilient to discarding than other fish, the Council wants to minimize regulatory discards, particularly those caused by possession limits. Raising the incidental skate possession limit will, on one hand, decrease regulatory discards. On the other hand, there is some possibility that the higher incidental possession limit coupled with higher skate prices after landings are curtailed may encourage targeting skates on short trips, or more retention of skates on trips targeting other species. Again, it is difficult to quantify these countervailing effects, but reducing the negative economic effects caused by discarding probably outweighs the potential for vessels to keep more skates when fishing under the higher incidental skate possession limit. According to 2007 landings data, 3,051 trips landed less than

500 lbs. of skates or an equivalent amount of skate wings together totaling 548,971 lbs. whole weight. In comparison, 4,129 trips (out of 7,649 trips landing skates or skate wings) landed less than 1,135 lbs. or an equivalent amount of skate wings together totaling 1,402,507 lbs. whole weight. Assuming that trips landing between 500 and 1,135 lbs. of skates would discard the difference, the final alternative would avoid 314,536 lbs. of skate discards.

#### 6.1.1.3.1 No action: 500 lb. skate wing possession limit

There would be no additional impact on the skate fishery of retaining the existing incidental skate wing possession limit; however as noted under the proposed action, it would result in an estimated 314,536 lbs. of additional discards. Whether this alternative would reduce the total landings of skate wings depends on how much fishermen would continue to target skates under a higher incidental possession limit compared to the 500 lb. possession limit. However, it this alternative probably would result in lower total landings once the incidental possession limit is triggered.

#### 6.1.1.3.2 Alternative 1: 750 lb. skate wing possession limit (1,703 lbs. whole weight)

This alternative would result in a discard level less than the No Action alternative but more than the proposed action. It also would result in an intermediate level of risk of exceeding the TAL compared to the other alternatives.

#### 6.1.1.3.3 Preferred Alternative (Proposed Action): 1,250 lbs. incidental skate wing possession limit

According to 2007 landings data, 3,051 trips landed less than 500 lbs. of skates or an equivalent amount of skate wings together totaling 548,971 lbs. whole weight. In comparison, 4,129 trips (out of 7,649 trips landing skates or skate wings) landed less than 1,135 lbs. (an amount very close to the proposed incidental possession limit) or an equivalent amount of skate wings together totaling 1,402,507 lbs. whole weight. Assuming that trips landing between 500 and 1,135 lbs. of skates would discard the difference, the final alternative would avoid 314,536 lbs. of skate discards.

Although the wing fishery has the highest level of risk of exceeding the TAL under this alternative, the risk is small and it is expected that the large buffer between the ACT and ACL/ABC will prevent the ACL/ABC from being exceeded.

Further analysis using 2009 trips and 2010 daily landings rates is provided in Section 0.

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

No additional skate mortality is expected if vessels targeting skates for the wing market were allowed to also land carcasses for the bait market. It could make skate trips more profitable, but this practice is generally rare and the effects would be so marginal that it would not affect decisions to fish for skates.

### 6.1.1.5 Combined effect of preferred alternatives

The change in the possession limit for the targeted skate fishery would have the largest impact of the individual measures in the proposed action, but this alternative is estimated to increase the discard rate by 0.5% and 1.7% on targeted skate wing trips compared to the No Action alternative based on Table 24. This alternative would result in higher discards when the possession limit is at its lowest during the first four months of the fishing year and to a lesser extent when it is only marginally below the 5,000 lb. possession limit in the No Action alternative. Because it is lower than the targeted No Action possession

limit, by itself it will cause a change in total skate landings. The decrease in discards from the higher incidental possession limit compared to the No Action alternative will offset or partially offset any increase in discards caused by the lower targeted wing possession limit.

There is a slightly higher risk that the TAL could be exceeded because the increase in the TAL trigger from 80% to 85% is coupled with the higher incidental possession limit of 1,250 lbs. Table 34 shows the results of all nine possible combinations of the targeted possession limit, TAL trigger and the incidental possession limit with the final alternative having a split season skate wing possession limit of 2,600 lbs. from May 1 to Aug 31, followed by a 4,100 lb. limit thereafter. There is a possibility that the TAL would be exceeded by 5% and trigger an accountability measure; however, the relatively large (25%) buffer between the ACT and ACL/ABC will prevent the ACL/ABC from being exceeded. The proposed measure to allow skate carcasses to be landed in proportion to the amount of wings landed will not affect the catch of skate but will simply allow a higher utilization of the resource.

### 6.1.2 Impacts on other fisheries

#### 6.1.2.1 Northeast Multispecies

More than 95 percent of vessels landing northeast multispecies are expected to fish under sector allocations. Their fishing time will be almost completely determined by their catch of multispecies and therefore they are not expected to change their fishing behavior in response to the proposed changes in the skate wing possession limit while fishing for multispecies. Similarly, common pool multispecies vessels fishing under DAS limits will use their limited DAS to target multispecies and therefore, also will not change their fishing behavior in response to the changes in the skate possession limit or landings rules. As a result, the proposed action is expected to have no impact on the catch of multispecies.

#### 6.1.2.2 Monkfish

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 No Action. This would improve the economic effect on the monkfish fishery, but would not increase the mortality on monkfish which are controlled by DAS limits and an ACL.

#### 6.1.2.3 Scallops

Few, if any, limited access scallop vessels land skates because their value is so low compared to scallops and they have limited DAS in which to land both scallops and skates. 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. It is therefore unlikely that the proposed alternatives would affect either effort directed on scallops or scallop landings. Of the few limited access scallop vessels that land skates, most do not land skates in excess of the 1,135 lb. whole weight skate possession limit, so the proposed action is unlikely to change skate landings by limited access vessels as a group.

Some general category scallop vessels retain a mix of species to augment their allowable landings of 400 lbs. of scallops per trip, so the proposed action might cause general category vessels to discard skates that they otherwise would have landed. Also because scallops are substantially more valuable than skates, these vessels are unlikely to change their fishing behavior to offset their potential increase of skate discards.

### 6.1.2.4 Other fisheries

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.

## 6.1.3 Discards (bycatch) of non-target species

Reducing the skate wing possession limit is intended to increase the number of trips targeting skates, but 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.

## 6.1.4 Protected species

The proposed action would make seasonal adjustments to the skate wing possession limits and landings regulations within the total allowable landings (TAL) target for a part of the skate fishery. The TAL which was first implemented in 2010 would reduce total skate landings by about 29% from 2008-2009 levels. The proposed action is expected to only minimally increase total skate landings (about 0-4% of total skate landings) if the target TAL is exceeded. This would result a reduction of total skate landings of 25 to 29% compared to 2009 levels. Although fishing effort is not expected to change for vessels that do not target skates, the proposed action would result in a substantial decrease in targeted fishing for skates compared to levels of 2009 and earlier years. The impacts of the individual components of the proposed action are described below.

> **A. Skate wing possession limit**: 2,600 lbs. (5,902 lbs. whole weight) from May 1 to August 31; 4,100 lbs. (9,307 lbs. whole weight) from September 1 until in-season incidental possession limit trigger is reached

Compared to the No Action alternative, measures implemented in July 2010 under Amendment 3 to the FMP, this measure is not expected to increase total fishing time or catch and therefore it is not expected to increase adverse impacts protected species, including Atlantic sturgeon. It is possible that the proposed action might reduce fishing that has the potential to interact with seas turtles, because it will reduce fishing time in the targeted wing fishery through lower possession limit in the summer when turtle interactions tend to be higher.

> **B. In-season incidental skate wing possession limit trigger – 85%**

An increase in the in-season incidental skate wing possession limit trigger from 80% under no action to 85% under the proposed action also is not expected to result in any increase in overall fishing time because overall total allowable landings (TAL) would remain the same. Despite a higher trigger, the lower targeted possession limit under the proposed action would result in less targeted fishing for skates in summer months when interactions with protected species tend to be higher than later in the year. Therefore, this measure is not expected to result in increased interactions with protected species, including Atlantic sturgeon.

> **C. Incidental skate wing possession limit – 1,250 pounds**

An increase in the incidental skate wing possession limit possession limit from 500 lbs. under no action to 1,250 lbs. under the proposed action will not change the fishing behavior of boats that are not at least partially targeting skates. For example, it will not affect boats targeting scallops or multispecies groundfish. It is expected to allow boats to land a larger part of their catch of skates instead of discarding them. As a result it may allow some boats to continue to partially target skates in combination with other species such as monkfish after the in-season incidental skate wing possession limit trigger is reached but any increases would be marginal compared to 2009 levels. Also, given the lower possession limits that are being proposed, the trigger is expected to be reached substantially later in fishing year 2011 than in fishing year 2010 when it was reached on September 2. Therefore possibly increased levels of fishing for skates under a higher incidental possession limit are not expected to occur the fall and winter. Therefore, this measure is not expected to result in increased interactions with protected species, including Atlantic sturgeon.

**D. Allow vessels to process wings at sea and land skate carcasses for the bait market**

This provision will allow vessels targeting skate wings to land carcasses for the bait market. It will only marginally increase revenues from skate catches since prices for skate carcasses are much lower than prices for wings. Based on public comments from the skate industry, it is expected to affect relatively few vessels. Therefore it is not expected to have any impact on the catch of skates or skate fishing effort. As a result, it is not expected to have any impacts on interactions with protected species, including Atlantic sturgeon.

### 6.1.5 Essential Fish Habitat (EFH) Assessment

No change in the use and deployment of gear or changes in the overall level or distribution of fishing effort targeting skates are anticipated as a result of the proposed action. Therefore the proposed action is not expected to have any impacts to the physical environment or on EFH.

## *6.2 Impact on Stellwagen Bank National Marine Sanctuary*

No impacts on the Stellwagen Bank National Marine Sanctuary are foreseen or anticipated. The proposed action only changes possession limit and product form restrictions and is not expected to cause changes in the total amount of fishing effort or its distribution with respect to the Stellwagen Bank National Marine Sanctuary.

## *6.3 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. Additional analysis of the economic impacts of the proposed action on individual vessels operations is included in the Initial Regulatory Flexibility Analysis in section 8.7.

### 6.3.1 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 22 and Table 23. 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 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 exceed the TAL. Any increase in regulatory discards 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 22. 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 23. 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.<br>a. Provides additional buffer against exceeding the TAL. | a. Will not achieve the TAL and would increase discards due to the low possession limit. |

| Option | Description | Pros | Cons |
|---|---|---|---|
| 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.<br>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.*<br>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. |
| 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.<br>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.<br>c. Foregoing opportunity to correct for higher discards in the current year (2010). |

| Option | Description | Pros | Cons |
|---|---|---|---|
| 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.<br>b. High likelihood of achieving 100% of the TAL.<br>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.<br>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 24). 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-season[10]. 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 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 24).

10. 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.

Table 24. 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 25, Table 26, and Table 27), compared to No Action of 5,000 lbs. (Table 28). 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 28). 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 27). 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 24), 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).

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 25. Skate trip diagnostics and effects of a 1,900 lbs. skate wing possession limit on 2009 trips landing 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 26. 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 27. 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 28. 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 | |

### 6.3.2 Fishery performance under various skate wing possession limits in 2010 and implications for possession limit alternatives

#### 6.3.2.1 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 29. 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 500 lb. possession limit, 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 29), 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 29. 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.

| | | | 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 30. Year-over-year comparison of landings of skates and other related finfish made between Jul-16 and Sep-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% |

## 6.3.2.2 Weekly landings rates

Skate wing landings before June 16, 2010 averaged over 1,000,000 lbs./week, or nearly 160,000 pounds per day. Leading up to the publication of the final rule of Amendment 3 on June 16[11], 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, 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. 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.

11. 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 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:

**Equation 1**

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

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 6.3.2.1, 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. 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 1/365$^{th}$ of the TAL).

**Table 31. 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. (No Action)** | 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% |

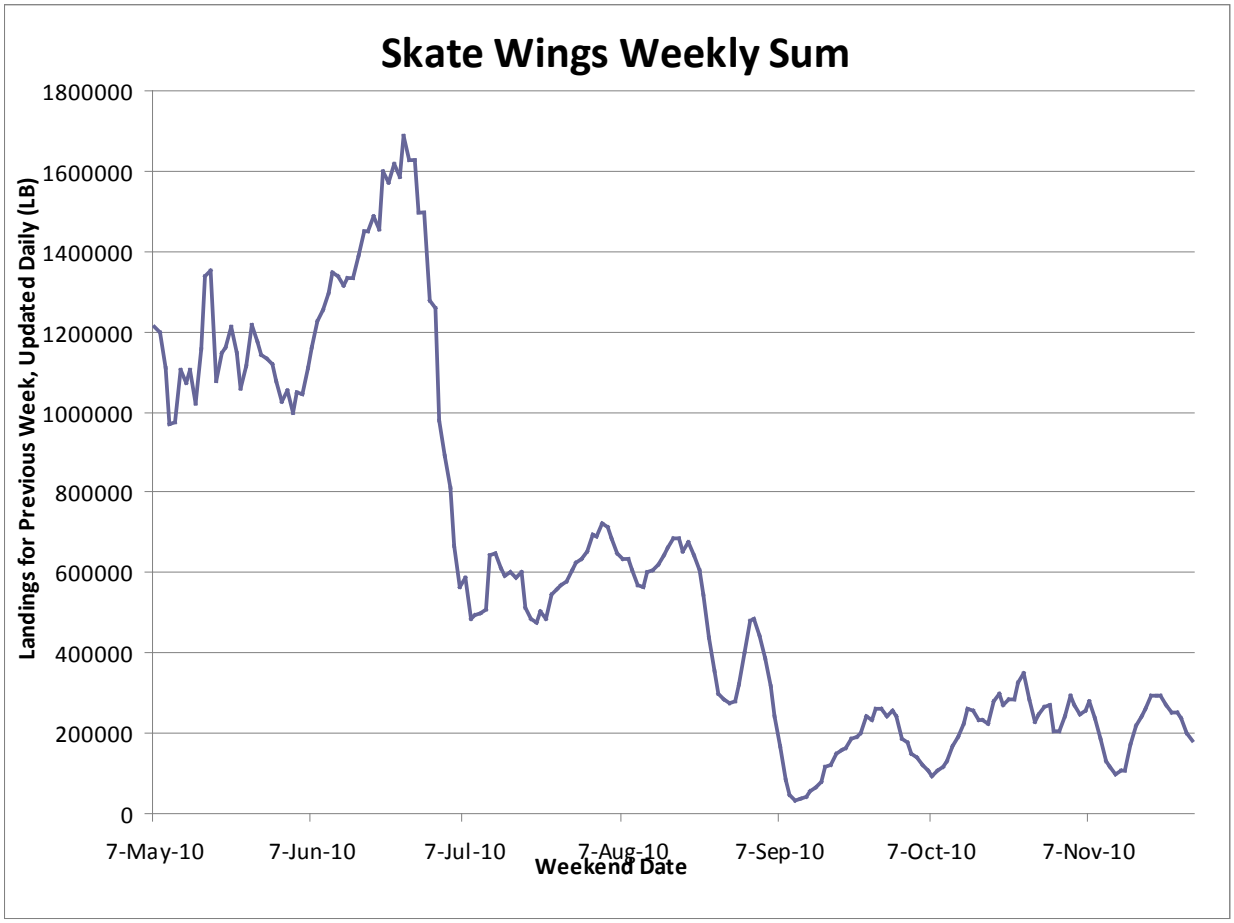



**Figure 16. Seven day moving average of daily landings during 2010**

**Table 32. 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 |

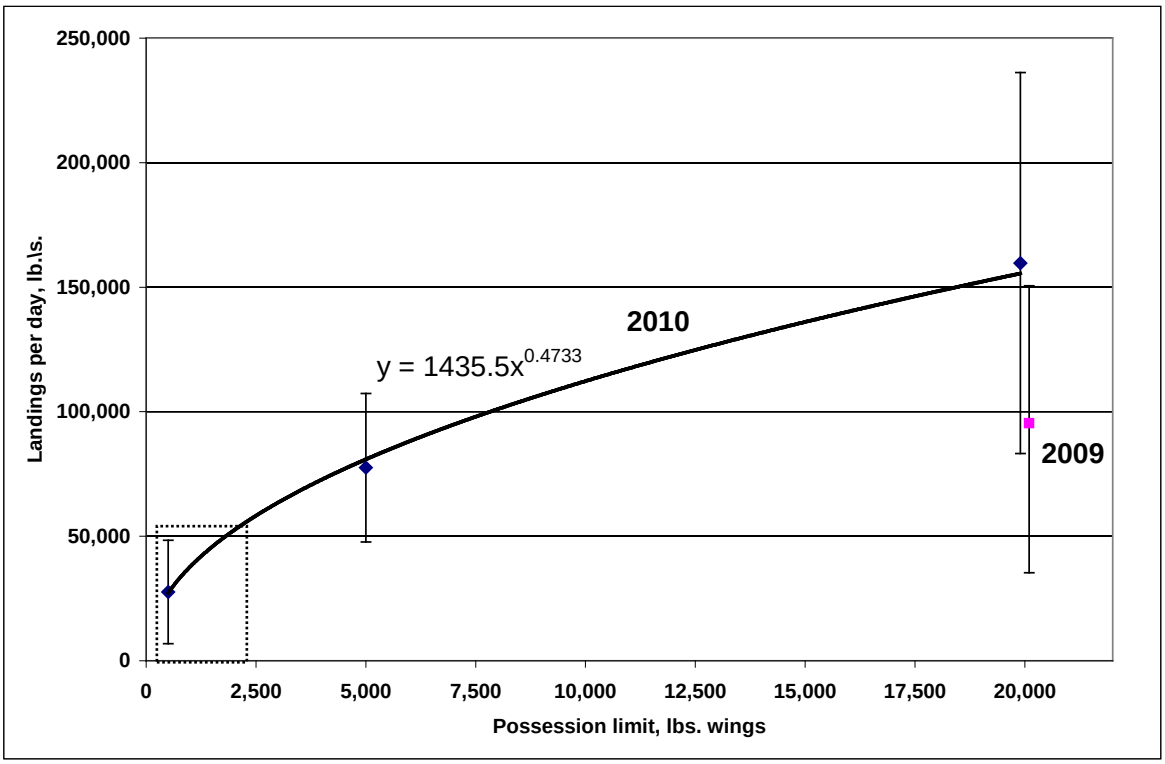



**Figure 17. Fitted and observed daily catch rates in 2010 compared to observed daily catch rates in 2009, from May 1 to November 27 of each year**

### 6.3.3 General economic effects of possession limits

The effects of various skate possession limits on the fishery were estimated using a cost/revenue economic model as described in section 0. 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.

### 6.3.4 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. 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 33 provides some examples of the additional revenue that may be achieved per trip, under a range of possession limit alternatives.

**Table 33. Estimated additional trip-level revenue from landing skate carcasses for bait under a range of possession limits (assuming a dock price of $0.11 per lb. -average FY 2010 skate bait price)**

| Possession Limit (pounds wing weight) | Max. Carcass wt. (pounds) | 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 |

### 6.3.5 Combined effect of skate wing possession limit reduction, TAL trigger alternatives, and incidental skate wing possession limits.

The following analysis is derived from the 2010 daily landings rates which are analyzed in Section 6.3.2.2. In that analysis, the expected daily landings rate is interpolated based on the estimated power function in Equation 1 for 2,600 lbs. and 4,100 lbs., the first period lasting for 123 days, and the second period until the TAL trigger (ranging from 75-85%) is reached, assuming a constant predicted landings rate of 59,335 and 73,609 lbs. per day, respectively.

Table 34 shows the results of all nine possible combinations with the final alternative having a split season skate wing possession limit of 2,600 lbs. from May 1 to Aug 31, followed by a 4,100 lb. limit thereafter. Other than the slight possibility that the TAL would be exceeded by 5% and trigger an accountability measure, the effects are mostly economic and distributional.

The TAL trigger advances or postpones the duration of the directed fishery by about two weeks, assuming that the current TAL for the 2011 season remains. The duration of the directed fishery, however, is estimated to last until December or January (Table 34). If due to higher skate prices or other factors the number of skate trips increases, the season will not last as long as predicted here. Conversely, peer reviewed data and analyses that increase the skate TAL could allow the directed skate wing fishery season to run longer.

The under any of the TAL trigger alternatives, a higher incidental possession limit (ranging from the 500 lbs. No Action to 1,250 lbs.) would allow landings to increase at a greater rate. Landings under each of the scenarios range from 93% of the TAL to 107% of the TAL. Overages of 5% or less are within an

acceptable range where the ABC is unlikely to be exceeded. Overages greater than this amount also may not cause catches to exceed the ABC, but may invoke a trigger to lower the TAL trigger in future years.

**Table 34.** Projected dates of reaching the TAL trigger and percent of the current skate wing TAL landed based on the equation in Figure 17 and 2010 daily skate wing landings rates.

| | 75% trigger | | 80% trigger | | 85% trigger | |
|---|---|---|---|---|---|---|
| Projected trigger date | 12/16/2010 | | 12/30/2010 | | 1/13/2011 | |
| Incidental limit | Projected date of reaching TAL at incidental limit | Total projected landings (% of TAL) | Projected date of reaching TAL at incidental limit | Total projected landings (% of TAL) | Projected date of reaching TAL at incidental limit | Total projected landings (% of TAL) |
| 500 | | 93.0% | | 96.1% | | 99.3% |
| 750 | | 96.8% | | 99.6% | 4/15/2011 | 102.3% |
| 1250 | 4/16/2011 | 102.7% | 4/6/2011 | 104.9% | 3/26/2011 | 107.1% |

The incidental skate wing possession limit alternatives (Section 4.1.3) have varying effects on the number of trips and discarding depending on the trip duration, size of vessel (which is positively correlated with trip duration), and degree to which the vessel targets skates and depends on income from skates. Over the range of alternatives considered by this framework adjustment, the predicted results based on a possession limit model analysis of 2009 trip data are shown in the table below.

In general, a lower proportion of trips landing skates are affected by higher possession limits, and the incidental limits disproportionately affect longer trips (which typically land more skates, but may or may not individually depend more on skates for a source of fishery revenue). For example, using a 500 lbs. possession limit (No Action) only 83% of affected trips target skates on trips longer than 24 hours, but 73% of affected trips targeting skates occur on trips less than 24 hours. With the 1,250 lb. incidental skate wing possession limit, in contrast affects 79 and 55% of trips, respectively.

Of trips that target skates, only 2.1% of day trips and 3.4% of longer trips targeting skates would be unaffected by No Action, while these percentages increase marginally to 2.4 and 4.2 percent respectively. These estimates assume constant 2009 prices, so the response of skate wing prices to lower supply could increase the incentive to target skates, particularly in inshore waters and shorter trips where operating costs may be lower.

It is estimated that increasing the incidental skate wing possession limit to 750 lbs. would increase fishery revenue by $262,000, split evenly between vessels making day trips and vessels making trips longer than 24 hours. Increasing the limit to 1,250 lbs. is estimated to increase fishery revenue by $770,000, also split evenly between vessels taking short and long trips. In comparison to total revenue from the skate wing fishery (Section 5.5.1), these are marginal changes, but are not insignificant. More importantly, they can keep open foreign markets and maintain market infrastructure while the directed skate fishery is curtailed to avoid exceeding the ACL.

The incidental possession limit alternatives are not that different in their performance relative to the risk of exceeding the TAL. Assuming the preferred alternative for the seasonal skate wing possession limit of 2,600 and 4,100 lbs. and a directed skate wing fishery closure around December or January, the 500 lbs. incidental limit is less likely (projected 93-97% of the TAL landed) to cause the fishery to exceed the TAL, while the higher 1,250 lbs. limit is projected to exceed the TAL by a small fraction (103-107%) but

has a low risk of triggering the accountability measure, which becomes effective if landings exceed 105% of the TAL.

The effect on discards, however, is more substantial. Compared to the discards predicted to occur on trips whose revenue from landing other species exceeds fishing costs (and therefore continue fishing) with a 500 lb. incidental skate wing possession limit, a 750 lbs. limit is projected to reduce discards by 8 percent. Increasing the limit to 1,250 lbs. is projected to reduce discards by 21% relative to No Action.

This doesn't mean that one alternative is less risky or creates less mortality relative to the ABC. It mainly means that a greater fraction of skates is accounted for by landings rather than by discards. The latter is taken into account in the assumed 52% discard rate and the 25% buffer for management uncertainty. Therefore, changes to incidental possession limit alternatives primarily have an economic effect, up to the point that they might cause additional targeting of skates and consequently begin to risk exceeding the ABC.

Table 35. Comparative effects of incidental skate limits, based on 2009 trips and limits being effective throughout the fishing year.

| Incidental limit | Trip length | Proportion of affected trips | Proportion of affected trips targeting skates | Proportion of unaffected trips targeting skates | Change in revenue | Discard reduction | Percent of TAL |
|---|---|---|---|---|---|---|---|
| 500 lbs. | Day | 27% | 73% | 2.1% | | | 93-99% |
| | > 24 hrs | 56% | 83% | 3.4% | | | |
| 750 lbs. | Day | 21% | 66% | 2.1% | $130,858 | -8% | 97-102% |
| | > 24 hrs | 45% | 81% | 3.6% | $131,464 | | |
| 1250 lbs. | Day | 15% | 55% | 2.4% | $324,986 | -21% | 103-107% |
| | > 24 hrs | 40% | 79% | 4.2% | $354,606 | | |

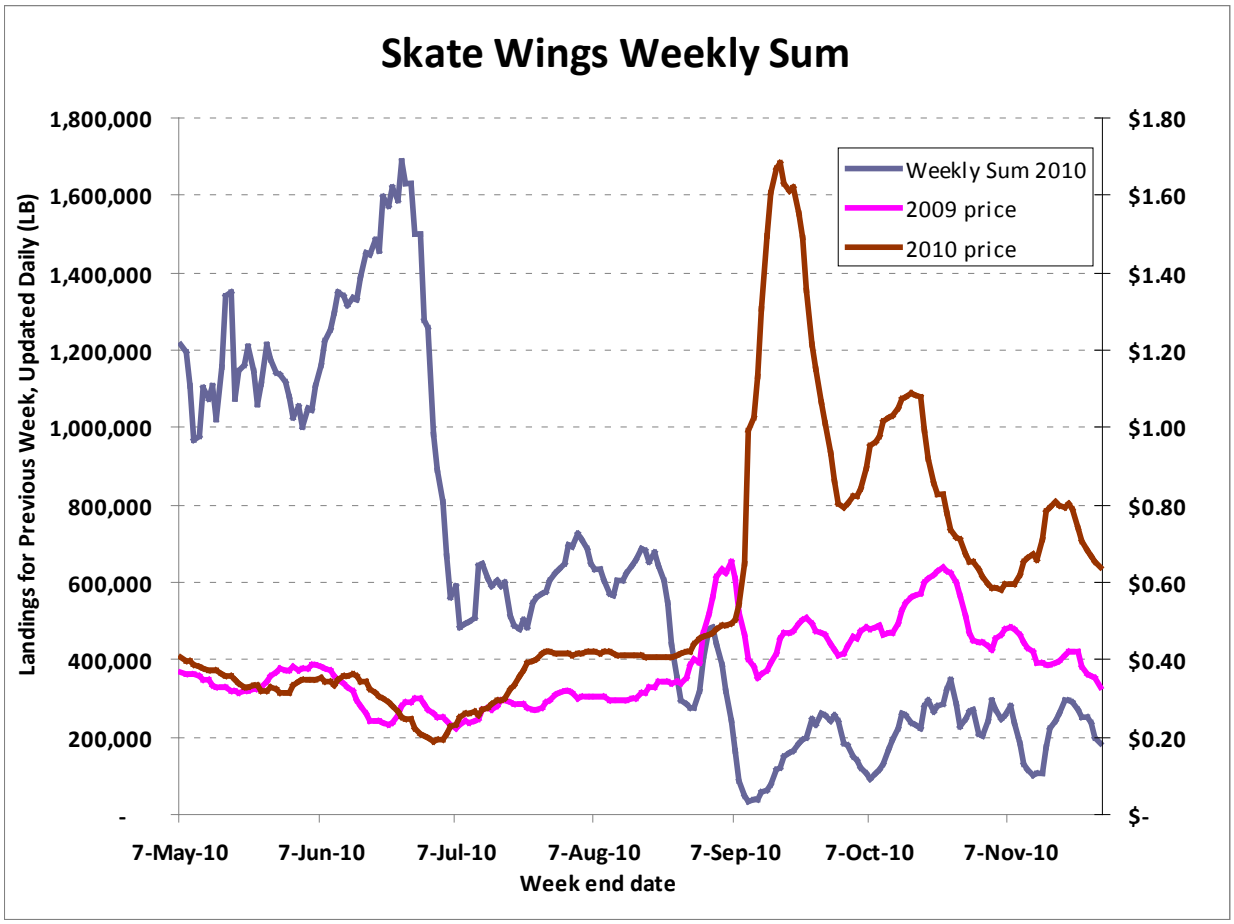
The effect of the split seasonal skate wing possession limit (Section 0) is also mainly economic. The figure below shows the response of skate wing prices to domestic supply (weekly landings), compared to 2009 prices (when skate landings were unconstrained by possession limits). During 2009, skate wing prices averaged about 30 cents per (whole) pound through early September. Absent management changes at that time in 2009, prices increased to 40-60 cents/lb. Although the causes of this price increase are complex and may develop from multiple sources (such as prices of competing products in the world market and seasonal patterns in airfreight prices), processors report that product quality is better during the fall and early winter, while product demand is up[12].

In 2010, skate prices started out at relatively the same level as they were in 2009, and furthermore they did not respond to the higher landings rate that occurred in the few weeks preceding implementation of Amendment 3, which reduced the skate wing possession limit from 20,000 to 5,000 pounds. Once Amendment 3 became effective and after the period of high landings in June, skate wing prices appeared to respond to lower demand. Compared to 2009, prices increased by about 1/3 to 40 cents/lb. Beginning on Sep. 3, 2010, prices spiked to over $1.60 lb. and then decreased to 60-80 cents/lb. while the 500 lb. skate wing possession limit was in effect.

12. Most of the product demand for skate wings arises from overseas markets.

The important effects of the preferred alternative (split seasonal possession limit and a 1,250 lb. incidental limit, Section 4.1) are twofold. First the lower limit early in the fishing year postpones landings to later in the year when skate wings are more valuable. And secondly, the increase in the skate wing possession limit in September, followed by a potential decrease to a higher incidental limit reduces market instability in skate wing prices (which can reduce income to fishermen when processers anticipate these changes by freezing and holding product). Both effects can help provide a steadier stream of product, maintaining market infrastructure, and a steadier stream of jobs and income.

**Figure 18. Seven day moving average of daily landings during 2010**




## 6.3.6 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 and 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.

## 6.3.7 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.

## *6.4 Social Impact Assessment*

Based on the analysis done in Amendment 3 to the Skate FMP, social impacts are the greatest (from the highest to lowest level of impacts) in New Bedford, Chatham and Point Judith, and secondarily Tiverton, Newport, Boston, Stonington, Gloucester, Barnegat Light and Hampton, VA.

The social impact assessment in Amendment 3 concluded that the reduction in the skate wing trip limit from 20,000 to 5,000 lbs. in 2010 would have negative social impacts in terms of risks to individuals and families that included job loss, family disruption and damage to long-standing social networks. On the industry side, the impact assessment identified harm to fishermen, dealers and especially to processors as the result of losing market share abroad that might be difficult to regain in the future.

This proposed action proposed is expected to have positive social impacts compared to the no-action alternative, which would continue the 5,000 lb. skate wing possession limit, the 80% of TAL trigger for reducing the possession limit for wings to the current incidental wing possession limit of 500 lbs. and the prohibition on processing skate wings at sea and landing skate carcasses from the wing fishery for the bait market. Enabling the wing fishery to fish longer under a reduced targeted catch possession limit would allow the wing fishery to stay open longer in the 2011-2012 fishing year resulting in more a more stable supply of skates needed to maintain market channels, prices, and employment both on vessels and in processing and distribution. The positive economic benefits compared to the no-action alternative would result in positive social benefits and mitigate some of the negative social impacts that resulted from the Amendment 3 measures. Finally the lower possession limit has the additional social benefit of being supported by fishermen, processors and fishing industry representatives. This support was voiced at two Council meetings (November 17, 2010 and January 25, 2011) and at a Skate Oversight Committee meeting (January 18, 2011) for the economic reasons given above.

## *6.5 Summary and Comparison of Impacts*

**Biological** - Impacts on the target species are expected to be neutral on most skate species or marginally positive on thorny and smooth skates (See section 6.1.1) due to a possible shift in skate targeting closer to shore. It is not possible to determine whether or not the proposed action will result in more discards. The lower possession limit is expected to cause more discards; however, the higher incidental possession limit trigger and higher incidental possession limit are expected to reduce discards. Also, because the Skate FMP includes annual catch limits and accountability measures, any increases in catches will be adjusted to avoid exceeding the ABC. No significant impacts on other species, EFH or protected resources are expected (sections 6.1.2, 6.1.5 and 6.1.4) because the proposed action adjusts skate wing possession limits in ways that are minor in scope and designed to stay within the same TAL. Similarly, the proposed action and other alternatives are not expected significantly differ in their biological impacts including impacts on the EFH, other species or protected resources.

**Economic** - The important effects of the preferred alternative (split seasonal possession limit and a 1,250 lb. incidental limit, Section 4.1) are twofold. First the lower limit early in the fishing year postpones

landings to later in the year when skate wings are more valuable. And secondly, the increase in the skate wing possession limit in September, followed by a potential decrease to a higher incidental limit reduces market instability in skate wing prices. Both effects are expected to provide a steadier stream of product, maintaining market infrastructure, and a steadier stream of jobs and income.

**Social** – The proposed action proposed framework is expected to have positive social impacts in terms of mitigating risks to individuals and families that included job loss, family disruption and damage to long-standing social networks that occurred as a result of to the no-action alternative implemented under Amendment 3. (See Section 6.4 above)

## 6.6 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.

### 6.6.1 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 alternative. Because the skate fishery is primarily a sub-component of (i.e., is incidental to) the NE multispecies fishery and the monkfish fishery, much of the analysis of cumulative effects is done in connection with the EAs conducted for Framework 45 to the NE Multispecies FMP and Amendment 5 to the Monkfish FMP. To the extent that recent EAs for these fisheries overlap with the effects of the skate fishery, they are incorporated herein by reference.

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.

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. The skate resource complex
2. Non-target species (incidental catch and bycatch)
3. Protected species
4. Essential fish habitat (EFH) and the physical environment
5. Fishing communities

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 in this fishery 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.

### 6.6.2 Summary of the proposed action measures

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 three components of the proposed action are described below.

### 6.6.3 Skate Wing Possession Limit - 2,600 lbs. (5,902 lbs. whole weight) from May 1 to August 31; 4,100 lbs. from September 1 until the in-season incidental possession limit trigger is reached

The skate wing possession limit would be lowered from 5,000 lbs. (11,350 lbs. whole weight) to 2,600 lbs. 5,902 lbs. whole weight) beginning on May 1, 2011 (or as soon as practicable thereafter) and would remain in effect until no later than August 31, 2011. On September 1, 2011, the skate wing possession limit would increase to 4,100 lbs. (9,307 lbs. whole weight) until the end of the fishing year or until the TAL trigger caused the Regional Administrator to reduce the skate wing possession limit to the incidental skate wing possession limit. The skate wing possession limit would automatically adjust on these same dates in subsequent fishing years.

### 6.6.4 In-season possession limit triggers Skate Wing TAL Trigger – 85%

When the wing fishery harvests 85% of its TAL, the Regional Administrator will have the authority to reduce the wing possession limit to 1,250 lb. wing weight (2,838 lb. whole weight) for the remainder of the fishing year. The decision to reduce the skate wing possession limit will require a determination that absent such action, the skate wing fishery would exceed the TAL by the end of the fishing year.

### 6.6.5 Incidental Skate Wing Possession Limit - 1,250 lbs. skate wing possession limit (2,838 lbs. whole weight)

When the skate wing landings reach the TAL trigger and the Regional Administrator determines that the skate fishery would otherwise exceed the TAL by the end of the fishing year, the skate wing possession limit will be reduced to 1,250 lbs. of skate wings (2,838 lbs. whole weight), except for vessels fishing for skates under a Skate Bait Letter of Authorization unless the skate bait fishery has also landed its TAL trigger.

### 6.6.6 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.

### 6.6.7 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 and are described repeated below.

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 36, 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 36 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 36 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.

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.

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. The impacts of this project to the fisheries have been analyzed in the draft environmental impact statement for the Cape Windfarm Project.

Table 36- 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

### 6.6.8 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.

### 6.6.9 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 37 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[13] 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.

Population estimates for each DPS of Atlantic sturgeon are not available at this time, and further work needs to be done to accurately develop these estimates. Current estimates indicate that the Hudson River DPS likely consists of approximately 870 spawning individuals in any one year. However, adult Atlantic sturgeon are not believed to spawn annually, but rather every other year for males and every two to five years for females. Although NMFS does not have information necessary to determine the sex or spawning condition of Atlantic sturgeon encountered by the skate fishery, these encounters may include both males and females and fish that may or may not spawn during that year. Therefore, encounters of Atlantic sturgeon by the skate fishery may be a subset of the entire population, as opposed to being comprised exclusively of the smaller annual spawning population.

The incremental impacts of the preferred alternatives in Framework 1, relative to taking no action, are not expected to result in a significant adverse impact to Atlantic sturgeon. The proposed action is not expected to result in adverse cumulative impacts between the date the final rule is implemented and October 2011, when a final listing determination under the ESA is expected. Because all landings of skate wings (and most are incidental to) fishing activities governed by regulations for other fisheries, primarily the NE Multispecies and Monkfish FMPs, any analysis regarding Atlantic sturgeon encounters in those FMPs also serves to account for and address concerns regarding vessels also operating under the Skate FMP.

The environmental assessments (EAs) for Framework 45 to the NE Multispecies FMP and Amendment 5 to the Monkfish FMP both address impacts of gear in which Atlantic sturgeon encounters are known to occur. The Framework 45 EA analysis concluded that Atlantic sturgeon encounters in gears primarily

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

used in the NE multispecies fishery, and, by extension, to catch the majority of skate wing landings (large-mesh sink gillnet and otter trawl), were low according to the NEFSC data from 2006-2010. Therefore, it was determined to be unlikely that the implementation of FW 45 would result in significant impacts to any DPS of Atlantic sturgeon during FY 2011. Given the lack of information concerning how the Atlantic sturgeon DPSs are and will be impacted by takes of Atlantic sturgeon in the monkfish fishery, NMFS established a Monitoring and Action Plan in conjunction with the partial approval of Amendment 5 to the Monkfish FMP to mitigate the cumulative impact of the monkfish fishery on Atlantic sturgeon. This Plan, which is described in the Addendum to the EA for Amendment 5, outlines that NMFS is conferencing under the ESA in an effort to gather new information to determine the magnitude of the impacts of the monkfish fishery on Atlantic sturgeon and begin development of measures to reduce such impacts; NMFS will establish reasonable and prudent measures (RPMs) to reduce the impacts of this fishery on Atlantic sturgeon if the species is listed under ESA; and NMFS will monitor the impacts of the monkfish fishery on Atlantic sturgeon through the annual review process established in the Monkfish FMP, regardless of whether or not the species is listed under ESA. The mitigation measures established in the monkfish fishery necessarily are applicable to the skate fishery because skates harvested with gear used in the monkfish fishery are subject to the Monkfish FMP and its implementing regulations.

Considering the breadth to which potential impacts to Atlantic sturgeon were analyzed here, and in the NE Multispecies and Monkfish FMP assessments; this action is not expected to result in additional impacts to Atlantic sturgeon beyond those that are already occurring in those fisheries. To the very minimal extent that Atlantic sturgeon are caught in the sea scallop fishery, there are no observed takes of Atlantic sturgeon in that fishery, and, therefore, no expected adverse impacts on Atlantic sturgeon as a result of this action.

Table 37- 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 | Endangered 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 | Endangered | High Potential | High potential | Unknown: Water Quality: Nutrients; Toxic contaminants; Biotoxins; Noise | Unknown: Reduction/ Competition of prey; Harassment |
| Fin whale | Endangered | 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 | Endangered | 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 | Endangered | 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 | Endangered | 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 degradation 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 | Endangered | | | | |
| Leatherback turtle | Endang | | | | |
| Loggerhead turtle | ESA threatened | | | | |

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

### 6.6.10.1 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, are discussed in the Affected Environment section of this document. 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 6.2 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 (the recent changes are probably within the margin of sampling error) and still is far 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. The little skate biomass index declined from a 6.72 kg/tow average to a 3.67 kg/tow average, but 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 6.6.10.2). 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.

#### 6.6.10.1.1 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.

Table 38. Revised skate specifications for 2010 and 2011 fishing years.

| | | | |
|---|---|---|---|
| ABC | 41,080 mt | Wing fishery possession limit | 2,600 lbs. (5,902 lbs. whole weight) May – Aug; 4,100 lbs. (9,307 lbs. whole weight) Sep-Apr. |
| ACT (75% of ABC) | 30,810 mt | Wing fishery TAL trigger | 85% 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 |

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). After Amendment 3 possession limits were implemented on July 16, 2010, the wing fishery may reach 80% of its TAL on September 2, 2010, triggering the incidental limit of 500 lb. wing weight for nearly eight months of the fishing year. The skate bait fishery did not exceed its seasonal quotas during the first eight months of the fishing year. The potential effectiveness of the proposed possession limits were evaluated using 2009 and available 2010 fishery data. More information will be available in the 2011 SAFE Report that will be prepared to set specifications for fishing years 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.

6.6.10.1.2 NE Multispecies FMP

Amendment 16 and Framework Adjustment 44 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 and Framework 44 significantly reduced fishing levels for most of the 20 stocks of groundfish. Primarily, these reductions have been implemented through catch limits on vessels participating in sectors although they also decreased the allocation of Category A DAS by 50% for a small number of vessels fishing under the common pool effort controls. 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. Data on the potential increase in skate landings by sector vessels are not yet available, the overall catch of skates is controlled by restrictive possession limits.

Framework 45 was implemented on May 1, 2011. This framework updates pollock status determination criteria including establishing and ABC for pollock, modify the Georges Bank yellowtail flounder rebuilding strategy, implements measures to protect spawning cod in the inshore Gulf of Maine, allows for two additional sectors, and changes General Category scallop vessel restrictions in the Great South Channel. None of these measures are expected to affect the directed fishery for skates and are not

expected to substantially change fishing effort in the multispecies and general category scallop fisheries. As a result, they are not expected to have a cumulative impact on the skate resource.

Table 39. Total skate landings (lbs. live weight) 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*

#### 6.6.10.1.3 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. Changes to monkfish specifications for fishing years 2011 and 2012 will be effective with the implementation of Amendment 5 and Framework Adjustment 7 to the Monkfish FMP. The specifications will increase DAS from 31 to 40. The scope of these changes is marginal and not expected to affect the status of skate species, particularly because skate catch will be adjusted regularly through accountability measures to prevent exceeding the ABC for skates.

#### 6.6.10.1.4 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 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). Conversely, such an increase in Mid-Atlantic effort would be expected to increase the catches of clearnose skate, 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.

In 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.

Framework Adjustment 22 will implement specifications for fishing years 2011 and 2012. The specification will allow increased landings of scallops within the same fishing mortality targets as for 2010; however, fishing effort and area swept by scallop gear is expected to decrease as the result of fewer open area DAS and increase area access trips which have high catch rates and require less towing time. However, increased effort on Georges Bank probably will result in some increased catch of barndoor and smooth skate. Other measures that will be implemented under Framework 22 include reasonable and prudent measures to address the take of loggerhead turtles and a change in the bycatch restrictions for Georges Bank yellowtail flounder.

#### 6.6.10.1.5 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 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.

The potential higher demand for skates landed for the bait market; however, 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.

#### 6.6.10.1.6 Habitat

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.

### 6.6.10.2 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.

A final decision on the proposed listing of Atlantic sturgeon under the ESA is expected by October 6, 2011. At that time, if one or more DPSs of Atlantic sturgeon are determined to be threatened or endangered under the terms of the ESA, NMFS will be obligated to re-initiate consultation under section 7 of the ESA for all approved Federal FMPs for which actions taken under those FMPs may adversely affect Atlantic sturgeon. The resulting Biological Opinions may include management measures necessary to prevent jeopardy to Atlantic sturgeon.

<u>Scallops</u>

The Council adopted Amendment 15 to the Scallop FMP for review and approval. This action is expected to be implemented in 2011 and will 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.

Framework 22 establishes scallop fishery management measures for the 2011 and 2012 FYs, including scallop DAS allocations and rotational access area trip allocations and possession limits. Measures are based on ACL provisions proposed in Amendment 15 to the FMP. Framework 22 also includes default management measures for the 2013 FY that would be replaced by management measures under the next biennial framework action that would establish measures for the 2013 and 2014 FYs. Finally, Framework 22 limits fishing effort in the mid-Atlantic during the summer months in order to reduce the potential for interactions between the scallop fishery and threatened loggerhead sea turtles.

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

Amendment 5 to the Monkfish FMP was partially approved on April 29, 2011, and its implementing regulations will soon follow. The amendment establishes annual catch limits (ACL) and accountability measures (AM), and sets those measures for the fishery. NMFS disapproved measures proposed in Amendment 5 for the Northern management area of the fishery because the proposed specifications were no longer consistent with the best available science on the status of the monkfish resource. The Councils are developing Framework 7 to the Monkfish FMP to establish fishery specifications for the Northern management area that are consistent with the best available scientific information. These actions 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).

NE Multispecies

The NE Multispecies FMP manages 20 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. Amendment 16 to the Multispecies FMP was implemented in May 2010 and among other actions adjusts the fishing mortality rates and rebuilding schedule of stocks that are overfished or subject to overfishing. The amendment is expected to result in substantial reductions in catch and effort for some species. Consequently, it is expected to reduce the incidental catch and bycatch of skate species including the overfished species of smooth and thorny skates.

Framework 45, implemented May 1, 2011, made a variety of adjustments to the NE Multispecies FMP. Framework 45 revised the biological reference points and stock status for pollock, updated annual catch limits for several stocks for fishing year 2011-2012, implemented U.S./Canada Management Area Total Allowable Catches, adjusted the rebuilding program for Georges Bank yellowtail flounder, increased scallop vessel access to the Great South Channel Exemption Area, approved five new sectors, modified the existing dockside monitoring requirements, revised sector administrative procedures, established a

Gulf of Maine Cod Spawning Protection Area, and refined measures affecting the operations of vessels with Handgear A and Handgear B permits.

The Council voted at its April 2011 meeting to submit Framework 46 to NMFS for review and implementation. Framework 46, if approved by NMFS, would increase the amount of haddock allowed to be caught by the herring fishery ("haddock catch-cap") from its current level of 0.2 percent of the ABC, to 1% of the ABC, and make separate allocations for the Georges Bank and Gulf of Maine stocks. Framework 46 would also modify the method of monitoring the herring fishery catch in order to derive an estimate of total haddock catch in the fishery. It is expected that the action will allow the herring fishery to fully utilize the available herring quota while ensuring that haddock bycatch is adequately controlled and monitored. NMFS is estimating that Framework 46 would be implemented in the early fall.

The Council is expected to initiate Framework 47 to the FMP in June 2011 to set specifications (OFLs, ABCs, and ACLs) for 20 groundfish stocks for FYs 2012-2013 (beginning May 1, 2012). Framework 47 would also refine AMs for ocean pout, windowpane flounder, Atlantic halibut, Atlantic wolffish, and SNE/MA winter flounder, consider eliminating the scallop access area yellowtail flounder caps, and consider additional allocation of yellowtail flounder to the scallop fishery based on estimated catch.

Other non-fishing actions

In the future, one other development other than fishing could potentially affect the skate fishery VEC's due to their geographic overlap: offshore wind farms. In January 2010 a Request for Information about the possible siting of wind farms south of Nantucket. It is not known, but probably unlikely, that a windfarm project would have a significant environmental effect on skates; however, it could create significant obstacles to fishing activities that catch skates.

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 deep water fisheries and the associated FMP's is not ascertainable at this time.

### 6.6.11 Cumulative effects of the proposed action

Table 40 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.

In summary, the proposed measures viewed together, are not expected to have a significant cumulative effect on the environment. As explained above, the skate wing fishery exists almost exclusively as a subcomponent to the NE multispecies and monkfish fisheries, and, to much lesser extent, the sea scallop fishery. The proposed action affects only the skate wing fishery component of these other fisheries and the bait fishery only indirectly. It also changes only possession limits and not the total allowable level of landings (TAL). Therefore, any impacts on Atlantic sturgeon related to the skate fishery are already accounted for and analyzed by the EAs for Framework 45 to the NE Multispecies FMP and Amendment 5 to the Monkfish FMP. The proposed EA for Amendment 15 to the Sea Scallop FMP finds that there are no observed interactions between Atlantic sturgeon and sea scallop fishing gear. Although a new biological opinion for skates with respect to Atlantic sturgeon in the fall of 2011 may conclude that the skate fishery, as a sub-component of the NE multispecies and monkfish fisheries, has an impact on Atlantic sturgeon in terms of the catch of skates that is incidental to the prosecution of the NE multispecies and monkfish fisheries, the proposed action is minor in scope and by itself is not expected to increase effort in the groundfish, monkfish, or targeted skate fisheries (and is expected to decrease effort as a result of the lower possession limits). As a result, it is not expected to have any additional cumulative impacts on Atlantic sturgeon that have not been analyzed and accounted for in the NE multispecies and monkfish fisheries.

The main purpose of the measures is to extend the wing fishery by lowering the targeted wing fishery possession limit, increasing the TAL trigger, increasing the incidental possession limit and allowing carcasses to be landed in the wing fishery to increase utilization of the skate resource. 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.

**Table 40.** Cumulative effects on valued ecosystem components (VECs) compared to no action.

| Measure | Valued Ecosystem Components | | | | |
|---|---|---|---|---|---|
| | **Target Species** | **Non-target Species** | **Protected Species** | **Habitat** | **Communities** |
| **SKATE WING POSSESSION LIMIT**<br><br>**No Action**<br>5,000 lbs. skate wing possession limit | Neutral | Neutral | Neutral | Neutral | Neutral, but continued negative impacts from triggering the lower incidental possession limit earlier in the fishing year |
| **Proposed Action-**<br>Skate wing possession limit: 2,600 lbs. May 1 - Aug 31; 4,100 lbs. Sep 1 - Apr 30 | Neutral impacts – Higher discards on trips targeting skates and other species early in the year. These would be offset by the lower discards from triggering the incidental possession limit later than under No Action. Future TAL would be adjusted by any net increase or decrease in discards. | Slight positive 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. Primary non-target species are managed under ACLs so no negative impacts expected | None or unknown impacts<br>Unlikely to cause large shifts in effort to areas where protected species are more/less abundant. | Unknown impact. Vessels may take more frequent (but shorter) trips closer to port, where habitat may be more /less vulnerable than in traditional skate fishing areas | Positive impact by keeping wing fishery and market channels open longer throughout the year<br>Reduces derby fishing behavior |
| **Alternative 2 –**<br>Skate wing possession limit: 4,100 lbs. | Same as above | Same as above | Same as above | Same as above | Similar to above, but slightly negative compared to the proposed action because incidental possession limit will be triggered earlier |
| **Alternative 3** –<br>Skate wing possession limit: 3,200 lbs. | Same as above | Same as above | Same as above | Same as above | Similar to proposed action, but less positive because demand for skates s stronger later in the year |
| **Alternative 4** –<br>Skate wing possession limit: 2,600 lbs. | Same as above, but higher discards due to lower possession limit expected in the directed wing fishery | Same as above | Same as above | Same as above | Negative impact if skate trips are unprofitable with the lower possession limit<br>May prevent reaching OY if the possession limit is too low |

| Measure | Valued Ecosystem Components | | | | |
|---|---|---|---|---|---|
| | **Target Species** | **Non-target Species** | **Protected Species** | **Habitat** | **Communities** |
| **IN-SEASON TRIGGERS FOR INCIDENTAL POSSESSION LIMIT**<br><br>**No Action**<br>80% of TAL | Neutral | Neutral | Neutral | Neutral | Neutral, but continued negative impacts from triggering the lower incidental possession limit earlier in the fishing year |
| **Proposed Action**<br>85% of TAL | Neutral, but slightly increases risk of exceeding TAL | No measurable impact, but could reduce targeting of other species because the targeted directed wing fishery would last longer | None or unknown impact -<br>Unlikely to cause large shifts in effort to areas where protected species are more/less abundant. | None or unknown impact -<br>Unlikely to cause large shifts in effort to areas where habitat is more/less vulnerable | Positive: Would allow directed wing fishery to last longer and keep market channels open; would reduce discards thereby allowing greater utilization of the skate resource. |
| **Alternative 1**<br>75% of TAL | Same as above | Same as above | Same as above | Same as above | Negative: Would shorten the directed wing fishery & disrupt shore side businesses more; would reduce increase discards thereby causing poorer utilization of the skate resource. |
| **INCIDENTAL SKATE POSSESSION LIMIT**<br><br>**No Action**<br>500 pounds | Neutral, but would continue to cause discards once the incidental possession limit is triggered | Neutral | Neutral | Neutral | Neutral, but continued negative economics impacts from lower incidental possession limit earlier |
| **Proposed Action**<br>1,250 lbs. | Would decrease discards once the incidental possession limit is triggered compared to no action | Unknown but not substantial<br>Primary non-target species are managed under ACLs so no negative impacts expected | None or unknown impact<br>Unlikely to cause large shifts in effort to areas where protected species are more/less abundant. | None or unknown impact -<br>Unlikely to cause large shifts in effort to areas where habitat is more/less vulnerable. | Positive – would increase chance of making fishing trips viable with a higher wing possession limit, particularly in the monkfish gillnet fishery |
| **Alternative 1**<br>750 lbs. | Increase in skate discards although detectable changes in discards are accounted for when the TAL is adjusted through a change in specifications | Same as above | Same as above | Same as above | Positive compared to No Action , but slightly negative compared to proposed action because trips would be less economically viable under a lower possession limit |

| Measure | Valued Ecosystem Components | | | | |
|---|---|---|---|---|---|
| | Target Species | Non-target Species | Protected Species | Habitat | Communities |
| **POSSESSION OF CARCASSES IN THE WING FISHERY**<br><br>**No Action** | No effect | No effect | No effect anticipated since discarded skate carcasses are not known to attract protected species thereby making them more vulnerable to fishing | Positive effect because discarded skate carcasses liberate energy as a food source for crustaceans and scavenging species | Neutral |
| **Proposed Action** Allow vessels targeting skates for the wing market to land skate carcasses | No effect | No effect | Same as above | Slight negative effect due to the reduction of a food source for crustaceans and scavenging species; however, carcasses maybe returned to marine ecosystem as lobster bait | Positive effect from increased utilization of skate resource; higher income to vessels choosing to retain carcasses; possible increase in supply of lobster bait. May reduce shoreside employment marginally |

# 7.0 COMPLIANCE WITH THE MAGNUSON-STEVENS FISHERY MANAGEMENT AND CONSERVATION ACT (MSA)

## *7.1 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.

**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 consistent with the measures adopted under Amendment 3. Amendment 3 was implemented 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. Amendment 3 also establishes an acceptable biological catch (ABC) control rule and accountability measures (AM) to achieve National Standard 1 requirements. The proposed action does not in any way change Amendment 3 provisions adopted to meet National Standard 1 requirements, but instead proposes minor changes to possession limit and landings regulations.

**National Standard 2**

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

The measures in this action are based on the best and most recent scientific information available: the analyses 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). The SSC has reviewed the methods that were used and found them to be appropriate.

**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 for that fishery are more conservative than those for the bait fishery.

**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 the same for all vessels regardless of the state of residence of the owner or operator of the vessels. Although any fishing mortality control (including possession limits and quotas) results in the allocation of fishery resources, the measures in the proposed action are reasonably expected to promote conservation by continuing to prevent overfishing and rebuild overfished stocks.

**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 TALs from inducing derby-fishing that would otherwise undermine the profitability of vessels landings skates. None of the measures in this action directly allocates skates and therefore none has economic allocation as its sole purpose.

**National Standard 6**

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

The proposed action, developed with the input of skate fishermen and processors, is intended to allow fishermen and processors to better match the supply of skate with seasonal demand and to extend the length of the wing fishery before the possession limit is reduced to the incidental possession limit. In this way, the proposed action takes into account variations among, and contingencies in, fisheries, fishery resources, and catches. Vessels may make short or long trips, and may 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.

**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. For example, lower possession limits tend to increase costs for fishing operations since for a given amount of time fishing catches are reduced. This measure accomplishes other goals, however, such as maintaining a supply of fish for the marketplace to match market demand through a greater part of the fishing year or by allowing vessels that catch skates as an important component of their landings to increase revenues from being able to fish longer throughout the year.

The proposed action does not duplicate other fishing regulations or fishery management measures. The Skate FMP is the only management plan controlling the possession limits for skates in the EEZ.

**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.***

The proposed action was developed with the input of skate fishermen and processors specifically to tailor skate possession limits necessary to prevent overfishing, to better meet the economic needs of fishing communities. It is expected to result in economic benefits to fishermen and processors by extending the length of the season for the skate wing fishery and to better match the supply of skate wings with market demand. As a result it is expected to have positive impacts on fishing communities.

**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 higher 85% TAL trigger and the higher incidental possession limit of 1,250 pounds will directly reduce discards in the wing fishery. The impacts of the alternatives, and in particular skate possession limits, on discards are evaluated in Sections 6.1.1 and 6.1.3.

**National Standard 10**

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

The proposed action is limited to modification of skate passion limits for the skate wing fishery. Although possession limits 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.

## *7.2 Other MSA 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 MSA 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—

### 7.2.1 Conservation and management measures, applicable to foreign fishing

Foreign fishing is not allowed under this management plan or this action, so specific measures are not included to specify and control allowable foreign catch.

### 7.2.2 Description of the fishery

Amendment 3 to Skate FMP (November 30, 2009) contains and extensive description of the fishery. The relevant parts of this description are included and/or updated in this document in Section 5.0, the Affected Environment.

### 7.2.3 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 proposed action would modify skate wing possession limits. The maximum sustainable yield and optimum yield for the skate complex are described in the Skate FMP in Section 4.3.3, and are not changed by this action.

### 7.2.4 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 100 percent of 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 all landings from U.S. fishing vessels. Therefore there is no portion of the optimum yield from this fishery that can be made available to foreign fishing.

### 7.2.5 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.

### 7.2.6 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;*

The proposed action does not contain any measures that would penalize vessels that were prevented from harvesting skates because of weather or other ocean conditions. The proposed action is limited to modifying possession limit amounts and does not change the way any measure is implemented except by allowing a limited amount of skate carcasses to be landed in the skate wing fishery.

### 7.2.7 Describe and identify essential fish habitat

> *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 for skate species was defined in the Skate FMP which was implemented in 2003. This action does not change the essential fish habitat designations. The Council currently is updating EFH designations for all NEFMC managed species, including skates, in an omnibus amendment that is expected to be implemented in 2012.

### 7.2.8 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 and the Northeast Stock Assessment Workshop which consult with NMFS, the Council and its Plan Development Teams, Scientific and Statistical Committee and species oversight committees about scientific data deeds.

### 7.2.9 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 the Social Impact Analysis in Section 6.4.

### 7.2.10 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 75$^{th}$ percentile of the survey biomass time series. 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 75$^{th}$ percentile of the selected time series[14] for a stock. A stock is classified as overfished when the three year biomass moving average declines more than a specified threshold value[15] for the stock. Both criteria can be determined annually when the final survey data become available for analysis.

### 7.2.11 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;*

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

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.

Table 24 (page 6-98) shows the effect 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 from 500 lbs. (an alternative in the DEIS) to 1,250 lbs. to minimize discards on trips that target species other than skates.

### 7.2.12 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;*

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 5.5.1.6.

### 7.2.13 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 descriptions of the commercial and recreational fishing sectors was included in Amendment 3 to the Skate FMP and are described in Section 5.5 of this document.

### 7.2.14 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.*

The proposed action modifies skate wing possession and landing restrictions. It does not allocate any harvesting privileges for skate species. The Skate FMP does not employ limited access privileges or catch shares in managing skates.

### 7.2.15 EFH provisions

*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 earlier Skate FMP actions. This framework adjustment does not further address or modify those EFH definitions or EFH protection measures. The assessment of impacts on EFH (EFH Assessment) is in Section 6.1.5

# 8.0 COMPLIANCE WITH OTHER APPLICABLE LAW

## *8.1 National Environmental Policy Act (NEPA) - Environmental Assessment*

The required elements of an Environmental Assessment (EA) are specified in 40 CFR 1508.9(b). They are included in this document as follows.

- The need for this action is described in Section 3.1.
- The alternatives that were considered are described in Section 4.0 (alternatives including the proposed action).
- The environmental impacts of the proposed action are described in Section 7.0.
- A determination of significance is in Section 8.1.1
- The agencies and persons consulted on this action are listed in Section 8.1.3.
- Cumulative impacts of the proposed action are described in Section 6.6.
- A list of preparers is in Section 8.1.2.

### 8.1.1 Finding of No Significant Impact

National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-6 (NAO 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. On July 22, 2005, NOAA published a Policy Directive with guidelines for the preparation of a Finding of No Significant Impact (FONSI). In addition, the Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant in making a finding of significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria, the recent Policy Directive from NOAA, and CEQ's context and intensity criteria. These include:

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

**Response**: No, the proposed action is not reasonably expected to jeopardize the sustainability of the skate resource. This action makes minor modifications to specifications for fishing year 2011 by a) changing the possession limit for skate wings; b) changing the trigger for reducing the targeted skate possession limit to the incidental catch limit, c) increasing the amount of the incidental catch limit and d) allowing vessels to process wings at sea and land skate carcasses for the bait market. None of the modifications are expected to cause increases in fishing mortality above the overfishing threshold that would jeopardize the sustainability of the skate resource. The action is designed to be consistent with the catch targets adopted in Amendment 3 and the overall target has been set at a level less than ABC taking into account sources of biological and management uncertainty, as proposed in Amendment 3.

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

**Response**: No, the proposed action is not reasonably expected to jeopardize the sustainability of any non-target species, including species proposed for listing under the Endangered Species Act (ESA). The main effect of the proposed action will be a reduction in the possession limit for the targeted skate wing fishery and an increase in the incidental possession limit wings. These changes are not expected to change the total allowable landings for skate wings and are not expected to change the bycatch of non-target species in the skate fishery. In general, this action does not increase overall fishing effort above levels assessed in Amendment 3, thus there is no indication that impacts on non-target species will be different.

Although information about bycatch is limited and inconclusive with respect to fishery-wide impacts, the impact of this action on non-target species is not expected to be significant, primarily because there is unlikely to be any increases in directed skate fishing effort (skate fishing effort is expected to decrease as a result of the reduced possession limits). With respect to Atlantic sturgeon, the proposed action is not expected to result in additional impacts beyond those already occurring in the fishery given that the management measures contained in this action are expected to decrease fishing effort levels in comparison to taking no action. Based on 2006-2010 observer data, estimated annual takes of Atlantic sturgeon expanded by VTR landings in sink gillnet gear and otter trawl gear, including gear types not used to target skates, range from 1,536 to 3,221 sturgeon annually, with an average of 2,215 individuals. These data indicate that gear used to catch skates, other than scallop gear, is likely to interact with Atlantic sturgeon. Based upon this information, it appears that less than one-sixth of Atlantic sturgeon (13 percent on average) die as a result of an encounter with gear used to catch skates. This relatively low mortality rate indicates that although sturgeon encounters in the skate fishery may be high in certain areas and times of year (based, in part, on whether the skate landings are incidental to the monkfish fishery or the NE multispecies fishery), the mortalities that can be attributed to the skate fishery are low. Even under much higher possession limits in the skate wing fishery (10,000 lb and 20,000 lb per trip from 2003 until July 2010), sturgeon encounters have remained the same or decreased in that same time period. It is therefore important to note that, while these data can be attributed to gear used in the skate fishery, skates are primarily caught incidentally in the NE multispecies and monkfish fisheries, and so the actual encounters in what is a small directed fishery are likely to be substantially lower than those presented above.

Regarding cumulative impacts on Atlantic sturgeon, as explained above, the skate wing fishery, to the extent that is interacts with Atlantic sturgeon, exists almost exclusively as a subcomponent to the NE multispecies and monkfish fisheries. Therefore, any impacts on Atlantic sturgeon related to the skate fishery are already accounted for and analyzed by the EAs for Framework 45 to the NE Multispecies FMP and Amendment 5 to the Monkfish FMP. Although a new biological opinion for skates with respect to Atlantic sturgeon in the fall of 2011 may conclude that the skate fishery, as a sub-component of the NE multispecies and monkfish fisheries, has an impact on Atlantic sturgeon in terms of the catch of skates being incidental to the NE multispecies and monkfish fisheries, the proposed action is minor in scope and by itself is not expected to increase effort in the groundfish, monkfish, or targeted skate fisheries (and is expected to decrease effort as a result of the lower possession limits). As a result, it is not expected to have any additional cumulative impacts on Atlantic sturgeon that have not been analyzed and accounted for in the most recent NEPA analysis of actions taken in the NE multispecies and monkfish fisheries. For the same reasons supporting FONSIs in those actions, a FONSI is justified for this action.

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

**Response**: No, the proposed action is not reasonably expected to cause substantial damage to the ocean and coastal habitats and/or EFH. Relative to the baseline habitat protections established under Amendment 10 to the Atlantic Sea Scallop FMP and Amendment 13 to the Northeast Multispecies FMP. Specifically, this action does not change access into the Habitat Closed Areas nor is it expected to increase the overall level of fishing effort targeting skates. Therefore, measures to further mitigate or minimize adverse effects on EFH are not necessary. An EFH Assessment was included for this action in Section 6.1.5.

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

**Response**: No, the proposed action is not reasonably expected to have substantial adverse impacts on public health or safety. By reducing the possession limit for the targeted skate wing fishery, this action is

expected to reduce incentives for derby fishing before the trigger for reducing the possession limit is reached. Also the higher 85% trigger level and the higher incidental possession limit of 1,250 lbs. also are expected to reduce incentives for derby fishing before the trigger is reached.

***(5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?***
**Response**: No, the proposed action is not reasonably expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species. Section 5.4 describes the endangered or threatened species that are found in the affected area. Section 6.1.4 summarizes the impacts of the proposed action on endangered and threatened species; overall, none of the proposed measures are expected to have a significant impact on these species.

Updated bycatch estimates associated with gear types known to catch skates indicate that the skate wing fishery is likely to interact with Atlantic sturgeon during FY 2011. However, as noted under FONSI question #2, the proposed action is expected to result in a decrease in fishing effort for skates; therefore, impacts on Atlantic sturgeon beyond those already occurring in the fishery are not expected to increase given that this action will likely reduce fishing effort levels in comparison to taking no action.

Regarding cumulative impacts, as explained in the response to question #2 above, there are no additional cumulative impacts expected other than those already accounted for and analyzed in the EAs for recent actions affecting the NE multispecies and monkfish fisheries. Therefore, for the same reasons justifying a FONSI in those actions, a FONSI is justified for this action

***(6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?***
**Response**: The proposed action is not expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area. Section 5.1describes the physical environment of the affected area including the benthic environment and biological parameters of the skate resource. In general, this action proposes to maintain skate catches at same as those established under Amendment 3 (2010 and 2011 fishing years) and therefore, no additional impacts on biodiversity and ecosystem function are expected as a result of this action.

***(7) Are significant social or economic impacts interrelated with natural or physical environmental effects?***
**Response**: No, this action does not cause any significant social or economic impacts that interrelated with significant natural or physical environmental effects. The social and economic impacts of the proposed action result only from changes in fishing rules which do not have with significant natural or physical environmental effects.

***(8) Are the effects on the quality of the human environment likely to be highly controversial?***
**Response**: No, the effects on the quality of the human environment are not likely to be highly controversial because the proposed action is so minor in scope and the methods, such as the trip limit model used to analyze impacts of the alternatives is very simple and models like it are used for many other similar fishery management actions.

***(9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?***
**Response**: No unique areas, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas are located within the affected area; therefore, there are no impacts on these components of the environment from the proposed action.

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

**Response**: The effects on the human environment are not likely to be highly uncertain or involve unique or unknown risks. This action primarily proposes modifications to the existing skate management program. The risks and impacts of this program on the human environment have been discussed and analyzed in previous actions. This action makes only minor modifications to the current management program which has been in place since July 16, 2010.

Regarding Atlantic sturgeon, the incremental impacts of the proposed action versus taking no action are not highly uncertain nor do they involve unique or unknown risks. If final listing determinations for Atlantic sturgeon are issued, the existing Section 7 consultation for the skate fishery would be reinitiated consistent with the requirement to reinitiate formal consultation where discretionary Federal agency involvement or control of the action has been retained and a new species is listed that may be affected by the action. During the reinitiation, the effects of the skate fishery on the five DPSs would be fully examined. Any highly uncertain effects or unique or unknown risks are essentially identical to those examined in the EAs resulting in FONSIs for recent actions affecting the NE multispecies and monkfish fisheries. Accordingly, a FONSI for this action is justified for the same reasons as the FONSIs for these other recent actions.

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

**Response**: No, the proposed action is not related to other actions with individually insignificant but cumulatively significant impacts. Section 6.6 describes fishing and non-fishing past, present and reasonably foreseeable future actions that occurred or are expected to occur in the affected area. Some measures within the proposed action do result in cumulative impacts in some cases, but none of the impacts discussed exceed the threshold that would indicate a significant impact. In summary, the skate resource, EFH, protected species, and the human environment have been impacted by past and present actions in the area and are likely to continue to be impacted by these actions in the future. In general, the proposed action will modify the possession limits for the skate wing fishery and allow skate carcasses to be landed along with wings. These changes will have positive impacts on the long-term success of the skate management program that will prevent overfishing and achieve optimum yield on a continuing basis.

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

**Response**: No districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places are located in the affected area; therefore, there are no impacts on these resources from the proposed action.

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

**Response**: No, the proposed action is not reasonably expected to result in the introduction or spread of a nonindigenous species. The only nonindigenous species known to occur in any significant amount within the fishery areas is the colonial sea squirt (*Didemnum sp.*). At this time, there is no evidence that fishing spreads this species more than it would spread naturally. Furthermore, the proposed action is not expected to spread the species more than regular fishing activity would; however, the spread of invasive tunicates and fishing gear needs to be monitored closely.

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

**Response**: No, the proposed action is not likely to establish a precedent for future action with significant effects. It modifies fishing possession limits within in a management program that controls the total catch of skates within scientifically determined limits recommended by the New England Fishery Management Council's Scientific and Statistical Committee. The impact of any future changes will be analyzed as to their significance in the process of developing and implementing them. Further, the proposed changes to the listing for loggerhead sea turtles and the proposed listing of Atlantic sturgeon under ESA are not affected by this action. If a listing is approved for Atlantic sturgeon, a formal Section 7 consultation under the ESA will be required for the skate fishery, and, if necessary, measures must be established to reduce the incidental take of Atlantic sturgeon in this fishery.

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

**Response**: No, the proposed action is not reasonably expected to threaten a violation of Federal, State or local law or requirements imposed for the protection of the environment. This action does not propose any changes that would provide incentive for environmental laws to be broken.

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

**Response**: No, the proposed action is not reasonably expected to result in any independent cumulative adverse effects that could have a substantial effect on the target species or non-target species that have not already been accounted for and analyzed for recent actions in the NE multispecies and monkfish fisheries, both of which resulted in FONSIs. Both target and non-target species, including information related to the impact of the proposed action on Atlantic sturgeon, which is proposed for listing under ESA, have been identified and assessed in this document (Sections 6.1.1 and 6.1.2). In general, this action will modify the skate wing possession limits including skate carcasses to be landed that otherwise would have been wastefully disposed of at sea. The proposed action is not expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort in the NE multispecies or monkfish fisheries for which it is a subcomponent. Therefore, for the reasons given in the EAs for the recent actions in these other fisheries, the effects to target and non-target species, including species listed or are proposed to be listed under the ESA, resulting from this proposed action, are not expected to be significant. The improvements in the condition of the stock through implementation of reduced possession limits are expected to generate positive impacts overall compared to the no action alternative.

**FONSI DETERMINATION:**

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for Framework1, and in the EIS for Amendment 3 to the FMP for the Northeast Skate Complex, and the EAs for Framework 45 to the NE Multispecies FMP and Amendment 5 to the Monkfish FMP, it is hereby determined that Framework 1 will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

_____ _____

Regional Administrator, Northeast Region, NMFS Date

### 8.1.2 List of preparers; point of contact

**Point of Contact**
Questions concerning this document may be addressed to:
Mr. Paul Howard, Executive Director
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Framework Adjustment 1 was prepared and evaluated in consultation with the National Marine Fisheries Service. Members of the NEFMC Staff and the NMFS Regional Office prepared and reviewed portions of analyses and provided technical advice during the development of the Environmental Assessment.

**List of Contributors**
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In addition, other individuals contributed data and technical analyses for the document; Michelle Bachman (NEFMC staff – impacts on essential fish habitat); and Woneta Cloutier (NEFMC staff – administrative assistant for the Skate FMP).

### 8.1.3 Agencies consulted

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

New England Fishery Management Council
National Marine Fisheries Service, NOAA, Department of Commerce
United States Coast Guard, Department of Homeland Security

### 8.1.4 Opportunity for public comment

The proposed action was developed during the period May 2010 through November 2010 and was discussed at the meetings listed in Table 41, below. Opportunities for public comment were provided at each of these meetings.

**Table 41 Summary of meetings with opportunity for public comment for Framework 1**

| Meeting | Location | Date |
|---|---|---|
| Council Meeting | Ocean Edge Resort, Brewster, MA | November 18, 2010 |
| Skate Committee Meeting | Clarion Hotel, Portland, ME | January 18, 2010 |
| Council Meeting | Sheraton Harborside, Portsmouth, NH | January 25, 2010 |

## *8.2 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 skate 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. The NEFMC is now seeking the concurrence of the National Marine Fisheries Service with respect to the proposed action in this framework adjustment.

While ESA Section 7 consultations are required when the proposed action may affect listed species, a conference is required only when the proposed action is likely to jeopardize the continued existence of a proposed species or destroy or adversely modify proposed critical habitat. Therefore, a conference would be required if it was determined that the skate fishery, including implementation of Framework 1, was likely to jeopardize one or more of the proposed five DPSs of Atlantic sturgeon or one or more of the nine DPSs of loggerhead sea turtles. Recent bycatch estimates (2006-2010) support the conclusion drawn from earlier bycatch estimates that the skate fishery may interact with Atlantic sturgeon. However, because skate wings may only be landed while a fishing vessel is operating under DAS regulations governing the monkfish, NE multispecies, and/or (to a much lesser extent) the sea scallop fisheries, the potential impacts of these fisheries have been considered in the implementation of recent changes to these other fisheries (e.g., Amendment 5 to the Monkfish FMP and Framework Adjustment 45 to the NE Multispecies FMP).

A biological assessment evaluates the potential effects of an action on listed and proposed species and designated and proposed critical habitat to determine whether any such species or habitat are likely to be adversely affected by the action. A biological assessment is used in determining whether formal consultation or a conference is necessary. A formal Section 7 consultation was completed in October 2010 which analyzed the effects of the skate fishery on listed species and designated critical habitat, including loggerhead sea turtles. For listed species, therefore, the actions under Framework 1 have been analyzed in the informal consultation dated April 29, 2011, and it has been determined that they are not likely to cause an effect to listed species or critical habitat not considered in the October 2010 Biological Opinion.

As noted previously, one of the factors cited in NMFS' proposed listing for the five DPSs of Atlantic sturgeon is bycatch. The ASMFC analysis concluded that to remain stable or grow, populations of Atlantic sturgeon can sustain only very low anthropogenic sources of mortality. It is apparent, therefore, that should the proposed listing be finalized, reductions in bycatch mortality may be required in order to recover Atlantic sturgeon. Final listing determinations for the Atlantic sturgeon DPSs are expected by October 6, 2011. If final listing rules are published, they will likely become effective 30 days after publication. With the publication of a final listing rule, a Section 7 consultation would be required. Through that consultation process, the effects of the skate fishery would be estimated and analyzed. At this point, while Atlantic sturgeon is a proposed species, the question is whether the proposed action is likely to jeopardize the continued existence of the proposed species. Atlantic sturgeon is a proposed species only until a final listing determination is made. When a final listing determination is made, the proposed rules will either be withdrawn or final listing rules will be published. We have considered whether the skate fishery, including implementation of Framework 1, is likely to jeopardize the proposed Atlantic sturgeon DPSs and conclude that jeopardy is not likely to occur between now and the time a final listing determination is expected to be made in October 2011. While it is possible that there may be interactions between Atlantic sturgeon and gear used in the skate fishery, the number of interactions that will occur between now and the time a final listing determination will be made is not likely to cause an

appreciable reduction in survival and recovery. This is supported by updated bycatch estimates based upon NEFOP observer data for the years 2006 through 2010. These additional data support the conclusion from the earlier bycatch estimates that the skate fishery may interact with Atlantic sturgeon from now until the time a final listing determination is made for the species, but the magnitude of that interaction during the timeframe of interest that is related specifically to the skate fishery is not likely to result in jeopardy to the species based on current assessments of each DPS.

Serious injuries and mortalities of Atlantic sturgeon in commercial fishing gear are a likely concern for the long term persistence and recovery of the DPSs, and was a primary reason cited for the proposals to list the DPSs under the ESA. If final listing determinations are issued, the existing Section 7 consultation for the skate fishery would be reinitiated consistent with the requirement to reinitiate formal consultation where discretionary Federal agency involvement or control of the action has been retained and a new species is listed that may be affected by the action. During the reinitiation, the effects of the skate fishery on the five DPSs would be fully examined.

The October 2010 Biological Opinion for the skate fishery concluded that the skate fishery may affect, but was not likely to jeopardize, loggerhead sea turtles. An incidental take statement and associated reasonable and prudent measures and terms and conditions were included with that Biological Opinion. In reaching that conclusion, the Biological Opinion considered the effect of the estimated take on nesting beach aggregations and ultimately to the global species as listed. The difference between the analysis contained in the October 2010 Biological Opinion and that conducted for the proposed species would be that it was conducted at the level of the global species and it was conducted for a species listed as threatened whereas the proposal is for nine DPSs, two of which are proposed to be listed as threatened and seven to be listed as endangered. The Northwest Atlantic DPS is the one affected the most by the skate fishery and it is proposed to be listed as endangered. It is important to note that the effects analysis was conducted by examining the estimated number of takes against what is known about the biological status of loggerhead sea turtles and did not explicitly include any specific variable that would be affected by the listing status (e.g. threatened or endangered). Since the October 2010 Biological Opinion considered effects at the nesting beach aggregation level first and then aggregated up to consider effects at the species level, an analysis considering effects at the DPS rather than species level and on an endangered rather than threatened species would not change the jeopardy conclusion of that Biological Opinion. Therefore, we conclude that a conference for the proposed loggerhead DPSs is not required.

## *8.3 Marine Mammal Protection Act*

Section 5.4 of this action contains a description of marine mammals potentially affected by the Skate Fishery and Section 6.1.4 provides a summary of the impacts of the proposed action as analyzed in Framework 1.A final determination of consistency with the MMPA will be made by the agency when Framework 1 is implemented.

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 in 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 Northeast 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.

## 8.4 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.

## 8.5 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.

## 8.6 Executive Order 13132 (Federalism)

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

## 8.7 Initial Regulatory Flexibility Analysis (IRFA) - Determination of Significance

The purpose of the Regulatory Flexibility Act (RFA) is to provide opportunities for small entities to participate in the development of proposed regulations and to identify ways to reduce the regulatory burden and record-keeping requirements on small businesses. To achieve this goal, the RFA requires government agencies to describe and analyze the effects of regulations and possible alternatives on small business entities. Based on this information, the Regulatory Flexibility Analysis determines whether the proposed action would have a “significant economic impact on a substantial number of small entities.”

This analysis uses the IRFA analysis done for Amendment 3 for the Skate FMP using data from 2007 and which was implemented in July 2010 to provide background data on the distribution of impacts. For the

purpose of this analysis the 2007 data is believed to reasonably represent the fishery prior to the implementation of Amendment 3. More recent data on individual vessel operations on that would show the distribution of impacts on individual operation are not available; however, available data show that the number of vessels landing skates in 2009 dropped only marginally from 499 vessels in 2007 to 465 in 2009. Also, the proposed changes in the skate wing possession limits, the TAL trigger and landings rule would have a small but positive economic impact on all vessels landing skates.

**Problem Statement and Objectives**

The purpose of action and the need for management are explained in Section 3.13.1.

**Management Alternatives and Rational**

Proposed management alternatives and their rational are explained in Section 4.0

**Description and Number of Small Entities to which the Rule Applies**

The RFA recognizes three kinds of small entities: small businesses, small organizations, and small governmental jurisdictions. The proposed action would only affect small businesses engaged in the harvesting fish. The small business size standard for businesses engaged in any fish-harvesting or hatchery business that is independently owned and operated and not dominant in its field of operation, with receipts of up to $4.0 million annually.

In practice, although some firms own more than one vessel, available data make it difficult to reliably identify ownership control over more than one vessel. For this reason, the number of permitted vessels is considered to be a proxy for the number of small business entities. The proposed action may affect any vessel that may be eligible to retain skates on any given fishing trip. During 2007 there were a total of 2,685 vessels that were issued a permit that would allow the operator to harvest skates for commercial sale. However, during 2007 there were only 542 vessels that participated in the skate fishery. That is, approximately 20% of the potential universe of regulated entities actually landed any skates for commercial sale.

The regulated fishing entities participating in the New England Skate fishery may all be classified as small entities for purposes of the RFA since no one vessels had gross sales that exceeded $4 million. Analysis of the economic impacts of the proposed action was conducted using trip level data which required reasonably complete information on trips that either landed skate wings or whole skates as well as sales of fishery products on trips that did not land skates. For this reason 43 of the 542 participating vessels had to be dropped from further analysis. The impact on these 43 vessels may be expected to be within the range of the remaining 499 vessels that were retained for further analysis.

Of the 499 participating vessels average, total sales were $296 thousand per vessel, of which, revenue from skate sales averaged $13 thousand; approximately 4% of total annual sales (Table 1).

**Table 42. Skate fishery summary data for 2007 (source: VTR data)**

| | |
|---|---|
| ***Number of Vessels*** | ***499*** |
| ***Total annual revenue from skates*** | 6,734,433 |
| ***Average revenue from skates*** | 13,415 |
| ***Total annual revenue from all trips*** | 148,939,613 |
| ***Average annual revenue from all trips*** | 296,692 |

## Economic Impact of the Proposed Action

Based on the analysis done for Amendment 3, the combination of proposed action possession limits for the skate wing fishery would have no potential adverse impact on 372 (74.5%) of the 499 participating vessels included in the analysis (Table 2). That is, skate landings on trips taken by these vessels during 2007 were below the proposed 5,000 lb. skate wing possession limits.

However, the impacts of the proposed alternative on any given fishing business may be expected to differ according on how much a vessel owner depends on skate revenues. Dependency was calculated as the proportion of total annual sales of all fishery products that was from the sale of skate products. As shown in Table 43, almost 75% of the 499 participating vessels have a low dependency on skate fishery (less than 5 %).

**Table 43. Number of vessels by quartile by percentage of total gross revenues from skates (2007)**

| Revenue Dependency Groups | Number of vessels |
|---|---|
| ≤ 0.19% | 125 |
| 0.19% to 0.91% | 125 |
| 0.91% to 4.75% | 124 |
| 4.75% to 100% | 125 |
| TOTAL | 499 |

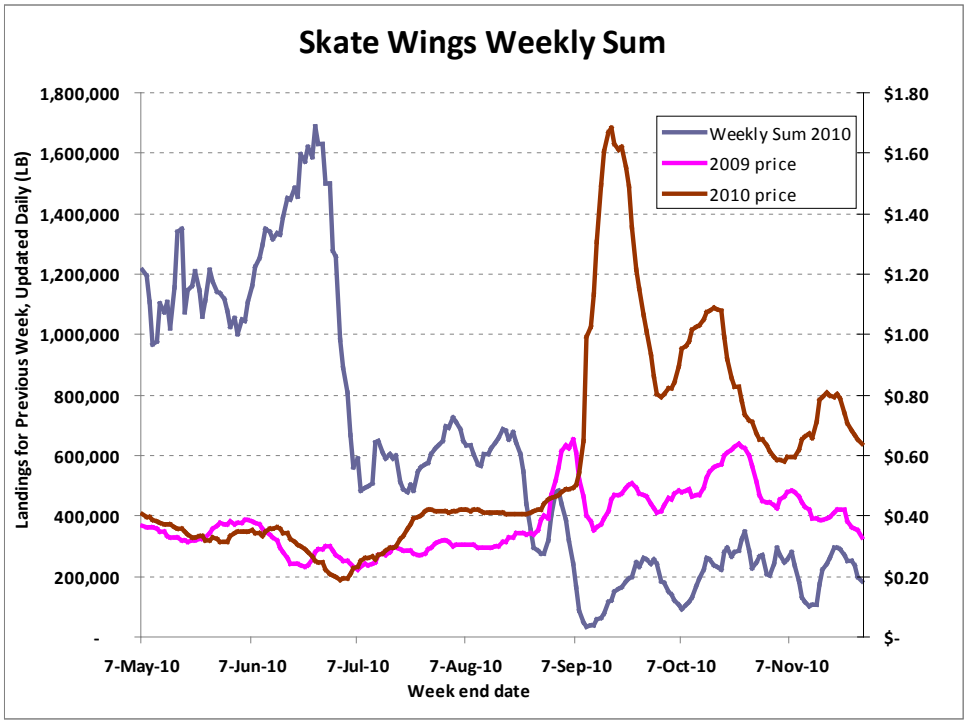
Based on the 2009 landings characteristics presented in Table 29 of this document, 149 or fewer of 465 vessels would be affected by reducing the skate wing possession limit from 5,000 to 2,600 lbs. during May through August. Ninety-five or fewer vessels would be affected by the reduction to 4,100 lbs. from September 1 until or until the 85% TAL trigger is reached. No loss in landings or gross revenue is expected because 85% of the TAL trigger is expected to be reached after 11 months and the incidental possession limit would be higher than under the no action alternative.

**Table 44. Number of vessels affected by proposed changes in the possession limit based on 2009 trip characteristics**

| | No of Vessels Affected |
|---|---|
| Not affected by either limit | 316 |
| Affected by 2600 lb. limit only | 116 |
| Affected by both 2,600 lb. limit and 4,100 lb. limit | 33 |
| Total | 465 |

However, it is very unlikely that these vessels will experience any loss in revenue. According to comments received from skate fishermen and processors at public meetings, market demand for skates is very weak during the summer months. Figure 17 ( repeated here for convenience), shows that price did not increase significantly in response to the large reduction in supply caused by the implementation of Amendment 3 possession limit in July 2010. It was not until September that prices rose when the supply of wings was severely constrained because the 80% TAL trigger was reached and the 5,000 lb. possession limit for the wing fishery was reduced to the 500 lb. incidental catch limit. Therefore the change in the wing possession limit from 5,000 lbs. throughout the year to 2,600 lbs. May through August and 4,100 lbs. from September until a higher percentage (85% instead of 80%) TAL rigger is reached will allow a higher proportion of skates to be landed in the fall when prices are expected to be higher. Secondly, the increase in the TAL trigger from 80% of the TAL to 85% of the TAL will allow more skates to be landed in the targeted wing fishery before these vessels are subject to the lower incidental possession limit. Third, the proposed action would increase the incidental possession limit from 500 lbs. to 1,250 lbs. with the result that revenues for all vessels in the wing fishery will increase while fishing under the this incidental possession limit compared to the no action alternative.

**Figure 19 Seven day moving average of daily landings during 2010**



### Economic impacts of non-selected alternatives

It was not possible to quantitatively analyze the other alternatives in comparison to the proposed action. Based on the input received from skate fishermen and processors at one committee meeting and the final Council meeting, the proposed action was the most likely to result in the largest economic benefits for skate vessels and processors. These groups reported that the proposed action would allow the fishery to better match the supply of skate wings to seasonal market demands. Therefore and for the other reasons explained in the preceding section, the preferred alternative is expected to have the largest positive impact on revenues for all vessels regardless of their level of dependency on the skate resource.

## *8.8 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.

## *8.9 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 contains no new collection of information requirements subject to the PRA. The program for monitoring the possession limits and any changes 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.

## *8.10 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.

The proposed action will not 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. The proposed action is expected to result in small but positive gains to skate fishermen and processors and have positive impacts on fishing communities. It is not expected to result any measurable economic benefits to the U.S. consumer because the markets for skate wings are mostly foreign. The proposed action is clearly not expected to have an annual economic effect on the economy of $100 million or more. The total ex-vessel value of the skate wing fishery in 2007 was less than $8 million (Amendment 3, Section 7.5.1.3.3) when landings were 14,069 metric tons. Skate wing landings under the proposed action will be constrained to the skate wing TAL of 6,269 metric tons, less than 50% of the TAL The proposed action will not change the 2010 skate wing TAL in 2011 and therefore is expected to have a very small economic impact relative to the $100 million threshold of EO 12866.

The proposed action also will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency. Analysis of compliance with other applicable laws also is described in this section (Section 8.0).

The proposed action will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof. No entitlements, grants, user fees, or loan programs are affected by proposed action.

The proposed action will not raise novel legal or policy issues arising out of legal mandates, the President's priorities, of the principles set forth in the Executive Order. (See discussion 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.

**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.

**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.

**Principle 3: Alternatives**
The Council identified several possession limit alternatives for skate wings (Section 4.0).

**Principle 4: Risks**
No significant change in risks is expected.

**Principle 5: Cost effectiveness**
The proposed action is expected to result in small positive economic benefits with no changes in administrative or enforcement costs. Possession limits have been in effect for a number of years. The proposed action only changes the level at which possession limits are set and does not require additional administration and enforcement compared to the no action alternative.

**Principle 6: Benefits and Costs**
The proposed action is expected to result in small positive economic benefits with no changes in administrative or enforcement costs. It may increase fishing costs because fishermen will have to take more trips to land the same amount of skates under the proposed lower possession limits; however, fishermen and processors have stated in public meeting that extending the duration of the directed wing fishery was more important than the costs of the lower possession limit. Also, lower discards anticipated under the proposed action are expected to possibly result in a higher proportion of the ABC being allocated to the fishery instead of to discards in the future.

**Principle 7: Best Available Information**
The FMP is based on the best available scientific information. See Section 0

**Principle 8: Performance Objectives**
The performance objective is an extend duration for the wing fishery and a more stable supply of wings to various markets.

**Principle 9: Views of Appropriate State, Local and Tribal Officials**
See section 8.1.3, list of agencies consulted. State fisheries agencies have formal representation as members of the New England Fishery Management Council.

**Principle 10: Avoidance of Regulations that are Inconsistent, Incompatible or Duplicative**
Avoidance of inconsistent regulations is attained through the processes of the 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.

**Principle 11: Least Burden on Society**
The FMP for skates is based on 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.

**Principle 12: Simplicity**
The options proposed are simple and familiar, by example, to fishermen and regulators and should minimize uncertainty and litigation.

**Summary and Conclusions**
The proposed regulations would result in marginal but unquantifiable gains to the harvesting and processor sectors. The impacts on U.S. consumers which are a very small part of the global market for skates cannot be determined but there is no reason to believe that it would be negative. The proposed action is not expected to result in a significant or predictable change in skate landings and it is not possible to determine the likely direction of any change.

#### 8.10.1.1 Summary of Recreational Fishing Impacts

The proposed action has no effect on recreational fishing.

#### 8.10.1.2 Mitigating Measures

No mitigation is necessary, since the environmental impacts are not expected to be significant.

## *8.11 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.

### 8.11.1 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.

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.

### 8.11.2 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.

### 8.11.3 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 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 FY2009. 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 and management alternatives considered in this action are described in Section 4.0.. The supporting science and analyses, upon which the policy choices are based, are summarized and described in Section 6.0. 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.

## *8.12 Glossary of Terms and Acronyms*

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

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

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

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

**Adverse effect** – Any impact that reduces quality and/or quantity of EFH, which 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 prevent 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** –These are the 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 plate-like 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, dispensation, 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 weigh-out 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.)

**DPS** – Distinct population segment

**DPWS –** Reference to the Data Poor Assessment Workshop that occurred in December 2008 (URL: http://www.nefsc.noaa.gov/nefsc/saw/).

**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.

**$F_{threshold}$** – 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).

**New England Fishery Management Council (NEFMC)** – The regional fishery management council that prepared this document (URL: http://www.nefmc.org/).

**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.

**Scientific and Statistical Committee (SSC)** – A standing committee of the NEFMC which provides peer review of Council science and approves annual catch limits.

**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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