6.1.7 Impacts of Other Groundfish Management Measures

Although it is not possible to predict at this time what management measures will be implemented in the groundfish fishery within the next few months and years, it is likely that these measures will target significant effort and possibly capacity reductions. It is important to remember that any reductions in multispecies fishing effort should directly reduce effort on skates.

Because the majority of skate fishing occurs on Multispecies DAS, reductions in Multispecies DAS should proportionately reduce opportunities for skate fishing. Moreover, significant reductions in Multispecies DAS could reduce skate effort more than expected. If significant reductions are taken, vessels will likely try to maximize their remaining opportunities in the multispecies fishery and may decide not to target skates at all since skates are low-value species compared to groundfish. This could impact the skate bait fishery more than the wing fishery because the bait fishery is a directed skate fishery that occurs under Multispecies DAS and because bait is even lower in value than wings. Anecdotal information suggests that this is already occurring as a result of the Interim Action implemented by NMFS to respond to the Court Order in the Framework 33 lawsuit (CLF et al. v. Daley).

6.2 IMPACTS ON HABITAT – EFH ASSESSMENT

A description of the physical environment in which skates live and an assessment of the impacts to this habitat from fishing practices is provided in Section 7.2 of this document (p. 296), the description of the resource and affected environment. All the alternatives and actions proposed in this FMP are intended to control and, in some cases, reduce the amount of fishing effort for skates. Except for the directed bait fishery off Rhode Island, most skate landings come from bycatch and incidental catch in the groundfish fishery managed under the Northeast Multispecies FMP. The actions proposed in this FMP, therefore, are unlikely to increase any adverse impacts to the EFH of any managed species that may be associated with the skate fishery.

6.2.1 Federal Permit Program

This measure requires vessels that land skates to obtain a federal permit. This measure is purely administrative; therefore, implementation of this measure is not be expected to have any effect on the habitat of the region.

6.2.2 Catch Reporting Requirements

This measure requires vessels that land skates to report their landings via a formal reporting system. This measure is purely administrative; therefore, implementation of this measure is not be expected to have any effect on the habitat of the region.

6.2.3 LOA for Bait-Only Vessels

This measure requires vessels that fish for skates for bait and do not want to be subject to the possession limits proposed in this FMP to obtain a letter of authorization (LOA). This measure is purely administrative; therefore, implementation of this measure is not be expected to have any effect on the habitat of the region.

6.2.4 Prohibition on the Possession of Barndoor Skates

This measure prohibits the possession of barndoor skates to protect the barndoor skate resource. Industry reports suggest that barndoor skates comprise only 1% - 5% of skate wing landings (which themselves are only 60% of the total skate landings). It is unlikely that any changes in fishing effort would result from this measure, as fishermen will simply discard any barndoor skates that they catch. Also, because this measure is only relevant to the incidental catch skate wing fishery, whose overall fishing effort is controlled under the Northeast Multispecies FMP, the overall amount of fishing effort in the region is unlikely to change as a result of this proposed measure. Thus, the implementation of this measure is not expected to have any effect on the habitat of the region.

6.2.5 Prohibition on the Possession of Thorny Skates

This measure prohibits the possession of thorny skates to protect the thorny skate resource. There is no information available on the percentage of the current skate wing landings that come from thorny skates, but even so, it is unlikely that any changes in fishing effort would result from this measure, as fishermen will simply discard any thorny skates that they catch. Also, because this measure is only relevant to the incidental catch skate wing fishery, whose overall fishing effort is controlled under the Northeast Multispecies FMP, the overall amount of fishing effort in the region is unlikely to change as a result of this proposed measure. Thus, the implementation of this measure is not expected to have any effect on the habitat of the region.

6.2.6 Prohibition on the Possession of Smooth Skates in the GOM

This measure prohibits the possession of smooth skates in the GOM to protect the smooth skate resource. There is no information available on the percentage of the current skate bait or wing landings that come from smooth skates, but even so, it is unlikely that any changes in fishing effort would result from this measure, as fishermen will simply discard any smooth skates that they catch. Also, because this measure is most relevant to the incidental catch skate wing fishery, whose overall fishing effort is controlled under the Northeast Multispecies FMP, the overall amount of fishing effort in the region is unlikely to change as a result of this proposed measure. Thus, the implementation of this measure is not expected to have any effect on the habitat of the region.

6.2.7 Possession Limit for the Skate Wing Fishery

This measure implements an overall possession limit for the skate wing fishery. This measure could discourage large-scale directed fishing for skates, in order to reduce fishing mortality on winter skates. Implementation of a possession limit of this sort is not be expected to have a direct effect on the habitat of the region. The possession limit could have an indirect effect on the habitat of the region by reducing the amount of effort directing on skates, assuming that fishing effort ceases as soon as the trip limit is reached and does not continue with the intent of "highgrading," but the overall amount of fishing effort is unlikely to be reduced as vessels will simply target other species managed under the Northeast Multispecies FMP.

6.2.8 Management Measures in Other Fisheries

In addition to the measures described above, the Council will rely on management measures in place in several other fisheries to help control skate fishing effort and rebuild the skate resources. In addition to assisting to control skate fishing effort, measures for other fisheries may also have an effect on EFH. In most cases, management measures implemented under other Council FMPs provide significantly more habitat protection than could be expected under the Skate FMP, due to the nature of the skate fishery.

6.2.8.1 Multispecies FMP

In addition to the following measures identified below, the Council is in the process of developing a major amendment to the Northeast Multispecies FMP. Amendment 13 will consider a range of alternatives to improve habitat protection and these alternatives may modify the measures described below.

Multispecies DAS

The multispecies DAS program directly restricts the time available for vessels to fish for skates in the Gulf of Maine, Georges Bank, or Southern New England. The effort reduction program initiated in Amendment 5 and expanded in Amendment 7 directly reduced the amount of fishing effort in the groundfish fishery. Effort reductions in the Northeast Multispecies FMP translate directly into reductions in habitat impacts due to a reduction in the frequency and intensity of gear use.

Multispecies Closed Areas

The Northeast Multispecies FMP uses seasonal and year-round closure areas to reduce fishing mortality and protect spawning stocks of several important groundfish stocks. These closures also serve to protect the habitat contained within them by prohibiting all types of fishing gear capable of catching groundfish. This includes all types of bottom-tending mobile gear, the types of fishing gear most often associated with adverse impacts to fish habitat. The closed areas remain closed to all vessels fishing for skates, as well, so they serve as de facto skate habitat protection areas. Although the benefits to skates may be incidental to the purpose of the closed areas, the degree of protection these areas provide to skates should not be overlooked. Based on the historical distribution patterns observed by the NMFS trawl survey for the species in the

skate complex, over 10% of all observations were in the areas now closed year-round (this includes the observations of the two southern species).

Other Measures in Multispecies FMP

Other measures in the Northeast Multispecies FMP, such as gear restrictions and trip limits, may either directly or indirectly affect skate fishing mortality. However, these types of measures are not expected to directly affect the habitat of the region.

6.2.8.2 Monkfish FMP

Because the monkfish fishery is primarily an incidental catch fishery (similar to the skate wing fishery), the management measures in the Monkfish FMP (limited entry, DAS, trip limits, mesh size restrictions, etc.) are unlikely to significantly affect the habitat of the region.

6.2.8.3 Sea Scallop FMP

There may be concern about the bycatch of skates in the sea scallop fishery, and several management measures in the Scallop FMP may serve to indirectly reduce bycatch of skates. Measures that reduce skate bycatch in the scallop fishery may also reduce the impacts of the scallop fishery on skate habitats by reducing the interactions between the scallop dredges used in the fishery and the habitats where skates occur. The Scallop FMP has reduced overall fishing effort in the scallop fishery by more than half (from 51,000 DAS in 1991 to 27,000 DAS in 1998 and then down to 19,600 DAS in 1999 with the closed area access program). This effort reduction is expected to have reduced adverse impacts to habitat that may be associated with the use of scallop dredge gear. Changes to the chafing gear and ring size used on the dredges may have reduced some of the adverse effects on habitat by making the dredge lighter on the bottom.

In addition to the measures identified above, the Council is in the process of developing a major amendment to the Sea Scallop FMP. Amendment 10 will consider a range of alternatives to improve habitat protection and these alternatives may modify the measures described above.

6.2.8.4 Lobster FMP

Fishing activities managed under the Lobster FMP involve only trap gear and are therefore not of significant concern relative to the habitat impacts associated with other fishing gears, such as otter trawls and scallop dredges. The management measures in the Lobster FMP are unlikely to significantly affect the habitat of the region.

6.2.9 EFH Assessment

This essential fish habitat (EFH) assessment is provided pursuant to 50 CFR 600.920 of the EFH Final Rule to initiate EFH consultation with the National Marine Fisheries Service.

6.2.9.1 Description of the Proposed Action

See Section 4.0 of this document for a description of the action proposed in this FMP (p. 8). The activity described by this proposed action, the regulated fishery for skates, occurs across designated EFH for all Council-managed species (see Amendments 11 and 12 to the Northeast Multispecies FMP). The range of this activity also occurs across the designated EFH of all species managed by the Mid-Atlantic Fishery Management Council and species managed under the NMFS Highly Pelagic Species FMP.

6.2.9.2 Analysis of the Effects of the Proposed Action

This action proposes to regulate the skate fishery. Several of the proposed actions are administrative in nature and have no impact whatsoever on EFH in the region. Measures to protect barndoor, thorny and smooth skate are relevant only to the incidental catch skate wing fishery, whose overall fishing effort is controlled under the Northeast Multispecies FMP. Consequently, the overall amount of fishing effort in the region is unlikely to change as a result of these proposed measures. The possession limit for the skate wing fishery could have an indirect effect on the habitat of the region by reducing the amount of effort directing on skates, assuming that fishing effort ceases as soon as the trip limit is reached and does not continue with the intent of "highgrading," but the overall amount of fishing effort is unlikely to be reduced as vessels will simply target other species managed under the Northeast Multispecies FMP.

This FMP does not propose to increase current levels of fishing activity in the U.S. EEZ. None of the proposed actions will cause additional adverse impacts on the EFH of any managed species relative to the baseline conditions established under Amendments 11 and 12.

6.2.9.3 Conclusions

In that fishing takes place as a result of this action, the action potentially has adverse effects on EFH that are less than substantial but does not increase any of the adverse effects as established in the baseline condition under Amendment 12. Since adverse effects are not increased, the Council has determined that the potentially adverse effects of fishing on EFH from this action have been minimized to the extent practicable; therefore, only an abbreviated EFH consultation is required.

6.2.9.4 Proposed Mitigation

None required.

6.3 IMPACTS ON OTHER SPECIES (FISHERY IMPACT STATEMENT)

No management measures proposed in this FMP are expected to have any direct or indirect impacts on other species within the management unit.

The Skate PDT considered the potential benefits of the proposed skate wing possession limits on other species that are caught in combination with skate wings, but the PDT concluded that these benefits are likely to be insignificant. Only to the extent that the proposed possession limit compromises trip profits and result in shorter trips could bycatch of other species be reduced. Given the low commercial value of skates, it is unlikely that the possession limit will produce this result often enough for benefits to other species to accrue. It is more likely that vessels will continue to fish for other species, move to an area with fewer skates, switch to another fishery, or take more trips if they reach the wing possession limit on a regular basis. The impacts of these alternative behaviors on other species cannot be accurately predicted or quantified.

It may be more important to consider the impacts of management measures in other fisheries on the skate complex, as skate fishing overlaps considerably with fishing for groundfish, monkfish, and to a lesser extent, scallops. This FMP considers the impacts of activities and management measures in other fisheries on skate fishing and the condition of the skate complex. Additional discussion of these measures and fisheries can be found in Sections 4.16 and 6.1.6 of this document.

6.4 IMPACTS ON PROTECTED SPECIES

6.4.1 Background

The seven species addressed by the Skate FMP are distributed along the coast of the northeast United States from near the tide line to depths exceeding 700 meters. Each displays a slightly different distribution pattern that is described generally in Table 1 and in more detail in the EFH Source Documents for these species (Volume III). A complete description of the available biological information about these species can be found in Section 6.1 of this document.

Skate inhabit the benthic regions of the inshore and continental shelf waters of the U.S. east coast. This habitat is shared by many of the groundfish species managed under the Multispecies FMP, as well as the spiny dogfish, monkfish, and scallop species that are managed under their own FMPs. In fact, one of the major concerns that has led to the implementation of a Skate FMP is the extensive bycatch and discard of skates in these similar fisheries. The gear types that are used to catch skates are also used to catch groundfish, dogfish, monkfish, and scallops. Therefore, the extensive overlap of skate habitat with these other more commercially valuable species, combined with the similar gear types used to catch these species, make it impossible for a fisherman to pursue one of these species without the probability of catching one of the other species. The Council, recognizing the extensive interrelationship of these fisheries, has evaluated the impact of management measures already in place in the Multispecies, Dogfish and Monkfish in terms of providing protection to skates. Their management strategy for skates first considers these existing measures before imposing further management restrictions to protect skates. In a similar fashion, the protective measures that have been implemented to reduce the

impact of multispecies, dogfish and monkfish fisheries to key protected species such as large whales and harbor porpoise must be considered as effective for the skate fisheries as well.

Skates are harvested in two very different fisheries, one for lobster bait and one for the skate wing market. Both fisheries use bottom trawl and sink gillnet gear that is known to interact with various protected species. However, each fishery has slightly different characteristics that must be understood before undertaking an analysis of potential impacts to these species.

Bait Fishery Characteristics

The skate fishery for use as lobster bait is the only known directed skate fishery, and the demand for skate as lobster bait is directly controlled by the intensely managed lobster fishery. The skate bait fishery is further limited geographically to the Southern New England region. The geographical limitation of the skate bait fishery is due to the fact that skate have a longer "shelf life" than the other soft bait choices such as mackerel or herring. Most lobster fishermen would prefer to use mackerel or herring for bait, however, those species do not last very long in traps set in the warmer southern New England region. Indeed, vessels fishing in the Gulf of Maine consistently use mackerel and herring for lobster bait, as they are a preferred bait and will last longer in the colder waters found in that area. Therefore, the only known directed skate fishery is limited both by the limited entry and trap restrictions currently in place under the Lobster FMP and by the limited use of skate as lobster bait to the Southern New England region. The bait fishery appears to be dominated by otter trawl vessels (97% of landings) operating out of southeastern Massachusetts and Rhode Island. Sink gillnets usually make up less than 10% of skate bait landings. Therefore, for the reasons stated above, it is assumed that the only area where a directed skate fishery may exist separate from the Multispecies, Dogfish, and Monkfish FMPs, would be in the southern New England region.

Size is a major factor in the choice of skate species used for bait. A "dinner plate" skate brings the highest price in the bait fishery. Therefore, because of their smaller size, little skates make up 90% or more of the skate landings for bait, with a small number of juvenile winter skates providing the rest of the landings. The large skates (adult winter, barndoor, and thorny) are rarely used in the Southern New England bait fishery. A complete description of available information about this fishery can be found in Section 7.3.1.1 of this document.

Wing Fishery Characteristics

The wing fishery is generally an incidental catch fishery that involves a larger number of vessels located throughout the region. Skates intended for the overseas wing market are caught in the large mesh otter trawl and sink gillnet fisheries that are simultaneously targeting other demersal species such as groundfish and monkfish. Skates are rarely landed unless prices are high enough to ensure some level of profitability. Therefore, skates caught but not landed in these fisheries become discards.

Skate wing landings are also dominated by otter trawl vessels (83%) with the sink gillnet sector averaging around 15% of skate wing landings over the last seven years. A complete description of available information about this fishery can also be found in Section 7.3.1.2 of this document.

Fishery Summary

The directed Southern New England skate bait fishery is not likely to expand because demand is limited by the current trap limits and other restrictions controlling effort in the lobster fishery. Skates landed in the wing fishery are largely taken as incidental catch in other fisheries such as groundfish, monkfish, and dogfish as well as sea scallops. The FMPs that regulate these fisheries also contain controls on effort for each fishery. In addition, the low market value of skate makes it unlikely that a vessel could survive economically without landing other more valued species, in addition to skates. Therefore, given these various limiting factors, fishing operations occurring under the Skate FMP are not expected to increase the overall otter trawl or gillnet effort in the region.

Existing Protected Species Programs

Many of the factors that are likely to mitigate the impacts of the skate fishery on protected species exist in other FMPs currently implemented in the Northeast Region. The specific measures that are relevant to the skate fishery are described in Section 4.16 of this document (p. 79). In addition, as described below, the regulatory measures of the Atlantic Large Whale Take Reduction Plan (ALWTRP) and the Harbor Porpoise Take Reduction Plan (HPTRP) have been implemented in direct response to the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) concerns expressed regarding the fishing operations taking place under the other FMPs (specifically the Multispecies, Spiny Dogfish and Monkfish FMPs) and must be adhered to by any vessel fishing for skate. As explained below, these protective measures also apply to the small sink gillnet component of the directed skate bait fishery that may not fall under the other FMPs mentioned above.

It is understood that measures contained in any FMP (including the Skate FMP) could change at any time in the future, potentially changing the degree of protection afforded all marine mammals as well as species listed as threatened or endangered under the ESA. However, once an FMP is in place, most changes to its measures occur through further Council action, and would be reviewed by NMFS for possible reinitiation under the ESA.

<u>Atlantic Large Whale Take Reduction Plan</u>

The gear used to catch skates, including gear used in the bait fishery, is identical to that used in the fisheries managed under the Northeast Multispecies, Monkfish, and Spiny Dogfish FMPs. Since each of these FMPs require permits for any gear "capable of catching" their target species, it would be impossible for any vessel to target only skate and avoid the measures contained in these plans. These FMPs have all undergone consultation pursuant to Section 7 of the Endangered Species Act (ESA), with the most recent Biological Opinions (Opinions) for all three FMPs dated June 14, 2001. The conclusions in all three Opinions are identical and state that each fishery is likely to jeopardize the continued existence of the North Atlantic right whale. The Opinions require NMFS to implement a set of Reasonable and Prudent Alternatives (RPA) to remedy the jeopardy finding. The RPAs call for significant further action under the ALWTRP.

The ALWTRP contains a series of regulatory measures designed to reduce the likelihood of fishing gear entanglements of large whale species in the North Atlantic. The RPAs called for three key regulatory changes: 1) new gear modifications; 2) implementation of a Dynamic Area Management system (DAM) of short-term closures to protect unexpected concentrations of right whales; and 3) establishment of a Seasonal Area Management system (SAM) of additional gear modifications to protect known seasonal concentrations of right whales. All of the above changes have been implemented since the beginning of 2002.

Harbor Porpoise Take Reduction Plan

As described at the beginning of this section, the gear used to catch skates, including gear used in the bait fishery, is identical to that used in the fisheries managed under the Northeast Multispecies, Monkfish, and Spiny Dogfish FMPs. This gear includes sink gillnet gear that has been found to entangle and kill harbor porpoise as well as other small odontocetes and seals. The HPTRP was developed to reduce the impact of this gear type on harbor porpoise populations to acceptable levels as defined under the MMPA. The measures implemented under the HPTRP include time/area closures combined with the use of acoustical devices (pingers) on nets. These measures have been shown to be effective in reducing the serious injury and mortality of harbor porpoise in the sink gillnet fishery.

6.4.2 Impacts of the Skate FMP Options

The basic goals of the Skate FMP are to obtain better data to understand the levels of discards and bycatch in relation to landings that are sold for bait or wings, and to rebuild the two overfished skate species. The current options being considered under the Skate FMP, with the exception of the possession prohibitions for overfished skates, are largely administrative (permit system) and data gathering (catch reporting) in scope. However, the Skate FMP establishes a mechanism for addressing any future unknown pressure or threats to the seven skate species.

The management options selected by the Council for the Skate FMP are described in Section 4.0 (p. 8) of this document, and include a federal permit system, catch reporting requirements, letters of authorization (LOA) for the bait fishery, possession prohibitions for the overfished skate species, and possession limits for the wing fishery. These measures are designed to either establish better documentation of the skate fishery, which will have no direct impact on the actual fishing operations, or are directed at protecting certain skate species. Due to the administrative nature of these measures, none are expected to provide either a direct beneficial or adverse impact on protected large whales, small cetaceans or sea turtles.

Provided below are assessments of the relative impacts of the management options on the protected species described in Section 7.1.3 of this document (p. 267). Since the bulk of the protective measures for protected species in the skate fishery are tied to other FMPs, discussion of impacts to protected species provided below will focus on the limited directed fishery for skate that may not be included in the requirements imposed by the other FMPs mentioned above, and to potential impacts to barndoor skate, an ESA candidate species.

6.4.2.1 Permit Options

The Council proposed to require permits for vessels, dealers, and processors engaged in the skate fisheries occurring in the U.S. EEZ, as is required in FMPs for other closely related fisheries such as multispecies, monkfish and spiny dogfish. A skate permit system does not; by itself provide any direct protection to marine mammals (large whales, small odontocetes, or seals) or sea turtles.

Permit Option 1 – One General Skate Permit (Proposed Action)

The selected option establishes one general open access federal skate permit. A general open access permit provides the regulatory mechanism by which the true scope of the number of vessels that may target skate can be documented. It assures that development of any directed skate fishery will be easily defined so that any additional threats to protected species not currently known can be assessed. Incorporation of a skate permit will also facilitate implementation of any further measures that may be needed to rebuild skate stocks.

Permit Option 2 – "Directed" and "Incidental Catch" Skate Permits (Non-Preferred)

This option would have established two permits for skates: (1) a Directed Skate Permit that would require compliance with all provisions of the Skate FMP, and (2) an Incidental Catch Skate Permit that would have a 1,000 pound skate possession limit but would have required compliance with any species prohibitions in the Skate FMP. Most barndoor skate are caught incidental to other fisheries and are rarely landed in quantities that exceed 1,000 pounds. Therefore, this option would have provided no additional protection for barndoor skate not already provided by the selected possession prohibition.

Permit Option 3 – Other Federal Permits (Non-Preferred)

This option would have allowed vessels and dealers that possess any Northeast Region federal fisheries permit that require logbook and dealer reporting to use these other federal permits to land, sell, and purchase skates. This option recognized the overlap of the skate fishery with other permitted fisheries. However, it would have provided no additional protection to barndoor skate not already provided by the selected possession prohibition.

6.4.2.2 Catch Reporting Requirements

Reporting requirements for the skate fishery will be similar to those for other federal fisheries in the Northeast Region. The options considered by the Council were designed to obtain additional or more detailed information about skates. A skate catch reporting requirement does not; by itself, provide any direct protection to marine mammals (large whales, small odontocetes, or seals) or sea turtles.

Reporting Option 1 – Status Quo (Non-Preferred)

The "no action" alternative for reporting requirements would have meant that vessels would continue to report skate landings and discards on their logbooks under the general categories of "unclassified skates" and "unclassified wings." This option would have provided no additional protection to barndoor skate not already provided by the selected possession prohibition, given

that no detailed data would be collected to better describe landings and discards of this overfished species.

Reporting Option 2 – Mandatory Reporting by General Categories (Non-Preferred)

This option would have required landings to be reported by "bait" and "wing" categories, and discards to be reported by "small skate" (<23 inches) and "large skate" (>23 inches) categories. This option would have provided a minimum of additional data on barndoor skate landings and discards. Managers could assume that "bait" landings are not barndoor skate, but would have had to rely on observer and survey data to determine the percentage of "wing" landings (if applicable) and "large skate" discards that may be barndoor skate.

Reporting Option 3 – Mandatory Reporting of Landings and Discards by Species (Non-Preferred)

This option would have required vessels to report all skate landings and discards in logbooks by individual species. It would also have required dealers to report all skate purchases by individual species. This option might have provided the best, most detailed data on barndoor skate landings and discards. The question of species identification problems is not significant for barndoor skate, as they are the most easily identifiable of the large skate species.

Reporting Option 4 – Mandatory Reporting of Landings by Species and Sea Sampling and Study Fleets for Species-Specific Discard Data (Proposed Action)

The selected option requires vessels to report all skate landings and discards in logbooks by individual species, and discards by the "small skate" and "large skate" categories noted in Option 2 above. It also requires dealers to report all skate purchases by individual species. This measure provides the best quality data on barndoor skate landings, but data on discards will be minimal. Managers will have to rely on observer and survey data to determine the percentage of "large skate" discards that may be barndoor skate. As mentioned above, the issue of species identification problems is not significant for the easily identifiable barndoor skate.

Reporting Option 5 – Mandatory Reporting of Landings by Species and Volunteer Program for Species-Specific Discard Data (Non-Preferred)

This option would have imposed a mandatory requirement for vessels to report landings by species and would have created a voluntary program for reporting discards by species. Dealers would have been required to report purchases by species. This option might have provided the most comprehensive information on landings as well as accurate data on discards, depending on the success of a voluntary program. Dealer reporting by species would have provided a cross-reference for the landings data if skate dealers were skilled in species identification. However, at least for barndoor skate, species identification is not considered a problem.

Reporting Option 6 – Mandatory Reporting by General Categories and Volunteer Program for Species-Specific Landings and Discard Data (Non-Preferred)

This option would have required landings to be reported by "bait" and "wing" categories, and discards to be reported by "small skate" (<23 inches) and "large skate" (>23 inches) categories. Dealers would have been required to report purchases of skates by market category. A voluntary program would have been established for vessels to report landings and discards by species and

would have provided the same minimal level of data collection on barndoor skate as Option 2. Collection of accurate data on barndoor skate would have been dependent on the success of the voluntary program and its ability to document all segments of the skate fishery. The lack of incentives for participation in a voluntary program would have been problematic.

Reporting Option 7 – Mandatory Vessel Reporting by General Categories and Mandatory Dealer Reporting by Species (Non-Preferred)

This option would have required vessels to report landings by "bait" and "wing" categories, and discards to be reported by "small skates" (<23 inches) and "large skates" (>23 inches) categories. Dealers would have been required to report purchases by species. This placed the onus of species identification on the dealers where it is possible that more accurate identification data could have been collected. However, managers would have had to rely on observer and survey data to determine the percentage of "large skate" discards that may be barndoor skate. Most managers consider the barndoor skate the easiest to identify.

6.4.2.3 Letter of Authorization for Bait-Only Vessels

The extent to which skate bait vessels sell their catch directly to lobster vessels is largely undocumented. This activity usually occurs in state waters between seasonal bait vessels and local inshore lobster vessels where no mechanism currently exists to document these transactions.

The selected option to require a letter of authorization is aimed at gaining an understanding of the amount of vessel-to-vessel transfer of skate for lobster bait as well as providing another tool to ensure the enforceability of the wing possession limits. Vessels will be required to record the sales of skate bait in their logbooks, and maintain receipts for these transactions. This is a portion of the directed skate fishery that needs to be quantified. However, if it is true that the direct sale of skate to lobster vessels is limited to inshore state waters, then the impact to marine mammals and sea turtles would be minimal. In addition, bait fisheries do not generally utilize barndoor skate. Not only is the species too large for lobster traps, but also lobster fishermen in Southern New England prefer 'dinner-plate'-size skates for bait purposes. Therefore, this option should have no adverse or beneficial effect on barndoor skate.

6.4.2.4 Measures to Protect Barndoor Skates

Options were considered in this FMP to prohibit the possession, landing, or sale of barndoor skate on all vessels fishing in federal waters. As noted in Section 7.1.3, barndoor skate are considered a candidate species under the ESA. Therefore, the species warrants significant management action to conserve the resource to the greatest extent possible. However, any restrictive measure applied to barndoor skate would not have a direct beneficial or adverse impact on marine mammals or sea turtles.

Option 1 –Prohibition on the Possession of Barndoor Skates (Proposed Action)

The selected option of a complete prohibition on possession of this species will provide the most complete protection available for barndoor skate. It will ensure that vessels at sea would be

forced to comply with the restriction. Depending on the degree of at-sea enforcement applied to these fisheries, it may affect vessel fishing strategy to avoid catching skates.

Option 2 –Prohibition on the Landing of Barndoor Skates (Non-Preferred)
A prohibition on landing barndoor skate would also have provided adequate protection for this overfished ESA candidate species. It would have allowed vessels to possess the species at-sea, but prohibit landing the species at the dock. Given that dockside enforcement is the major tool for NMFS, it would have maintained the desired affect of restricting use of this species in the marketplace. However, there would have been little incentive for vessels to modify their at-sea fishing strategy to avoid catching skate.

Option 3 – Prohibition on the Sale of Barndoor Skates (Non-Preferred)
Prohibiting the sale of barndoor skate would not have been significantly different from the landing prohibition described above. It would have achieved the same desired protection for this overfished ESA candidate species by restricting the use of the species in the marketplace, and would have allowed the inadvertent landing of a barndoor skate at the dock, but not its sale. However, as above, there would have been little incentive for vessels to modify their at-sea fishing strategy to avoid catching skate.

Option 4 - No Action (Non-Preferred)
Failure to prohibit the possession, landing, or sale of barndoor skate would have provided no additional protection for this species, except as noted in the previous discussions. The barndoor skate is considered "overfished" and was the subject of a petition to list as endangered or threatened under the ESA. It is still considered a candidate species under that Act.

6.4.2.5 Measures to Protect Thorny Skates

The overfished status of thorny skate calls for action to be taken to conserve the species under the Skate FMP. Although the implementation of restrictive measures to thorny skates may have an effect on barndoor skate as mentioned below, it would not have a direct beneficial or adverse impact on marine mammals or sea turtles.

Option 1 – Prohibition on the Possession of Thorny Skates (Proposed Action)

The selected option of a prohibition on possession of thorny skate will not directly benefit barndoor skate. The only indirect benefit would be the synergistic effect of a possession prohibition on two of the three "big" skates, causing fewer vessels to participate in the skate wing fishery that target large skates. Discards in other fisheries would continue to occur at the same level.

Option 2 – Prohibition on Landing of Thorny Skates (Non-Preferred)
A prohibition on the landing of thorny skates would not have directly benefited barndoor skate. However, there would have been little incentive for vessels to modify their at-sea fishing strategy to avoid catching one of the three 'big' skates in the wing fishery.

Option 3 – Prohibition on the Sale of Thorny Skates (Non-Preferred)
A prohibition on the sale of thorny skates would not have directly benefited barndoor skate. However, there would have been little incentive for vessels to modify their at-sea fishing strategy to avoid catching or inadvertently landing one of the three 'big' skates in the wing fishery. Therefore, discards of large skate species would have continued to occur.

Option 4 – No Action (Non-Preferred)
This option represents the "no action" alternative for thorny skate and would have had no beneficial impact on barndoor skate.

6.4.2.6 Measures to Protect Smooth Skates

Although it is not considered an overfished species, the smooth skate resource was overfished at the time of SAW 30 and is still depleted. Although the implementation of restrictive measures to smooth skates may have an effect on barndoor skate as mentioned below, it would not have a direct beneficial or adverse impact on marine mammals or sea turtles.

Option 1 – Prohibition on the Possession of Smooth Skates (Proposed Action)
This selected option was modified by the Council to apply only within the Gulf of Maine as defined by the Multispecies FMP regulated mesh line. Such a prohibition will not directly benefit barndoor skate. However, as noted above in the thorny skate discussion, a potential indirect benefit will be the overall effect of a possession prohibition on three of the four skates that are caught in the Gulf of Maine. To avoid landing three of four species, vessels may choose not to land any skate species from the area. Discards in other fisheries will continue to occur.

Option 2 – Prohibition on the Landing of Smooth Skates (Non-Preferred)
A prohibition on the landing of smooth skate would not have directly benefited barndoor skate.

Option 3 – Prohibition on the Sale of Smooth Skates (Non-Preferred)
A prohibition on the sale of smooth skate would not have directly benefited barndoor skate.

Option 4 – No Action (Non-Preferred)
This option represents the "no action" alternative for smooth skate and would have had no beneficial impact on barndoor skate.

6.4.2.7 Possession Limits for the Skate Wing Fishery

The Council considered three options for possession limits in the skate wing fishery at 10,000, 20,000, and 30,000 pounds. The skate wing fishery is currently characterized as an incidental catch in fisheries for other demersal species; especially groundfish and monkfish, taken by large mesh otter trawl and sink gillnet gear. However, as regulations potentially become more restrictive for these fisheries, vessels may target the skate species preferred in the wing fishery. Possession limits are intended to discourage expansion and any influx of new entrants into the fishery. Such limits do not by themselves protect barndoor skate, although discouraging expansion will be a benefit for all skate species that are taken in the wing fishery. In addition, a

restrictive possession limit measure applied to skates may have a beneficial impact on marine mammals and sea turtles if overall fishing effort is not allowed to increase.

Option 1 – 10,000 Pound Wing Possession Limit

A possession limit of 10,000 pounds would have provided the most protection for skates. Between 23 and 47 of the more than 800 vessels that landed skate in the wing fishery between 1997 and 2000 landed over 10,000 pounds in a trip. This indicated that an actual reduction in effort might have resulted with this option.

Option 2 – 20,000 Pound Wing Possession Limit (Proposed Action)

The selected option of a possession limit of 20,000 pounds per trip was further modified by the Council to restrict vessels to a daily possession limit of 10,000 pounds. This will provide an adequate hedge against expansion in the skate wing fishery. However, landings data from 1997 and 2000 indicate that only between 8 and 18 of the more than 800 vessels that landed skate in the wing fishery, landed over 20,000 pounds in a trip. This likely means that little, if any reduction in effort is likely to be seen with this option.

Option 3 – 30,000 Pound Wing Possession Limit (Non-Preferred)

It is unclear if a possession limit of 30,000 pounds would have provided an adequate hedge against expansion in the skate wing fishery. Only between one (1) and six (6) of the more than 800 vessels that landed skate in the wing fishery between 1997 and 2000 landed over 30,000 pounds in a trip. This suggests that, since very few vessels would have currently been affected by this limit, it would not have provided a disincentive for expansion.

Option 4 – No Wing Possession Limit ("No Action") (Non-Preferred)

The "no action" option would have provided no adequate control on expansion of the skate wing fishery that targets the large skate species, including the barndoor skate.

6.4.3 ESA Conclusions

Right Whale

Given the known anthropogenic sources of right whale mortality, their low population size, and their poor reproductive rate, the loss of even one northern right whale as a result of gear operating in the skate fishery may reduce appreciably the likelihood of both survival and recovery of this species. Although there are no documented takes of large whales in trawl gear, sink gillnet entanglements are common. Documented entanglements in any fishery are considered an underestimate of the extent of the entanglement problem since not all entanglements are likely to be observed. Consequently, the total level of interaction between fisheries and right whales is unknown. However, recent studies have estimated that over 60% of right whales exhibit scars consistent with fishery interactions.

New gear modifications required by the ALWTRP regulations are designed to further reduce the amount of serious injury and mortality from an encounter, but do not eliminate the threat of entanglement. The recent implementation of the DAM system and SAM program described above will further separate skate gear from most known or predicted right whale concentrations,

but cannot be expected to be 100% effective. Therefore, fisheries that utilize sink gillnet gear (including the skate fishery) will continue to pose a risk of entanglement to right whales.

Virtually all vessels that catch and land skate also participate in one of the other permitted fisheries, as it is nearly impossible to target skate and not catch the other demersal species. Even a vessel operating solely in a directed skate fishery will be using gear (sink gillnet or trawl) that is capable of catching a species in the multispecies complex, requiring him to possess a multispecies permit and comply with the ALWTRP and HPTRP. Furthermore, the low market value of skate makes it difficult to survive economically without landing the higher value species. Therefore, both skate bait and wing fisheries are prosecuted by vessels already enrolled in one or more fisheries that are already managed by FMPs in the Northeast Region. The Council is confident that the impacts to right whales will continue to be assessed under the ALWTRP process, as well as the FMP process, and modifications required to further relieve those adverse effects will be applied to all four fisheries.

Humpback, Fin, and Minke Whales

Humpback, fin, and minke whales are taken in the sink gillnet fisheries that catch skates. As with the right whale, the impacts of these fisheries on the large whale species have been assessed in ESA consultations for the Multispecies, Monkfish and Spiny Dogfish FMPs. The Opinions for these species concluded that the fisheries would not jeopardize the endangered humpback and fin whale and not affect the ability of the minke whale populations to maintain optimum levels. In addition, the ALWTRP measures, recently revised to meet the RPA established to protect the right whale, are expected to further reduce the potential for mortality and serious injuries that are occurring in all large whale populations in the Northeast Region.

Blue, Sei, and Sperm Whales

The preferred foraging areas of blue and sei whales are unknown, although the extensive surveys conducted along the U.S. continental shelf (CeTAP surveys in 1979-81, and NMFS summer ship and aerial surveys conducted from 1990-98) did not record significant sightings of either species in shelf waters. The known feeding behavior of blue and sei whales suggest they focus on plankton/zooplankton resources that are found in the upper water column. Sperm whales are frequently found foraging along the shelf edge at the outer edge of the known skate fishing areas. Therefore, the threat of entanglement in skate gear for these species is limited to encounters with the buoy lines coming from the sink gillnets set on the seabed to the surface buoys. This will be addressed by new ALWTRP gear modifications that require weak links to be installed both at each sink gillnet buoy and along the float line of each net panel.

Although the sink gillnet gear operations that catch skates may affect the blue, sei, and sperm whales, there appears to be significant separation between the known feeding range of these species and the primary skate fishing areas. In addition, adequate mitigation should be provided by the ALWTRP that is anticipated to benefit all large whale species

Sea Turtles

Skate fishing effort is concentrated primarily in the Gulf of Maine and Georges Bank areas. Sea turtle distribution in the Northeast Region is focused along the Mid-Atlantic and Southern New England shelf region during the summer and early fall. Therefore, with the exception of

leatherbacks that are able to forage into the middle of the Gulf of Maine, the overlap between the skate fishery and sea turtles is not significant.

The skate gears most likely to affect sea turtles are otter trawls and sink gillnets. NMFS assessed the potential impact of these gear types on all sea turtle species in the Biological Opinions issued for the Multispecies, Monkfish and Spiny Dogfish FMPs and concluded that the takes would not jeopardize the continued existence of the ridley, green, leatherback, or loggerhead sea turtles. The skate fishery is largely prosecuted by the same vessels participating in the multispecies, monkfish, and spiny dogfish fisheries. In addition, as explained in this section, the vessels participating in the small direct bait fishery operating in the Southern New England area are required to obtain permits for any gear "capable of catching" the target species of the other FMPs. Therefore, the fishing operations of these vessels were considered part of the ESA consultations conducted for those plans. Since the Skate FMP is not expected to increase the overall effort for trawl or gillnet gear, the potential impacts to sea turtles should not change with its implementation.

The Skate FMP, in combination with implementation of the RPAs contained in the recent Opinions for the Multispecies, Monkfish, and Spiny Dogfish FMPs, will affect the large whales (right, humpback, fin, blue, sei, and sperm whales), and sea turtles (green, Kemp's ridley, leatherback, and loggerhead)as described in this section and in Section 7.1.3. Furthermore, it has been determined that the skate fishery will not affect the endangered shortnose sturgeon, Atlantic salmon, hawksbill sea turtle, roseate tern, piping plover, or the two right whale critical habitat areas found in the Northeast Region for the reasons stated in Section 7.1.3. The barndoor skate is a candidate species under the ESA and is considered an overfished species under the MSFCMA. The final Skate FMP will prohibit possession of this species providing adequate protection to the barndoor skate.

6.4.4 MMPA Conclusions

It is recognized that the skate fishery will be prosecuted in the continental shelf waters frequented by several species of offshore odontocetes including pilot whales, Risso's dolphin, offshore and coastal bottlenose dolphin, harbor porpoise, white-sided, spotted and striped dolphins. It is unlikely that the bottom-tending trawl gear used by the skate fishery will affect these odontocetes. The levels of take of these species in the sink gillnet fisheries has been well documented by NMFS observer effort. The mortality and serious injury suffered by these species has been assessed relative to the PBR allowed under the MMPA for each species and have been found to be below those levels. However, harbor porpoise are still taken in numbers determined to be significant to the population (>10% of the species' PBR) requiring continued protection under the HPTRP.

Harbor porpoise are known to be taken in sink gillnet gear used to catch skate, and are found primarily in the Gulf of Maine in the summer months. However, they migrate seasonally through regions where skates are caught. For example, they move through the southern New England area where the skate bait fishery occurs in the spring (March and April). Harbor porpoise also move through the Massachusetts Bay and Jeffrey's Ledge region in the spring

(April and May) and the fall (October November). They are not known to frequent the Georges Bank region where skate are also found.

The skate wing fisheries that utilize sink gillnet gear land skate only as bycatch in other fisheries for demersal species (groundfish, monkfish and scallops). A small sink gillnet component of the directed skate bait fishery that takes place in Southern New England may not fall under the other FMPs mentioned above. The majority of these fisheries operate under FMPs that contain effort controls developed for each fishery. However, two factors serve to ensure that all vessels participating in the skate fishery must adhere to the protective measures of the other FMPs and the ALWRTP and HPTRP: (1) the low market value of skate makes it unlikely that a vessel could survive economically without landing other more valued species; and (2) each of these FMPs require permits for any gear "capable of catching" their target species, making it impossible for any vessel to target only skate and avoid the measures contained in these plans. For these reasons, the Skate FMP will not increase sink gillnet effort in the Northeast Region, and will not affect the ability of the HPTRP to maintain the serious injury and mortality levels below the PBR levels allowed for commercial fisheries under the MMPA. Thus, the Skate FMP will continue to allow harbor porpoise to achieve its optimum sustainable population level.

6.5 ECONOMIC IMPACTS

6.5.1 Introduction

In addition to the background information presented in Section 7.3 of this document, the Skate SAFE Report (Volume II) includes the following economic information that should be referenced for this assessment:

- Annual commercial landings and revenues of skates on a calendar-year basis and by state, market category, gear, and port;
- Dockside prices for bait and wings;
- Preliminary price models and supply/demand information;
- Vessel-level revenues from skates; and
- Skate dealer activity.

Of the management measures proposed in this FMP, only restrictions on the possession of skates could potentially have economic impacts on northeast fisheries and related businesses and consumers. These include the proposed prohibitions on possession of barndoor, thorny, and smooth skate, as well as the proposed possession limit for the wing fishery. A traditional benefit-cost analysis of these measures is not possible, however, due to missing information on landings and markets in three important areas:

- First, the biological assessments of resource status could not be used to generate species-specific landings projections because of unknown amounts of unreported landings and because virtually all of what is landed is reported in generic market categories for unclassified skates or wings.
- Second, landings explained less than 5% of the variation in dockside price regression models for bait and wings (see SAFE Report, Volume II). Under-reporting (particularly of bait) and

missing information on product quality and trade most likely contributed to these poor results, but the models need to be re-structured as inverse demands derived from the lobster fishery (bait) and international seafood markets.

- Finally, there is no directed skate wing fishery per se. Skates that are landed for the overseas wing markets are caught together with other demersal species, especially large mesh groundfish and monkfish species in trawl and sink gillnet fisheries. It is difficult to assess economic impacts on only a portion of an industry's regulated activities, particularly when new multispecies and sea scallop regulations (currently under development) are likely to spillover onto this plan.

Given the above limitations, the analysis of economic impacts is a qualitative analysis of the no-possession measures for overfished species, and a semi-quantitative analysis of proposed possession limits for the skate wing fishery.

6.5.2 Measures with No Direct Economic Impacts

As previously noted, not every measure proposed in this FMP is expected to have a direct economic impact on participants in the skate fishery. This is primarily because many measures proposed in this FMP are more administrative in nature and are designed to ensure effective implementation of the FMP, improve fishery information, and aid in the enforcement of the skate fishery regulations.

The measures proposed in this FMP that are not expected to have direct economic impacts are:

- Management Unit (Section 4.1);
- Fishing Year (Section 4.2);
- Skate Overfishing Definitions (Section 4.4);
- Rebuilding Programs for Overfished Species (Section 4.5);
- Identification of Essential Fish Habitat (Section 4.6);
- FMP Reviewing and Monitoring (Section 4.7);
- Framework Adjustment Process (Section 4.8);
- Federal Permit Program (Section 4.9);
- Catch Reporting Requirements (Section 4.10);
- Letter of Authorization for Bait-Only Vessels (Section 4.15);
- Identification of Baseline Management Measures in Other Fisheries (Section 4.16.1); and
- Review Process for Changes to the Baseline Measures in Other Fisheries (Section 4.16.2).

While the measures listed above are not expected to produce any direct economic impacts, some may be associated with indirect economic impacts. For example, the selection of a rebuilding program for overfished species, by itself, has no economic effects; however, the measures that result from applying the rebuilding program and triggering additional management action by the Council may have economic impacts. Similarly, the skate overfishing definitions do not have direct economic impacts associated with them, but the management action resulting from an "overfished" determination may produce economic effects. The Council also recognizes that the

economic impacts of management measures in other fisheries (including the baseline measures identified in this FMP) affect participants in the skate fishery. Increasing the restrictiveness of the baseline measures in other fisheries would not trigger a review and possible additional action under this FMP, but could affect revenues for skate fishery participants.

6.5.3 Proposed Prohibitions for Barndoor, Thorny, and Smooth Skates

During the development of this FMP, alternatives were considered to prohibit the possession, landing, and/or sale of barndoor, thorny, and smooth skates. As previously noted, the Council chose to prohibit the possession of all three species (with a geographical constraint on the prohibition for smooth skate).

Similar to the discussion of biological impacts (Section 6.1), the following discussion focuses on prohibitions on possession. It is assumed that prohibitions on landing and sale would produce economic impacts similar to those under a prohibition on possession. Of the species proposed for prohibitions in this FMP, only barndoor skates appear as a market category in the dealer database; however, virtually no landings have been reported in this category (e.g., 13 pounds in the year 2000). Thus, there are no landings data on which to base a quantitative economic analysis of proposed prohibitions on possession.

It is also not possible to draw absolute qualitative conclusions about the economic impacts of no-possession restrictions, although the information provided by fishermen and processors and incorporated into the 2000 Skate SAFE Report (Volume II) suggests that these prohibitions would produce only a small negative impact (also see Section 7.3.1 of this document for additional discussion). Inshore lobstermen south of Cape Cod and offshore lobstermen reportedly use little skates and some small winter skates caught in Southern New England waters as bait. In contrast, the inshore Gulf of Maine lobster fishery prefers soft-bodied fish such as herring and mackerel.

The scenario in the skate wing fishery appears to be less clear. Processors who contributed to the information presented in the 2000 Skate SAFE Report stated that thorny and barndoor skates, as well as winter skates, are sufficiently large for the wing market. Thorny skates in the Gulf of Maine are likely mixed with winter skates from the Great South Channel on the same trips. Winter skates probably dominate wing landings from Georges Bank and south based on species geographic distributions, possibly with some barndoor skate in the mix. The relative amounts of these three species in the wing landings are currently unknown. The overfished status of thorny and barndoor skates and the geographic range of winter skates suggests that winter skates likely compose the bulk of wings landings at this time.

6.5.4 Proposed Possession Limit for the Skate Wing Fishery

The rationale supporting a possession limit on wings is to preclude the development of a directed wing fishery at this time and thereby reduce fishing mortality on winter skate, avoid an overfished situation for winter skate, and help improve the overfished status of thorny and barndoor skates. Recent experience with spiny dogfish and monkfish shows that fishermen participating in the groundfish fishery, where there is considerable excess capacity and tight regulations, can relatively quickly deplete alternative fishery resources depending on market demand. Assuming that there is merit to the fisheries management paradigm, the short-run status quo gains during an overfishing period would most likely be outweighed by gains from moderate and steady exploitation.

The Council considered three options for a wing possession limit in addition to the no action alternative: 10,000 pounds, 20,000 pounds, and 30,000 pounds. All three options are evaluated below. Whether to continue fishing or end the trip once the possession limit is reached is an economic decision that vessels will have to make. The economic impacts of the proposed action (10,000 pounds per day/20,000-pounds per trip) are likely to closely resemble those expected under a 20,000-pound possession limit. This is further discussed in Section 6.5.5 (p. 244).

Existing dealer reports were used to identify trips for the possession limit analysis. Logbook data have been used recently to analyze spiny dogfish and silver hake possession limits, but the skate wing species category is not used consistently by fishermen when filling out vessel trip reports. For example, skate wing landings from the dealer reports (market categories 3651, 3661, 3671, and 3681) totaled 8.4 million pounds in 2000, compared to only 1.2 million pounds according to the vessel logbooks (SKATW species code). Fishing effort by trip was accessed from the logbook data, however.

The analysis was restricted to the calendar years 1995-2000. Landings data from the first year of mandatory reporting (i.e., 1994) are often considered to be incomplete, and the year 2001 data were not available in time for this analysis.

Not having biological projections, the 1995-2000 landings data were inspected visually for trends that could be used to project the no action and, therefore, alternative scenarios into the near future. The information summarized in Table 26 does not suggest any useful trends in vessel activity and wings landings. The number of vessels reported to have sold skate wings to dealers declined steadily from 933 in 1995 to 771 in 2000, but trip counts vacillated between about 13.6 thousand in 2000 and 15.2 thousand in 1998. Skate wing landings more than doubled between 1995 and 1996, but then averaged about 7.1 million pounds thereafter. (Roughly 75% of total skate wing landings have been made by vessels using otter trawl gear, and 20% by sink gillnet vessels.) Likewise, dockside revenues averaged $2.7 million during 1997-2000 after peaking at $4.9 million in 1996.

The usual inverse relationship between dockside prices and landings found for most species is not apparent for skate wings. Prices were highest at $0.50/pound during 1995 and 1996, the very years when skate wing landings were lowest and highest, respectively, in the series. Thereafter, prices were relatively constant, just shy of $0.40.

No temporal trends which are useful for projections are apparent at the possession limit levels either (Table 26). The number of vessels with landings of 10,000 pounds or more tripled between 1995 and 1996, but then fluctuated, returning to 47 in 2000 (Figure 84). The corresponding number of trips followed a similar ranking (Figure 85). The 20,000 and 30,000 pound cutoffs followed suit with 1996 activity standing out, followed by the year 2000 (Figure 84 and Figure 85). Landings and revenues follow trip levels (Table 26).

Although, on average, less than 1% of total trips landed 10,000 or more pounds of skate wings, these trips comprised a large share of the wings revenues: 56% in 1996 and 31% overall (use information in Table 26). The percentages for the same years that correspond to a 20,000 pound trip limit drop to 37% and 17%, respectively. Trips landing 30,000 pounds of skate wings or more contributed 26% to total wing revenues in 1996 and 9% overall.

Having no basis to empirically project future landings for each scenario, the range of values during 1995-2000 will serve as a rudimentary risk analysis.

Table 26 Skate Wing Landings, Calendar Years 1995-2000

Data are from NMFS dealer reports. A dash indicates confidential information. Revenues at risk include mixed species catches on trips that end early once the possession limit is reached (see text for explanation).

Category	Factor	1995	1996	1997	1998	1999	2000
Total	# vessels	933	851	860	809	779	771
	# trips	14,624	13,843	13,680	15,152	13,986	13,589
	Wing landings (lbs)	3,875,234	9,948,178	5,415,361	8,196,647	6,463,336	8,415,561
	Wing revenues	$1,952,501	$4,938,104	$2,123,312	$3,218,713	$2,456,230	$3,060,228
	Wing price ($/lb)	$0.50	$0.50	$0.39	$0.39	$0.38	$0.36
10,000 pound possession limit	# vessels	15	47	23	40	38	47
	# trips	21	230	59	130	82	134
	Wing landings (lbs)	331,580	5,474,586	998,690	2,144,455	1,215,374	2,257,376
	Wing revenues	$181,383	$2,747,722	$434,781	$886,889	$478,019	$852,348
	Trip revenues at risk	$76,855	$1,717,328	$184,458	$394,921	$193,490	$399,945
20,000 pound possession limit	# vessels	4	32	8	15	9	18
	# trips	5	112	14	30	13	34
	Wing landings (lbs)	113,845	3,831,506	380,190	784,215	316,142	901,655
	Wing revenues	$62,812	$1,936,523	$164,272	$322,720	$128,169	$328,178
	Trip revenues at risk	$9173	$848,732	$44,130	$83,945	$27,544	$90,474
30,000 pound possession limit	# vessels	0	21	3	6	1	5
	# trips	0	61	3	7	1	6
	Wing landings (lbs)	0	2,560,562	-	246,735	-	238,990
	Wing revenues	0	$1,277,317	-	$103,077	-	$65,648
	Trip revenues at risk	0	$385,000	-	$16,876	-	$15,344

Figure 84 Number of Vessels that Would Have Caught the Stated Wing Trip Limit on at Least One Trip

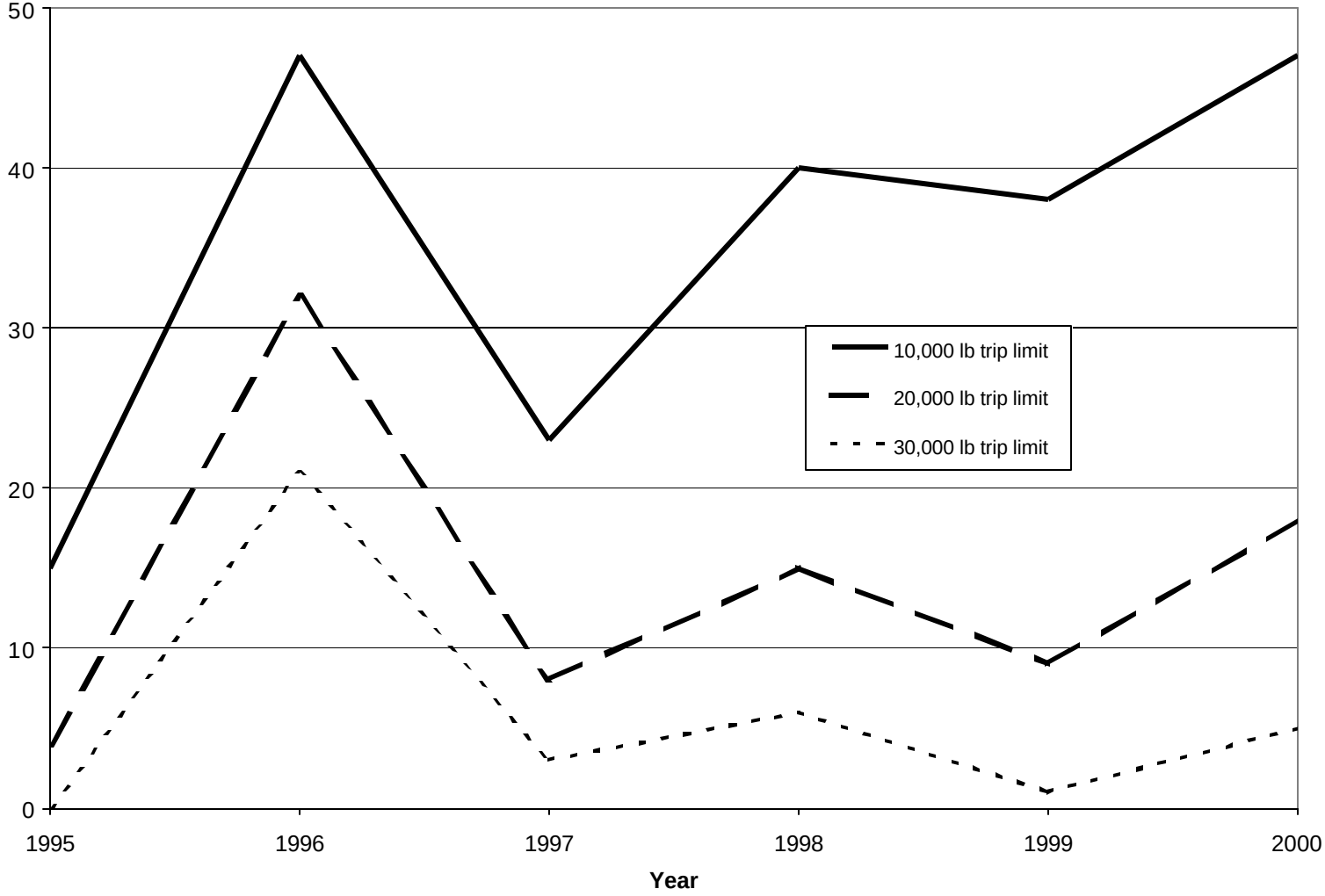
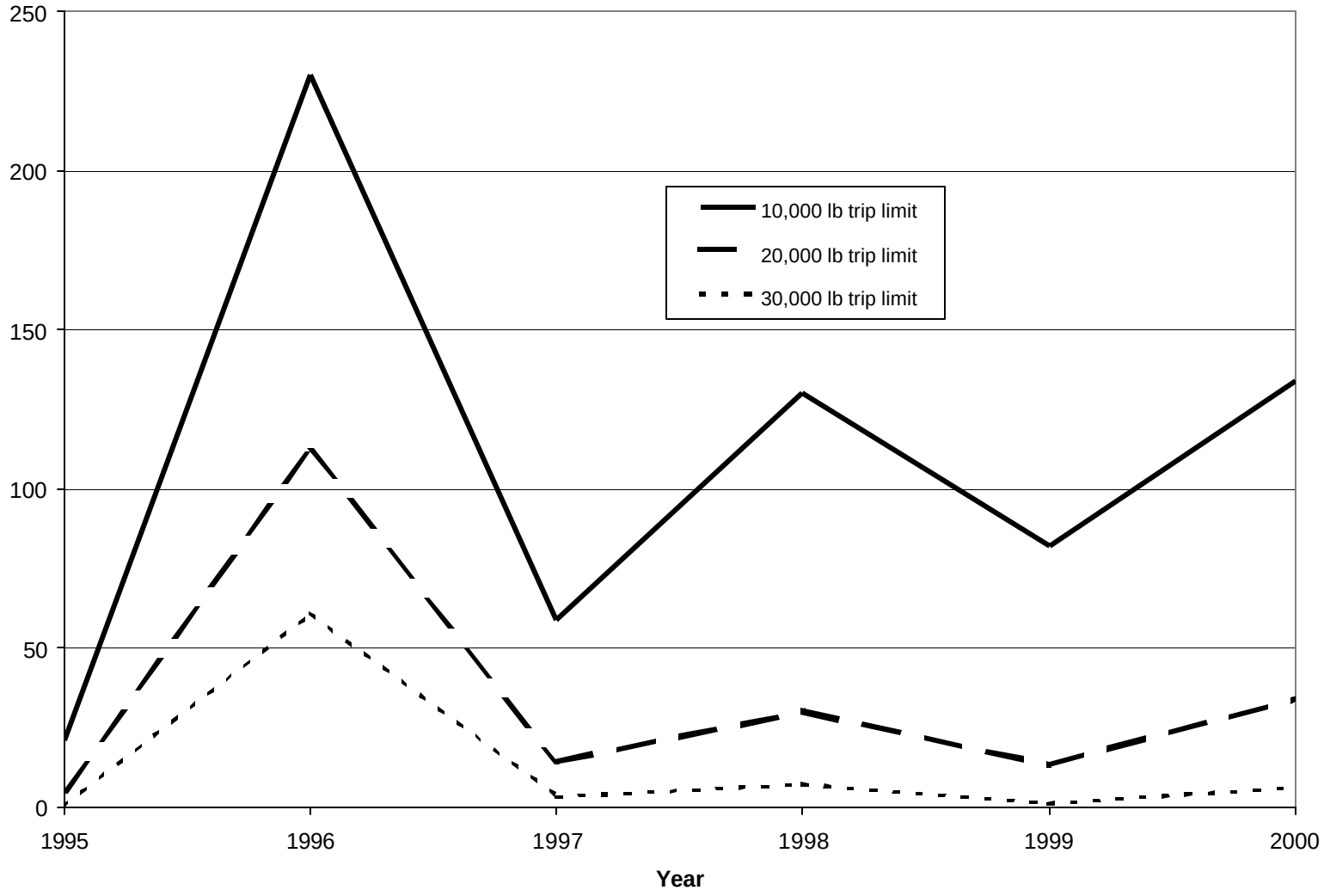


Figure 85 Number of Trips that Landed the Stated Amount of Skate Wings



6.5.4.1 Trip Limit Analysis

Steinback and Thunberg (2000) describe a straight-forward method to analyze the economic impacts of trip, or possession, limits in fisheries. Trip revenues are averaged per day-at-sea and then compared to daily operating costs. The captain decides whether to continue a trip once the limit is reached depending on whether he expects to cover normal daily operating expenses for inputs such as fuel, ice, food, and oil. If the trip continues, the regulated species is discarded and operating income to the vessel owner, captain, and crew (i.e., revenue minus operating costs) is reduced by the foregone revenues from discards. If the regulated species is needed to cover trip costs, the trip is cut short and operating income is reduced by the foregone average income-per-day on the shortened trip.

Several assumptions are implicit in the method as applied to skate wing management. The first assumption is that dockside wing prices will remain relatively constant despite reduced landings. This assumption seems valid based on recent experience (discussed above with reference to Table 26) and knowing that domestic wing prices are strongly determined by global supplies. Impacts on the fishing industry are therefore measured in terms of changes in landings alone.

The second assumption is that virtually all skate wings are exported, making it unnecessary to assess impacts on net benefits for U.S. consumers (i.e., consumer surplus). This assumption is consistent with information from industry advisors, although there are small domestic ethnic markets for skate wings. Skate wings are not reported separately in trade data; therefore, domestic landings can not be compared to exports.

The third assumption simplifies the behavior of fishermen in response to possession limits to either continue the trip or end it early after the limit is reached. It is conceivable that the possession limits cause fishermen to take more but shorter trips, depending in part on associated effort and other controls in the multispecies and monkfish plans. The economic impacts of this response is the cumulative loss of operating income due to more time steaming to and from fishing grounds on extra trips. Other possible responses include changing fishing locations where skate catch rates are lower, or changing fisheries (e.g., sea scallop fishery on general category permit). Given these possibilities, the estimates of economic losses which are reported below should be considered upper bounds. The resources required to estimate more complicated choice and production models are unwarranted given the small estimates of potential.

Fourth, changes in *operating income* are used to measure changes in *producer surplus*. This assumption will overstate losses, however, if repair and maintenance costs are reduced by shortened trips (again assuming no additional short trips).

Fifth, the opportunity costs of fishing were not addressed. It is arguable whether production elsewhere in the economy is affected by possession limits that shorten trip lengths.

Finally, the potential loss in operating profit and producer surplus by dealers, processors, and exporters resulting from reduced landings could not be assessed without cost data from these businesses.

Trip revenues (including by species) are from dealer reports. "Date-sold" was used to match dealer and logbook records in order to obtain days-at-sea effort data per trip. NMFS does not census operating costs; therefore, average daily operating costs (1996$) by gear type and vessel length were taken from independent sources reported in Steinback and Thunberg (2000): $270/day for trawl vessels <50 feet; $500/day for trawl vessels >=50 feet and <70 feet; $875/day for trawl vessels >=70 feet; $250/day for gillnet vessels <35 feet; and $315/day for gillnet vessels >=35 feet. In the few cases when the assigned costs exceeded actual trip revenues, operating income was set equal to zero. Virtually all trips landing at least 10,000 pounds of skate wings were made by trawl vessels.

Estimates of losses in operating income during 1995-2000, had the possession limits under consideration been in place, are reported in Table 27. Losses are broken down by trips that would have continued once the possession limit was reached and those that would have ended early. The number of trips in each group are also reported. Some cells in the table are empty to protect confidentiality.

The results in Table 27 suggest that a high percentage of trips would have continued during 1995-2000 under the possession limits considered in this FMP. For example, 46% of all trips affected by a 10,000 pound possession limit during these years are predicted to continue fishing.

The average annual loss in operating income corresponding to a 10,000 pound trip limit is $350,000/year, but year-to-year losses varied by an order of magnitude (Table 27). On a trip basis, the overall average loss throughout 1995-2000 is about $534/trip. Average annual losses corresponding to 20,000 and 30,000 pound trip limits are $144,000 and $61,000 respectively, and average losses per trip under these limits were $694 and $787 respectively.

As explained above, the estimates of losses in operating income during 1995-2000 are being used to measure the potential loss in producer surplus in the near future if the possession limits under consideration are implemented. The estimates in Table 27 were adjusted to 1996$ (OMB requirement) and are reported in Table 28 as the mean and range of potential annual losses in producer surplus. The range serves as a rudimentary risk analysis in the absence of a bioeconomic projection model.

Table 27 Retrospective Estimates of Losses in Operating Income from Skate Wing Landings Had the Possession Limits Been in Effect

Losses are not reported where information is confidential.

Year	Factor	10,000 Pound Trip Limit			20,000 Pound Trip Limit			30,000 Pound Trip Limit		
		Continue Trip	End Trip	Total	Continue Trip	End Trip	Total	Continue Trip	End Trip	Total
1995	# Trips	8	13	21	2	3	5	0	0	0
	Loss	$18,181	$33,788	$51,969	-	-	$6,499	0	0	0
1996	# Trips	97	133	230	37	75	112	18	43	61
	Loss	$522,745	$819,025	$1,341,770	$227,731	$470,114	$697,845	$90,962	$236,828	$327,790
1997	# Trips	40	19	59	9	5	14	3	0	3
	Loss	$125,070	$29,137	$154,207	$38,484	$4,066	$42,550	$16,737	0	$16,737
1998	# Trips	45	85	130	7	23	30	0	7	7
	Loss	$86,699	$98,540	$185,239	$9,742	$37,256	$46,998	0	$10,694	$10,694
1999	# Trips	39	43	82	4	9	13	0	1	1
	Loss	$62,286	$62,428	$124,714	$3,974	$14,205	$18,179	0	-	-
2000	# Trips	71	63	134	15	19	34	4	2	6
	Loss	$174,192	$69,057	$243,249	$37,311	$17,166	$54,477	$9,599	-	-

Under a 10,000 pound trip limit, losses in producer surplus could average $345,000/year and range from $53,000/year to $1.3 million/year (Table 28). Average annual losses are $143,000 and $61,000 under 20,000 and 30,000 pound possession limits, respectively, both with wide ranges.

Table 28 also reports the equivalent present value of these producer surplus losses over a short-term, 5-year period using a 7% discount rate (OMB requirement). For example, the present value of average annual losses under a 10,000 pound trip limit is $1.5 million.

In addition to measuring the opportunity costs of possession limits, the possible losses in the fishing industry's producer surplus can be used to help judge the conservation benefits of possession limits. Another assumption is that skates which are discarded on trips that continue after the possession limit is reached are either dead or moribund. In contrast, skate catches are reduced on trips that end early. If additional trips are not taken to compensate for shortened trips, the amount of skates saved in this way can be divided into foregone producer surplus to obtain an opportunity cost per pound of skate conservation.

Analysis of the 1995-2000 data shows that between 83,000 and 2.1 million pounds of skate wings could be saved from harvest annually by a 10,000 pound trip limit. The average annual savings is 615,000 pounds (1.4 million pounds live weight), or nearly 9% of total landings during these years. The corresponding average loss in producer surplus is $0.56/pound (i.e., $345 thousand from Table 28 divided by 615,000 pounds). (The opportunity costs should *not* be compared to skate wing dockside prices which are in terms of gross revenues per pound.) If all discards survived on trips that continued despite the possession limit (average of 375 thousand pounds/year), the average opportunity cost is reduced to $0.35.

Analysis of the other possession limits under consideration shows an average annual savings of 247,000 pounds of skate wings on shortened trips (i.e., not counting discards on continued trips) at the 20,000 pound cutoff (3.5% of total landings), and 100,000 pounds at the 30,000 pound cutoff (1.4% of total landings). These correspond to opportunity costs of $0.58/pound and $0.61/pound, respectively. Including discards reduces the loss to about $0.40/pound.

Table 28 Short-Term Potential Losses in Producer Surplus Under the Proposed Possession Limits

Present values (PV) were calculated using a 7% discount rate and 5-year time horizon. All values are in thousands of 1996 dollars.

Measure	10,000 Pound Trip Limit		20,000 Pound Trip Limit		30,000 Pound Trip Limit	
	Annual	PV	Annual	PV	Annual	PV
Average	$345	$1515	$143	$629	$61	$268
Minimum	$53	-	$7	-	$0	-
Maximum	$1342	-	$698	-	$328	-

6.5.4.2 Distribution of Impacts

Benefit-cost analysis compares the net economic impacts of alternative fishery management regulations on the overall economy of fishermen, seafood businesses, and consumers. Although the annual loss in producer surplus potentially caused by the proposed possession limits is small compared to other actions taken by the Council and by economic standards set by E.O. 12866, it is still important to investigate whether the impacts are concentrated on particular ports, gear types, or small businesses.

6.5.4.2.1 Port and Gear Impacts

More than 95% of the trips that landed at least 10,000 pounds of skate wings during 1995-2000 were made by trawl vessels that landed in New Bedford, Massachusetts. Trawlers landing in Provincetown, Massachusetts were a distant second at 3.5% of the total trips landing more than 10,000 pounds of skate wings. Only one gillnet trip exceeded 10,000 pounds of wings during this period.

Although concentrated, skate wings from large trips contributed relatively little to the total dockside revenues of New Bedford and Provincetown, let alone the potential losses resulting from possession limits. For example, in the year 2000, total fishery revenues in New Bedford and Provincetown were $148.806 million and $3.806 million, respectively. Total skate wing revenues on trips landing at least 10,000 pounds were $0.893 million (0.6%) in New Bedford, and $0.028 million (0.7%) in Provincetown. The possible reduction in skate revenues due to the possession limits under consideration would be an even smaller percentage of port total revenues.

6.5.4.2.2 Small Businesses – Vessel Impacts

Although several hundred vessels landed skate wings each year during 1995-2000, relatively few of them landed 10,000 pounds or more on any trip (Table 26). Specifically, fewer than 50 vessels per year, or less than 6%, landed at least 10,000 pounds of skate wings on any trip. Fewer than 4% of the vessels landed 20,000 pounds or more, and fewer than 3% landed at least 30,000 pounds.

A repeated incidence of large skate wing landings by individual vessels is one guide to dependence on skate wing landings. Throughout 1995-2000, 82 different vessels landed 10,000 pounds or more of skate wings on at least one trip. Thirteen of these vessels landed at least one trip at this level during each of the past five or six years. In contrast, 27 of these vessels did not land this quantity of skate wings on any trip during 1999 or 2000. The 20,000 pound threshold showed similar results, with two (2) out of 42 vessels landing this amount of skate wings during the last 5 or 6 years, and 22 vessels not reaching this limit on any trip during 1999 or 2000. Finally, 22 out of 27 vessels that landed at least one trip with 30,000 pounds of skate wings or more during 1995-2000 did not do so in 1999 or 2000.

Another measure of dependence is provided by the distribution of vessels and number of trips that landed the possession limits under consideration. Using the cumulative record during 1995-2000 once again, 82 vessels landed 10,000 pounds or more of skate wings on 674 trips, or 0.8%

of the 84,874 individual trips summarized in Table 26. One half of these vessels landed 1-4 large wing trips during this six-year period (Figure 86). In contrast, 17 vessels landed 10,000 or more pounds of skate wings on more than 10 trips each. These 17 vessels accounted for nearly 60% of the large skate wing trips.

The results for the higher possession limits are skewed towards few trips. Thirty of the 42 vessels which landed 20,000 pounds of skate wings or more during 1995-2000 did so on 1-4 trips. At the 30,000 pound threshold, 23 out of 27 vessels landed 1-4 large trips.

The final indication of vessel dependence on skate wing landings concerns revenues potentially at risk from the possession limits under consideration. During the year 2000, for example, skate wings contributed between 11% and 100% of total revenues on the 134 trips that landed at least 10,000 pounds of wings in 2000. (Other species landed on the mixed trips were primarily large mesh groundfish, monkfish, and lobster.)

Not all of these revenues would be impacted by the possession limit, however. Trips that can cover operating costs would only lose skate wing revenues in excess of the 10,000 pound limit, while trips that end because they are uneconomic would lose revenues from all species that would have been caught. The combination of these two potential impacts amounts to $400,000 using the year 2000 as a baseline (Table 26).

Figure 87 summarizes the potential impacts of a possession limit on the 47 vessels that landed more than 10,000 pounds of skate wings during the 2000 calendar year. The solid bars in Figure 87 pertain to only those trips which landed at least 10,000 pounds of wings, while the hashed bars pertain to the same vessels' total annual fishing activity. As shown in Figure 87, skate wing landings in excess of 10,000 pounds amounted to more than 5% of the trip revenues for 35 vessels (add the solid bars at 6-10%, 11-20%, 21-30%, and >30%). In contrast, the annual revenues of only three of these vessels would have been impacted by more than 5% if all fishing activity during the year is considered. For perspective, this is three vessels out of the population of 771 vessels that landed any amount of skate wings in 2000 (Table 26). Also, this potential loss of revenue would be mitigated (to an unpredictable degree) by changing fishing behavior. The 47 vessels that landed 10,000 or more pounds of skate wings on at least one trip in 2000 held permits in several fisheries, including summer flounder, sea scallop (general category), and squid/mackerel/butterfish as well as multispecies and monkfish (Figure 88).

The year 2000 results for vessels that landed above the 20,000 and 30,000-pound thresholds are similar. The potential revenue loss for the 18 vessels that landed at least 20,000 pounds of skate wings was less than 5% of total annual revenues in each case (14 were less than 1%). The five vessels meeting the 30,000 pound threshold were exposed by 1% or less based on annual revenues.

The vessel-level impacts for most of the other years were similar to the year 2000 results. In particular, the total annual revenues of six or fewer vessels that landed at least 10,000 pounds of skate wings would potentially be impacted by more than 5% except in 1996 when 21 out of a total of 851 vessels were exposed to a 5% or larger revenue loss.

Figure 86 Number of Vessels That Landed 10,000 or More Pounds of Skate Wings on at Least One Trip During 1995-2000 (N=82 vessels)

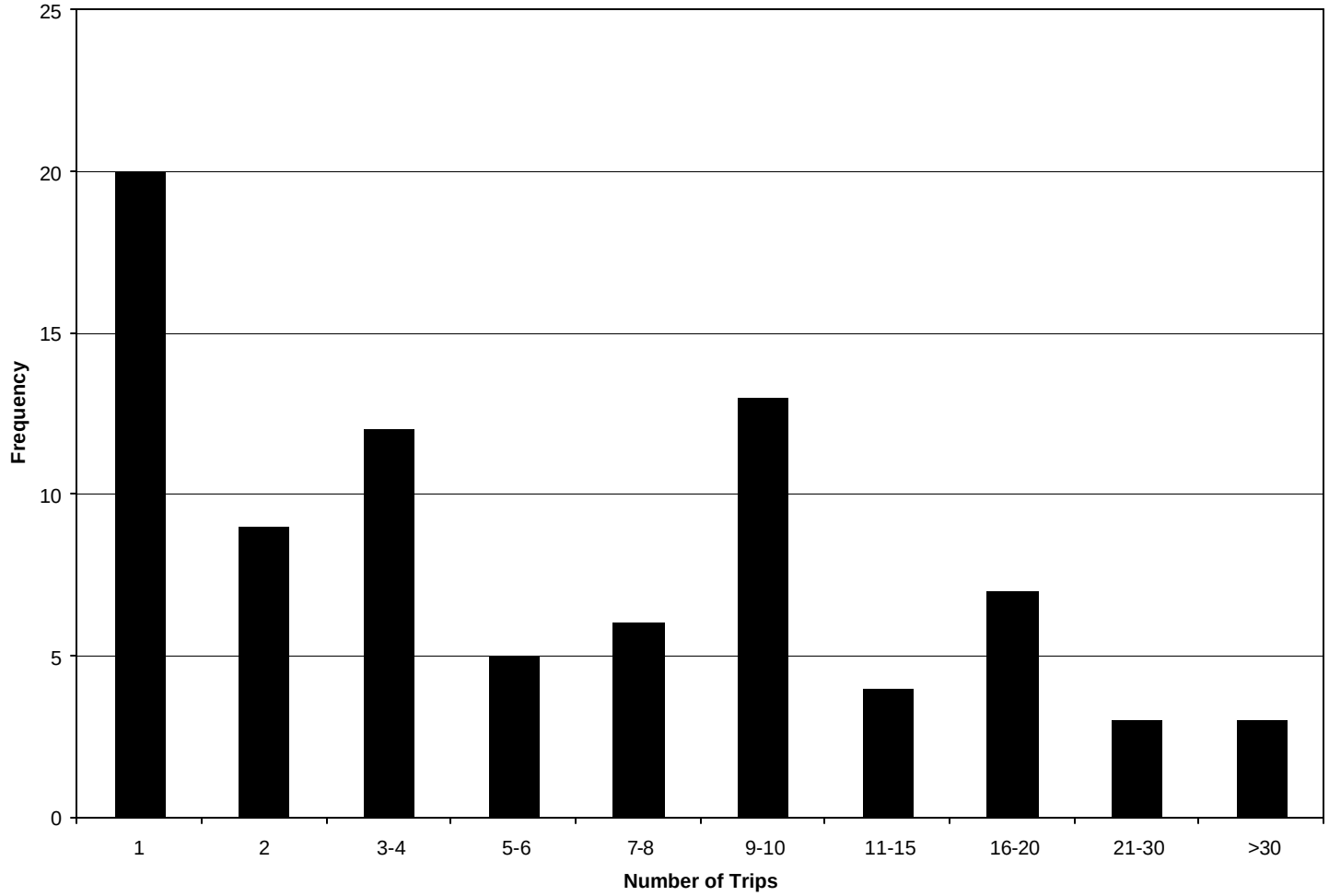


Figure 87 Revenues of Vessels Potentially Impacted by a 10,000 Pound Skate Wing Possession Limit (Based on Year 2000 Fishing Activity)

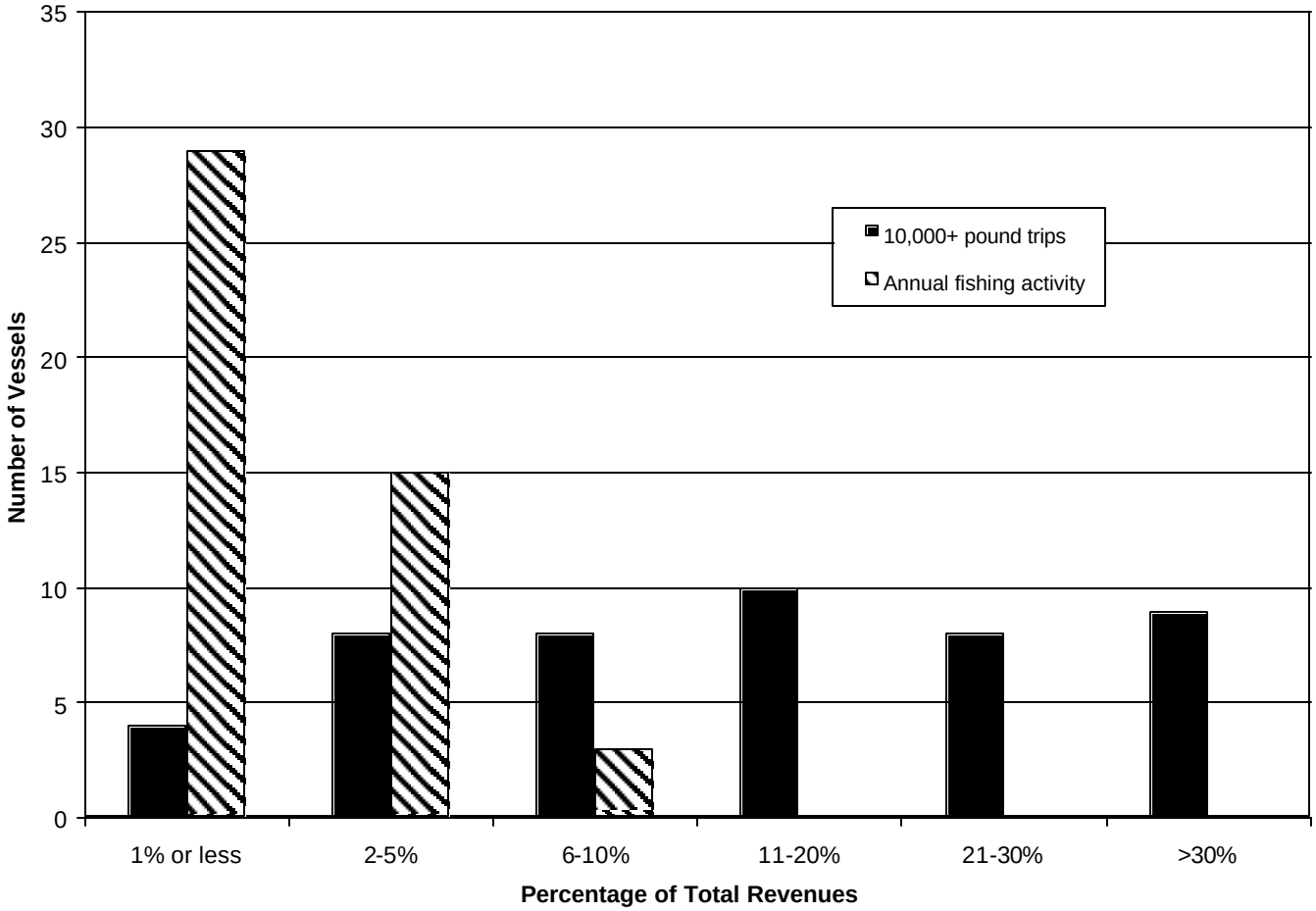
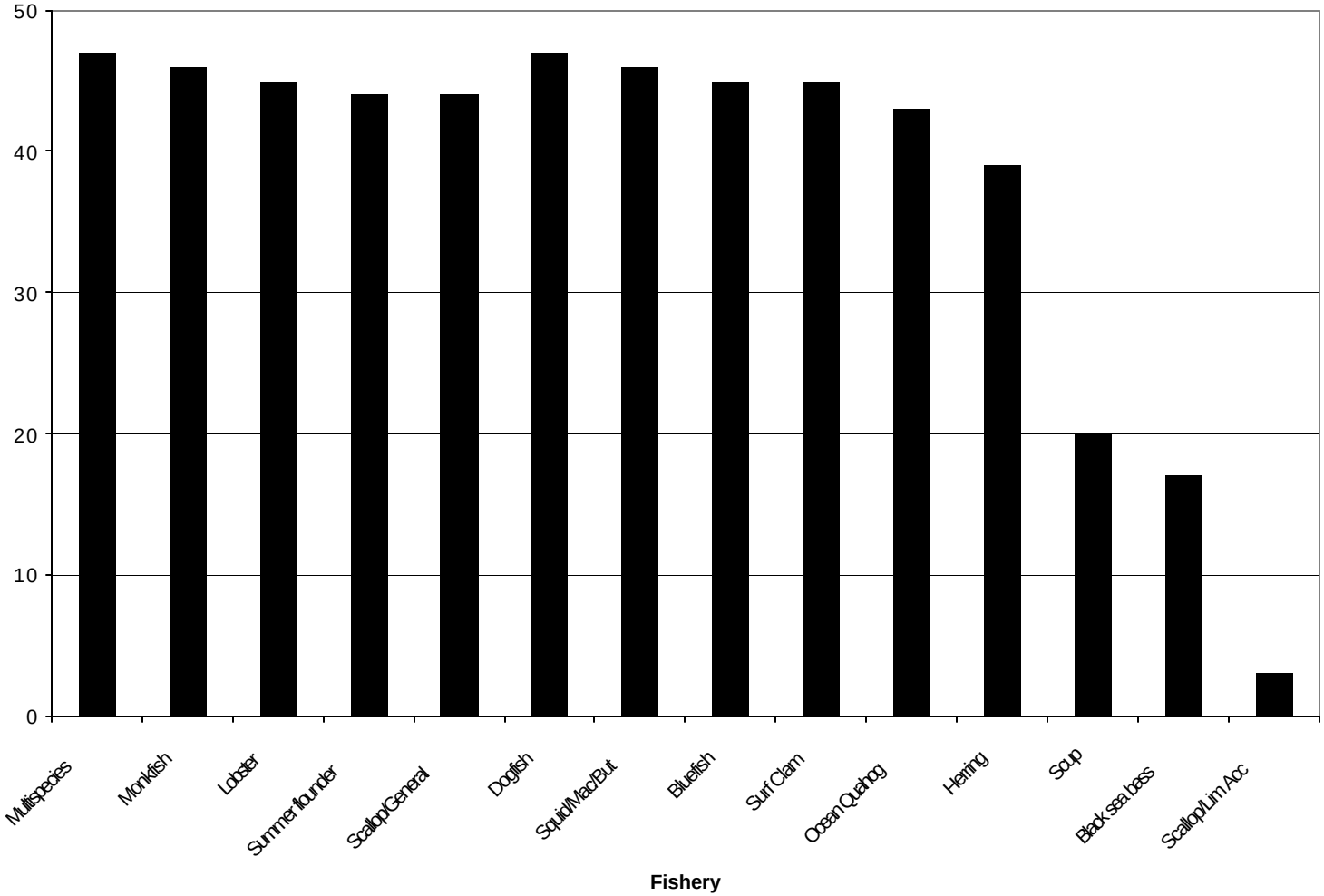


Figure 88 Count of Fishery Permits Held by the 47 Vessels That Landed at Least One Trip With 10,000 Pounds of Skate Wings During 2000



6.5.4.2.3 Small Businesses – Dealer Impacts

About 130 dealers reported skate wing purchases each year during 1995-2000. Although market shares and some companies have changed, only a small fraction of these dealers bought wings from vessels that landed at least 10,000 pounds per trip. In the year 2000, for example, 15 out of 124 dealers, primarily in New Bedford and Provincetown, Massachusetts, bought skate wings from trips that would have been affected by a 10,000 pound possession limit. The potential reductions in skate wing landings above 10,000 pounds per trip comprised 3% or less of total purchases of finfish and shellfish by these companies.

Continuing with the year 2000 baseline, eight (8) dealers would have been impacted by a 20,000 pound possession limit, although by 1% or less of total seafood purchases. Similarly, a 30,000 pound limit would have impacted five (5) dealers, although negligibly.

6.5.5 Postscript to Analysis of Economic Impacts

Data from the year 2001 became available after the DEIS and PREE were prepared for the Draft Skate FMP. Fishing activity associated with skate wing landings in 2001 was comparable to the range analyzed for the years 1995-2000 (Table 26, p. 232); therefore, a full analysis of the most recent year's data is unlikely to change conclusions concerning possible economic impacts of the proposed possession limit. Specifically, in 2001, 735 vessels landed 8.265 million pounds of skate wings on 12,040 trips (similar to 771 vessels landing 8.415 million pounds of wings on 13,589 trips in 2000 as Table 26 indicates). Also in 2001, 14 separate vessels landed wings in excess of the proposed 20,000-pound possession limit on 27 trips. The average annual price for wings was $0.30 per pound. If anything, these data show a reduction in skate wing activity when compared to the year 2000.

The proposed action also includes a 10,000-pound limit on skate wing landings for one-day trips. This measure will most likely have a negligible affect on the majority of participants in the fishery because one-day trips are a wasteful use of groundfish days-at-sea allocations. (The vast majority of skate wings are landed on groundfish trips.) For example, in 2000, only three vessels landed more than 10,000 pounds of skate wings on five trips that lasted less than one day (24 hours). The excess amounted to 10,520 pounds.

6.6 SOCIAL AND COMMUNITY IMPACTS

This assessment characterizes the magnitude and extent of the social and community impacts likely to result from the management measures proposed in the Skate FMP.

6.6.1 Background Information

A description of the affected environment (vessels that catch skates and fishing communities involved in the skate fisheries) is presented in Section 7.3 of this document. There is a great deal of overlap between the skate fishery and multispecies and monkfish fisheries. Therefore, information about vessels and fishing communities involved in the multispecies and monkfish fisheries supplements information about the affected environment presented in this document. In turn, the following may be referenced for additional social impact information that is not included in this document:

- Amendments 5 and 7 to the Northeast Multispecies FMP;
- Frameworks 25, 26, 27, 30, 31, 33, and especially Draft Framework 36 (which was never submitted); the Draft Framework 36 document has evolved into the Draft Amendment 13 DSEIS and includes even more social impact information;
- Report from the Groundfish Social Impact Informational Meetings;
- Monkfish Fishery Management Plan and the 2001 Monkfish SAFE Report; and
- Draft Amendment 10 to the Sea Scallop FMP

As mentioned in Section 7.3, the following documents also serve as important reference materials:

Aguirre International, October 1996. *An Appraisal of the Social and Cultural Aspects of the Multispecies Groundfish Fishery in New England and the Mid-Atlantic Regions.* Submitted to NOAA under Contract Number 50-DGNF-5-00008, 141 pp.

Hall-Arber, Madeleine, Christopher Dyer, John Poggie, James McNally and Renee Gagne, 2001. *Fishing Communities and Fishing Dependency in the Northeast Region of the United States.* MARFIN Project Final Report to National Marine Fisheries Service, 429 pp.

McCay, Bonnie and Marie Cieri, April 2000. *Fishing Ports of the Mid-Atlantic*. Report to the Mid-Atlantic Fishery Management Council, Dover, Delaware, 183 pp.

McCay, Bonnie, Blinkoff, Belinda, Blinkoff, Robbie, and Bart, David, December 1993. *Report, Part 2, Phase I, Fishery Impact Management Project, to the Mid-Atlantic Fishery Management Council*. Report to the Mid-Atlantic Fishery Management Council, Dover, Delaware, 179 pp.

6.6.2 Skate FMP Communities of Interest

Section 7.3 of this document characterizes skate fishing activity and dependence (defined as percentage of total fisheries revenues from skates) for most communities that are known to land skates in either the bait or wing fisheries. Details about the bait and wing fisheries are also provided in Section 7.3. In general, the only communities with substantial involvement in and/or dependence on skate fishing are: Point Judith, RI; New Bedford, MA; Provincetown, MA; and eastern Rhode Island (Newport, Tiverton, Portsmouth, Jamestown, Middletown, and Little Compton). The vast majority of skate fishing activity in RI ports, however, is in the skate bait fishery. Since none of the measures proposed in this FMP directly impact vessels participating in the skate bait fishery, this assessment will focus on impacts to the communities of **New Bedford and Provincetown**. Based on analysis presented in Section 6.2 of this document, New Bedford and Provincetown are the only two communities with skate wing landings high enough to be impacted by the proposed possession limit for the wing fishery.

While New Bedford and Provincetown have been identified as communities of particular interest in this FMP, it is still important to consider the general impacts of the measures proposed across all potentially affected participants in the fisheries. ***Social impacts*** can be defined as the changes that a fisheries management action may create in:

- people's way of life (how they live, work, play, and interact),
- people's cultural traditions (shared beliefs, customs, and values), and
- people's community (population structure, cohesion, stability, and character).

As such, social impacts may result from changes in flexibility, opportunity, stability, certainty, safety, and other factors that are not specific to any community, but oftentimes to any individual or entity experiencing changes resulting from a fishing regulation.

New Bedford, Massachusetts: New Bedford has emerged as the top port of landing for skate wings. In addition to landings, New Bedford processes the majority of skate wings landed throughout the region. Table 29 summarizes annual skate fishing activity in New Bedford (from the dealer weighout database) averaged across fishing years 1994-2000. From FY94-FY00, skate landings averaged almost 10% of total annual landings in New Bedford, but because of the higher value of other species, skate revenues only averaged 2.36% of total annual fisheries revenues there. In FY00, 385 multispecies-permitted vessels landed fish in New Bedford. It is likely that many of these vessels landed small amounts of skates that were caught incidentally in other fisheries, while only a few landed larger quantities of skates on "directed" trips.

Despite New Bedford's significant contribution to overall wing landings in the region (more than 61% of total wing landings came from New Bedford in FY00), dependency on the skate fishery in this community appears to be low. Completely eliminating the skate fishery in New Bedford would be expected to impact the community's fisheries revenues by less than 3%. However, it is important to remember that while the overall community's dependence on skates may be low, it is likely that there are individual vessels that will experience losses greater than those predicted for the community as a whole. In addition, skate processors in New Bedford obtain wings from

ports other than New Bedford and could potentially experience losses greater than those predicted for New Bedford based on the dealer weighout database.

Table 29 Average Annual Skate Fishing Activity in New Bedford, FY94-FY00

Bait Landings (Pounds)	174,628 (0.35% of total landings)
Bait Revenues (1999 Dollars)	14,500 (0.015% of total revenues)
Wing Landings (Pounds)	4,676,700 (9.36% of total landings)
Wing Revenues (1999 Dollars)	2,277,470 (2.34% of total revenues)
Total Skate Landings (Pounds)	4,851,328 (9.71% of total landings)
Total Skate Revenues (1999 Dollars)	2,291,970 (2.36% of total revenues)
Total Landings (Pounds)	49,987,257
Total Revenues (1999 Dollars)	97,203,228

Source: NMFS Dealer Weighout Database

Provincetown, Massachusetts: Provincetown is another port of landing for the wing fishery, although the level of wing activity is a distant second to that in New Bedford. However, vessels landing in Provincetown have exhibited an overall higher level of dependence on skates than those in any other ports (see Skate SAFE Report, Volume II). Table 30 summarizes annual skate fishing activity in Provincetown (from the dealer weighout database) averaged across fishing years 1994-2000. From FY94-FY00, skate landings averaged 9.8% of total annual landings in Provincetown, and skate revenues averaged 4.8% of Provincetown's total annual fisheries revenues. In FY00, 44 multispecies-permitted vessels landed fish in Provincetown. It is likely that the majority of these vessels landed some quantity of skates.

It is important to note that skate fishing activity in Provincetown increased considerably after FY96, so the averages reported in Table 30 underestimate current activity (see Section 7.3.3.3.4 for annual estimates). In addition, the industry in Provincetown reported during scoping that the dealer weighout database appears to underestimate skate activity in the area. It is likely that some skate wings landed in Provincetown are being transported directly to places like New Bedford without being documented by a local dealer. If this is the case, then skate activity reported through the dealer database likely underestimates total skate activity in the port.

Like New Bedford, while the overall dependence on skates in Provincetown may be relatively low, it is likely that there are individual vessels that will experience losses greater than those predicted for the community as a whole. In addition, most wings that are landed in P-Town are transported to New Bedford for processing, so any losses in landings that Provincetown vessels experience could exacerbate any impacts on processors in New Bedford.

Because of Provincetown's geographic isolation and proximity to areas that are closed for groundfish protection (Blocks 124 and 125 are currently closed four months each year), participation in the skate fishery becomes an even more critical element of fishing activity in the community. Despite the overlap between groundfish and skate fishing, skates have come to represent an important, viable fishery for vessels in Provincetown, which have experienced

significant reductions in fishing opportunities through multispecies regulations. If upcoming changes to the multispecies regulations further decrease opportunities, the ability to continue to land skates in Provincetown may become even more critical.

Table 30 Average Annual Skate Fishing Activity in Provincetown, FY94-FY00

Bait Landings (Pounds)	0 (0% of total landings)
Bait Revenues (1999 Dollars)	0 (0% of total revenues)
Wing Landings (Pounds)	315,200 (9.8% of total landings)
Wing Revenues (1999 Dollars)	108,314 (4.8% of total revenues)
Total Skate Landings (Pounds)	315,200 (9.8% of total landings)
Total Skate Revenues (1999 Dollars)	108,314 (4.8% of total revenues)
Total Landings (Pounds)	3,215,600
Total Revenues (1999 Dollars)	2,272,871

Source: NMFS Dealer Weighout Database

6.6.3 Skate FMP Social Impact Assessment Factors

Because detailed and skate-specific information is currently lacking and because the impacts of the measures proposed in this FMP are expected to be relatively minimal, the Social Impact Assessment (SIA) factors described below are evaluated in a qualitative sense. Each management measure proposed in this FMP is examined in the context of these factors to evaluate the magnitude and nature of the social impacts likely to result.

6.6.3.1 Changes in Occupational Opportunities

Definition: The degree to which the implementation of the management measures in this FMP could alter the employment and industrial profile of the affected fishing communities.

Description: Changes in occupational opportunities can lead to changes in household/family income, classes, and lifestyles. In assessing the extent of these changes, both the short-and long-term shifts in job opportunities should be considered. These include changes to year-round and seasonal fishing opportunities, short-term and long-term dislocation from the fishery, employment opportunities, and the ability to find and keep crew. Flexibility for the fishing fleet and the ability to plan business ventures over the short-term and long-term also are related factors.

Assessment of this variable should address the following questions:

- Could the proposed action change the structure and/or composition of New England's fishing fleets?
- Are the management measures proposed in this FMP likely to affect the supply and/or cost of fishing-related employees?
- Will affected fishermen have alternative fishing opportunities under the proposed action?

Generally, significant changes to occupational opportunities tend to be more cumulative and long-term in nature. Because the skate wing fishery is primarily an incidental catch fishery and no fishing communities significantly depend on skate fishing, it is very unlikely that any of the measures proposed in this FMP will cause notable changes in occupational opportunities. One important consideration related to this factor in this FMP is whether or not vessels affected by the proposed wing possession limit will be able to maintain sufficient opportunities to earn income from fishing on a year-round basis. This issue is discussed in the subsections below.

6.6.3.2 Disruption in Daily Living

Definition: Changes in the routine living and work activities of affected fishery participants, including the potential for alteration in their social and work patterns to adapt to new management measures.

Description: Measuring changes in established daily patterns – patterns that, in the case of fishing communities, are often internally generated and regulated and highly regimented – can provide a key component to social impact assessment. Although the existence, nature, and evolution of these patterns in fishing communities is well documented by marine anthropologists, the effects of changes to them have often been overlooked in conducting social impact assessments for fishery management. Ideally, measurement of disruption in daily living should include an assessment of the outcomes of any periods of inactivity, including changes in social stress and stress-related health problems, job satisfaction, crime rates, and family cohesion.

Assessment of this variable should address the following questions:

- How could the proposed action alter the daily living and work patterns of fishing families in the affected communities?
- Will fishermen need to travel to new fishing grounds or fishing grounds farther away from their homes as a result of the proposed action? Will fishermen be spending more time away from home as a result of the proposed action?
- Could the proposed action increase stress at the family level?

6.6.3.3 Regulatory Discarding

Definition: Forced discarding of oftentimes marketable and dead fish; usually a byproduct of trip limits, quotas, and minimum fish sizes.

Description: Regulatory discarding is an important social problem, just as it is an ecological problem. Low trip limits resulting in excessive discarding leave fishermen feeling embarrassed, demoralized, frustrated, and disgusted with their way of life. Fishermen recognize that discarding marketable and oftentimes dead fish does nothing to benefit them or their families, the health of the resource, their disappearing hold on local fresh fish markets, or seafood consumers. Fishing is usually a family business, so the impacts of this are felt throughout the entire family and fishing community.

Regulatory discarding is one factor that produces negative social impacts in the short-term, usually immediately after implementation of the measure that is creating the discard situation. It is an important factor to consider any time that possession or trip limits are proposed. For the Skate FMP, this factor will be considered in the context of both the possession limit proposed for the skate wing fishery and the proposed prohibitions on certain skate species.

Assessment of this variable should address the following questions:

- Is the proposed action likely to force fishermen to throw marketable fish overboard?
- Is the level of regulatory discarding under the proposed action likely to be high enough to generate significant negative social impacts?

6.6.3.4 Safety

Definition: The ability of fishermen to maintain safe operations at sea; can be compromised by various adaptations to increased regulations and decreased fishing opportunities.

Description: The safety of fishermen and fishing operations at sea is an extremely important social impact factor, as decreased safety often increases stress at the individual and family level, which can exacerbate many family and societal problems. In addition, the impacts of fishing-related casualties can be felt throughout fishing communities, where close-knit groups have longstanding family and social networks.

Assessment of this variable should address the following questions:

- Is the proposed action likely to compromise the safety of fishermen and/or fishing operations?
- Will fishermen need to travel to new fishing grounds or fishing grounds farther away from their homes as a result of the proposed action?
- Is it likely that fishermen will make adaptations to the proposed management measures that could compromise their safety (taking less crew, fishing during times of bad weather)?

6.6.4 Social Impacts of Proposed Management Measures

6.6.4.1 Social Impacts of Taking No Action

When management measures are considered in any FMP, amendment, or framework adjustment, their impacts are usually compared to a baseline scenario of "no action." For the Skate FMP, taking no action means that the Council would not develop an FMP for skates. No species-specific fishery data would be collected without a Skate FMP, and uncertainties about the skate resources and their associated fisheries would continue to constrain the Council's ability to ensure the long-term viability of the skate complex.

It is difficult to conclude that taking no action would result in a collapse of the skate resources, however, because skate fishing is affected by management measures in other fisheries. It is more likely that without a Skate FMP, continued effort reduction in the Multispecies, Monkfish, and

Scallop FMPs would provide adequate conservation to prevent a collapse of species in the skate complex. Still, it is unlikely that without an FMP for skates, the Council and NMFS could effectively manage skates through other plans so that all species in the complex rebuild to target biomass levels that can produce maximum sustainable yield (MSY) over the long-term. This FMP is essential to collecting species-specific fishery information to estimate MSY, which currently cannot be estimated.

Similarly, without a mechanism to implement species-specific measures for skates, it is likely that some species in the complex would continue to decline (i.e., thorny skate), creating the need for more stringent measures that could have severe impacts not only on skate vessels, but also on vessels in other fisheries that catch skates incidentally. Moreover, if this is the long-term outcome of not establishing an FMP for skates, the Council could be faced with implementing more stringent measures without the important fishery information that this FMP has been created to collect. The long-term social impacts of not collecting this information, therefore, could be significant.

Of the social impact factors identified in this assessment, the long-term negative impacts of not establishing a Skate FMP at this time could most significantly affect *changes in occupational opportunities* and *disruption in daily living*, especially if more draconian measures and/or if measures that impact other fisheries (groundfish, monkfish, scallops) would be required to address increasing concerns about the condition of the skate complex.

6.6.4.2 Measures with No Direct Social Impacts

Similar to the assessment of the biological and economic impacts of the proposed action, it is important to identify the actions proposed in this FMP that are not likely to result in any direct social impacts. This is primarily because many measures proposed in this FMP are more administrative in nature and are designed to ensure effective implementation of the FMP, improve fishery information, and aid in the enforcement of the skate fishery regulations.

The measures proposed in this FMP that are not expected to have direct social impacts are:

- Management Unit (Section 4.1);
- Fishing Year (Section 4.2);
- Skate Overfishing Definitions (Section 4.4);
- Rebuilding Programs for Overfished Species (Section 4.5);
- Identification of Essential Fish Habitat (Section 4.6);
- FMP Reviewing and Monitoring (Section 4.7);
- Framework Adjustment Process (Section 4.8);
- Identification of Baseline Management Measures in Other Fisheries (Section 4.16.1); and
- Review Process for Changes to the Baseline Measures in Other Fisheries (Section 4.16.2).

While the measures listed above are not expected to produce any direct social impacts, some may be associated with indirect social impacts. For example, the selection of a rebuilding program for overfished species, by itself, has no social or economic effects; however, the measures that

result from applying the rebuilding program and triggering additional management action by the Council may have social impacts. Similarly, the skate overfishing definitions do not have direct social impacts associated with them, but the management action resulting from an "overfished" determination may produce social effects. In these instances, the social impacts of the resulting actions will be evaluated by the Council during their development (framework adjustment and/or amendment).

The Council also recognizes that the social impacts of management measures in other fisheries (including the baseline measures identified in this FMP) affect participants in the skate fishery. Increasing the restrictiveness of the baseline measures in other fisheries would not trigger a review and possible additional action under this FMP, but could affect skate fishery participants and their communities.

6.6.4.3 Social Impacts of Proposed Permitting and Reporting Requirements

This FMP proposes to establish federal permits for skate fishing and to modify reporting requirements for vessels and dealers in order to collect better skate fishery information. Three permit options and seven reporting options were considered by the Council during the development of this FMP. The Council ultimately chose to establish one open-access permit for skates and to require the reporting of skate landings and purchases by species and discards by general size categories (see Section 4.0 for a complete description of the proposed action).

In general, the requirement to obtain a permit to fish for, land, sell, purchase, or process skates is assumed to produce no significant social impacts, positive or negative. This permit requirement is identical to requirements in every other federal fishery. The Council is not proposing a limited access program for this fishery, so there is no need to consider individuals that may potentially be excluded from the fishery. However, the proposed reporting requirements may result in short-term negative social impacts, but the long-term impacts are expected to be positive. The social impacts of the proposed reporting requirements are discussed generally below.

Modifications to reporting requirements are proposed that will affect not just those vessels and dealers catching/purchasing skates, but all vessels and dealers that are required to report all of their fishing-related activity through either logbooks or the dealer weighout database. Options that the Council considered ranged from the status quo to mandatory vessel reporting of landings and discards by species to mandatory dealer reporting of skate purchases by species. The social impacts of this measure will be experienced most by those who will be required to report by individual species. Since vessels will be required to report landings by species, fishermen will experience the associated social impacts. Because dealers will be required to report purchases of skates by species, they too will experience impacts. The impacts of these measures are not expected to be concentrated in any particular fishing community, although it is recognized that most skate dealers reside in Point Judith RI and New Bedford MA.

Changes in Occupational Opportunities: The proposed permitting and reporting requirements are not expected to result in any significant changes to this factor. The proposed measures are not expected to change the structure and/or composition of the fleet, nor are they likely to affect fishing opportunities and the supply/cost of fishing-related employees.

Disruption in Daily Living: Of the factors identified in this assessment, increased reporting burdens and species-specific requirements are likely to affect *disruption in daily living* most. It is possible that sorting time (time spent sorting the catch and discards by species) and reporting time (time spent filling out logbooks) will increase considerably. This could disrupt daily operations on board vessels, especially those that take a larger number of trips that are shorter in duration. If significant enough to compromise overall productivity, the disruptions could lead to the formation of negative attitudes about skate management and an overall decline in job satisfaction for the affected individuals. Although highly unlikely, these impacts could increase stress at the family level, and if they were to persist over the long-term, they could effect the fishing community as a whole.

Regulatory Discarding: This factor is not likely to be affected by the proposed permitting and reporting requirements.

During the development of the proposed action, the Council considered the potential to increase discard mortality under some of the proposed reporting options. If reporting requirements for vessels are such that on-board sorting time increases and skates spend more time on deck, fewer discarded skates are likely to survive. Negative social impacts relating to discarding could result if fishermen see that the skate reporting requirements are resulting in higher discard mortality on their vessels. Fishermen often develop negative feelings and attitudes about regulations that they perceive to be wasteful and/or contrary to conservation. This is one reason that the Council chose not to require that discards of skates be reported by fishermen on a species-specific level.

Safety: The proposed permitting and reporting requirements are not expected to compromise the safety of fishermen and/or fishing operations. Nothing related to permitting and reporting requirements should create the need for fishermen to travel farther from shore to catch skates or to make adaptations that may compromise their safety.

Improved data collection may result in short-term negative impacts but should result in long-term positive impacts on the skate fishery and should ultimately lead to better decision-making, ensuring the long-term effectiveness of this FMP.

6.6.4.4 Social Impacts of Proposed Prohibitions on Possession of Barndoor, Thorny, and Smooth Skates

During the development of the Skate FMP, the Council considered prohibitions on the possession, landing, and/or sale of barndoor skate, thorny skate, and smooth skate. The Council ultimately selected prohibitions on the possession of barndoor, thorny and smooth skates as the proposed action in this FMP. The prohibition on the possession of smooth skate is limited to the Gulf of Maine. The following discussion addresses all three kinds of prohibitions that the Council considered in this FMP.

The information provided in the Skate SAFE Report (Volume II) as well as Sections 7.3 and 6.2 of this document suggests that none of the proposed prohibitions will result in significant impacts due to loss of opportunity in any fishery or loss of revenues from the species proposed for

prohibitions. Barndoor and thorny skates are not thought to represent a significant component of the wing fishery, and smooth skate is not known to be landed in either the bait or wing fisheries.

For the most part, the proposed prohibitions serve as precautionary measures to prevent targeting of these species in the future. This, in turn, reduces the likelihood that additional measures will be needed in the future to protect these species, the impacts of which could be much more severe. Also, by preventing future targeting of these species, the Council is taking a *proactive* approach to protecting them before there is potential for a significant negative economic impact on the fishery. As previously mentioned, however, the potential to reduce fishing mortality is highest under a prohibition on possession and lowest under a prohibition on sale (a prohibition on landings falls in-between). If a prohibition on sale had been selected by the Council, for example, the probability would be much higher that additional measures would be required in the future to address the species in question.

One important difference between the prohibitions that the Council considered and their social impacts relates to the flexibility they provide vessels to correctly identify the species and comply with the prohibition. The concern is that more restrictive prohibitions (those on possession, for example) could result in violations for many fishermen who make an honest mistake by missing a prohibited skate on a high volume trip or by mis-identifying a prohibited species. As previously discussed, vessel flexibility tends to decrease as the restrictiveness of the prohibition increases, while the potential to reduce fishing mortality tends to increase as the restrictiveness of the prohibition increases. Ranking the prohibitions considered during the development of this FMP based on flexibility produces the following:

- No Action (most flexible)
- Sale
- Landing
- Possession (least flexible)

Changes in Occupational Opportunities: The proposed prohibitions on possession are not expected to impact opportunities to fish for skates and/or other species. Vessels fishing for skate wings will still be able to land winter skates, which currently compose the majority of skate wing landings. The proposed prohibitions should not change the structure and/or composition of the region's fishing fleets, nor should they affect the supply and/or cost of fishing-related employees.

Disruption in Daily Living: The proposed prohibitions on possession are not expected to alter the daily living and work routines of fishery participants, their families, or their communities. The only reason that vessels may travel to new or different fishing grounds as a result of the prohibitions is if they relocate to avoid concentrations of the prohibited species. This is unlikely because none of these species have historically represented a significant proportion of skate landings. Vessels encountering the prohibited species after the FMP is implemented are not likely to do so more than they have historically in the same areas, so they will likely handle the bycatch as they did in the past. They probably will not relocate to new fishing grounds to avoid prohibited skates if they are familiar with their historical fishing grounds, especially if they are seeking more commercially valuable species in these areas.

Regulatory Discarding: The proposed prohibitions on possession are not expected to generate significant negative social impacts resulting from increased regulatory discarding. However, it must be acknowledged that the proposed prohibitions are indeed likely to generate regulatory discards. The important question to consider is: will negative attitudes develop as a result of a legal requirement to throw three species of skates overboard? The answer to this question is likely to be "no" for two primary reasons. First, none of the three species proposed for prohibition are known to have been commercially valuable in the past, so most fishermen have probably always discarded them. Second, it is believed that many discarded skates survive, especially in comparison to discarded finfish. If skates are released alive, fishermen may feel that they are positively contributing to the conservation of the resource.

Safety: The proposed prohibitions on possession are not expected to compromise the safety of fishermen or fishing operations at sea. As discussed above, it is unlikely that vessels will relocate to new fishing grounds or fish farther from shore as a consequence of the prohibitions. Also, it is unlikely that fishermen will need to make any adaptations to these prohibitions that could compromise their safety.

6.6.4.5 Social Impacts of Proposed Possession Limit for the Wing Fishery

In addition to the no action option, the Council considered three options for a possession limit in the wing fishery: 10,000 pounds, 20,000 pounds, and 30,000 pounds. The rationale supporting a possession limit on wings is to preclude the development of a directed wing fishery at this time and thereby reduce fishing mortality on winter skate, avoid an overfished situation for winter skate, and possibly help improve the overfished status of thorny and barndoor skates. The Council ultimately selected a combination of Options 1 and 2: 10,000 per day (trips less than 24 hours) and 20,000 pounds per trip (trips greater than 24 hours). For reasons discussed in Section 6.5, the impacts of the proposed action are expected to most closely resemble the impacts associated with Option 2 (20,000 pounds).

In general, trip limits can affect the structure of a fishery. If the trip limit is set very low, the inshore sector of the fleet can sometimes manage to fish economically, while the offshore sector of the fleet cannot cover trip expenses. This can change the structure of financial rewards generated in the fishery and can ultimately change the short-term and long-term structure of the fishery itself. These types of outcomes, however, are not likely to result from the skate wing possession limits that are proposed in this FMP. The proposed possession limits serve more to "cap" activity and discourage fishery expansion than to reduce effort or allocate resources among user groups. Therefore, a more important consideration relative to the possession limits proposed in this FMP is whether or not they are likely to negatively affect revenues for a significant number of vessels.

Table 31 below summarizes the potential economic impacts of the possession limits for the skate wing fishery that the Council considered during the development of this FMP. The results in Table 31 are based on reported fishing activity from the 2000 calendar year. These results do not serve as a prediction of the absolute impacts of the possession limits under consideration, but they characterize the likely magnitude of the impacts based on observed and documented skate activity from the 2000 calendar year. Table 31 helps to emphasize that the overall negative

economic impact of any of these possession limits is expected to be relatively minor. Across all vessels and communities, the most liberal possession limit (30,000 pounds) would impact the total revenues of five (5) vessels by less than 1%, based on their observed skate activity in 2000. Similarly, the most conservative possession limit (10,000 pounds) would impact the total revenues of three (3) vessels by more than 5%. For some perspective, the numbers of impacted vessels are from a total of 771 vessels that landed any amount of skates during the 2000 calendar year.

Table 31 Total Number of Vessels Potentially Affected by the Proposed Possession Limits for the Wing Fishery

Proposed Possession Limit	No. of Vessels Affected by Possession Limit*	No. of Vessels with Total Revenues Impacted by Less than 1%*	No. of Vessels with Total Revenues Impacted by 2-5%*	No. of Vessels with Total Revenues Impacted by More than 5%*
10,000 pounds	47	29	15	3
20,000 pounds	18	14	4	0
30,000 pounds	5	5	0	0

**Based on reported trips during the 2000 calendar year*
The impacts of the proposed action are expected to most closely resemble the impacts of Option 2 (20,000 pounds).

The economic analysis (Section 6.5) indicates that vessels in the communities of New Bedford and Provincetown, Massachusetts will be most affected by the proposed possession limit for the wing fishery. Total skate wing revenues on trips landing at least 10,000 pounds in 2000 were 0.6% of total skate revenues in New Bedford and 0.7% of total skate revenues in Provincetown. The reduction in skate revenues due to the proposed possession limit would be an even smaller percentage of total port revenues. Because of other, more important fishing activity occurring in New Bedford, the impacts are likely to be more significant in Provincetown, even though the losses are expected to be smaller in terms of absolute numbers.

Changes in Occupational Opportunities: The proposed possession limit is not expected to significantly impact opportunities to fish for skates and/or other species. Vessels fishing for skate wings will still be able to do so on a year-round basis depending on market conditions. Overall, the proposed possession limits should not change the structure and/or composition of the region's fishing fleets, nor should they affect the supply and/or cost of fishing-related employees.

Figure 88 in Section 6.5 (Economic Impacts) presents a count of other federal fishery permits held by the 47 vessels that landed at least one trip with 10,000 pounds or more of skate wings during the 2000 calendar year. According to Figure 88, all potentially affected vessels held multispecies permits, presumably limited access permits with DAS allocations. Almost all potentially affected vessels held permits for monkfish; lobster; fluke; scallop (general category); squid, mackerel, butterfish; bluefish; and surf clam/ocean quahog.

Disruption in Daily Living: The proposed possession limit is not expected to alter the daily living and work routines of fishery participants, their families, or their communities. It is possible that a few vessels may take more trips to compensate for the possession limits, but this adaptation is still not expected to significantly disrupt the daily patterns of most participants in the fishery. The decision to increase the number of trips for skates will have to be made in the context of efficient DAS usage, short-term and long-term business planning, and possible future reductions in DAS. If DAS are reduced significantly (through Amendment 13 or other action), vessels may not find it economically feasible to fish for skates at all, let alone increase the number of trips they take for skates.

An additional impact of this measure may be that some dealers who have historically purchased wings from vessels that land larger amounts will have to adjust their operations accordingly, but the social impacts of this are not likely to be significant.

Regulatory Discarding: This factor may be affected under the proposed possession limit and would be affected most by the 10,000-pound limit that the Council considered. However, based on the economic information in Section 6.2, on average, less than 1% of total trips from 1995-2000 landed more than 10,000 pounds of skate wings (although these trips accounted for a significant portion of total wing revenues). Based on these data, the possession limits themselves should not generate significant regulatory discards. Discarding of skates after the possession limit is implemented is likely to occur as it does now.

Safety: The proposed possession limit is not expected to compromise the safety of fishermen or fishing operations. It is unlikely that vessels will relocate to new fishing grounds or fish farther from shore as a consequence of the possession limit. It is possible that some vessels will opt to take additional trips to compensate for reductions from the possession limit, but the number of vessels doing this is expected to be small. This adaptation would only compromise safety if vessels increase the number of trips they are taking during times of less predictable and more extreme weather. The likelihood of this occurring cannot be predicted at this time.

6.6.4.6 Social Impacts of Letter of Authorization for Bait-Only Vessels

The Council is proposing a requirement for vessels fishing for skate bait only to obtain a letter of authorization to do so. This requirement serves as an enforcement tool and allows for a distinct separation of bait-only vessels so that they are not subject to the possession limit for the wing fishery.

This measure is not expected to result in any significant short-term social impacts, positive or negative. The increased burden of obtaining the letter should not be significant enough to affect any of the factors under consideration.

6.6.5 SIA Conclusions

In general, the social impacts of the management measures proposed in the Skate FMP are likely to be minor. It is important to remember that vessels and communities most dependent on skates are those that participate in the bait fishery. Since none of the measures proposed in this FMP impact revenues or opportunities in the bait fishery, the scope and magnitude of negative social impacts is lessened significantly.

New Bedford and Provincetown are identified as the two communities that are likely to be most affected by the proposed management measures. Although the impacts of the measures proposed in this plan are expected to be relatively minor for both communities, it is important to note the differences between the two communities and emphasize that, in terms of importance and dependence, special consideration should be given to Provincetown, and the impacts of future measures on Provincetown should be weighed carefully.

- Although the absolute numbers are far less in Provincetown than New Bedford, landings and revenues of skates are more economically important to vessels in Provincetown.
- Because of the relatively low commercial value of skates and high value of species like scallops, monkfish, and some flatfish, it is not likely that there are vessels in New Bedford that are substantially dependent on the skate fishery.
- Provincetown's geographic location and isolation as well as the nature of its fishing fleet make it more vulnerable to significant changes to management measures not only for skates, but also for other fisheries.

Over the short-term, any negative social impacts of the measures proposed in this FMP are most likely to result from changes to reporting requirements, regulatory discarding from species prohibitions and possession limits (these impacts are expected to be relatively minor), and the proposed possession limit (these impacts are expected to be significant to only a few individual vessels). Over the long-term, the social impacts of this FMP are expected to be positive. Collecting better fishery information will ultimately improve the effectiveness of the skate management measures and rebuild the resources to their long-term sustainable levels.