tow declines below the average for the previous three years, then the Council would be required to take management action to ensure that stock rebuilding will continue to target levels.

Discussion: This approach will be applied in the following manner for overfished skate species:

- In 2004, the 2001-2003 fall survey average would be compared to the 1998-2000 average. Council action would be required if the 2001-2003 average is below the 1998-2000 average.
- In 2005, the 2002-2004 fall survey average would be compared to the 1999-2001 average. Council action would be required if the 2002-2004 average is below the 1999-2001 average.
- In 2006, the 2003-2005 fall survey average would be compared to the 2000-2002 average. Council action would be required if the 2003-2005 average is below the 2000-2002 average.

The advantage to this rebuilding program is that it takes a proactive approach by requiring that the survey average must be increasing over time to ensure rebuilding. Nevertheless, it will be important to allow for maximum flexibility and discretion while evaluating progress towards rebuilding.

Additional discussion and a retrospective performance analysis of this rebuilding program are provided in Section 6.1.3 of this document (p. 165).

4.6 ESSENTIAL FISH HABITAT

4.6.1 Background

4.6.1.1 Legal Authority and Mandate

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, known as the Sustainable Fisheries Act (SFA), expanded the focus of the Magnuson-Stevens Act by emphasizing the importance of habitat protection to healthy fisheries and by strengthening the ability of the National Marine Fisheries Service (NMFS) and the Councils to protect and conserve the habitat of marine, estuarine, and anadromous finfish, mollusks, and crustaceans. This habitat is termed "essential fish habitat" and is broadly defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

To improve fish habitat protection, the Magnuson-Stevens Act now requires the Councils, NMFS, and other federal agencies to take specific new actions. The Magnuson-Stevens Act requires the Council, after receiving recommendations from NMFS, to complete the following for all new FMPs or FMP amendments:

> **EFH Designation Mandate [16 U.S.C. 1853]:**
> (a) Any fishery management plan which is prepared by any Council . . . shall --
> (7) describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary . . . minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;

The Magnuson-Stevens Act also now requires all federal agencies that authorize, fund or undertake activities that may adversely affect EFH to consult with NMFS regarding those activities. NMFS and the Councils may make suggestions on how to mitigate any potential habitat damage. Once these agencies receive NMFS' comments, they must respond in writing within 30 days, outlining the measures they are proposing to mitigate the impact of the activity on EFH. They must also explain any inconsistencies between the mitigation actions they propose with the recommendations made by NMFS. This is known as the "EFH Consultation Process" and is required and authorized under Section 305 of the Magnuson-Stevens Act:

EFH Consultation Mandate [16 U.S.C. 1853]:

(2) Each federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act.

(3) Each Council --

(A) may comment on and make recommendations to the Secretary and any federal or state agency concerning any activity authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by any federal or state agency that, in the view of the Council, may affect the habitat, including essential fish habitat, of a fishery resource under its authority; and

(B) shall comment on and make recommendations to the Secretary and any federal or state agency concerning such activity that, in the view of the Council, is likely to substantially affect the habitat, including essential fish habitat, of an anadromous fishery resource under it authority.

4.6.1.2 History

The Magnuson-Stevens Act required the Council to amend its existing FMPs to address the EFH provisions and submit these amendments to the Secretary of Commerce no later than October 11, 1998. To meet this requirement, the Council had to identify and describe essential fish habitat for 18 Council-managed species (sea scallops, monkfish, Atlantic herring, Atlantic salmon, and 14 species of groundfish), and, to the extent practicable, take action to minimize fishing-related adverse effects on EFH. The Council also identified and proposed measures to conserve and enhance EFH, and identified habitat-related research and information needs, as required by the Act.

The Council developed a single, stand-alone FMP amendment that addressed the EFH requirements of all 18 Council-managed species. This document, the "omnibus" EFH amendment, was submitted to NMFS on October 7, 1998. Following review by NMFS, the sea scallop, groundfish, and Atlantic salmon portions of the amendment were approved by the Secretary on March 3, 1999. The monkfish portions were approved on April 22, 1999. The portions of the amendment related specifically to Atlantic herring were approved with the Herring FMP. Amendment #12 to the Northeast Multispecies (Groundfish) FMP extended Council management to offshore hake, and included the required EFH designations and review for this species. The proposed FMP for deep-sea red crab includes the required EFH designation, impacts assessments, and conservation recommendations for this species.

Since Fishery Management Plans have been amended with EFH information, NMFS and the Councils are more proactive in protecting habitat areas by alerting other federal and state agencies about areas of concern. When projects are planned that may adversely affect EFH, the Councils and NMFS can recommend conservation measures to mitigate problems. Since submitting the omnibus EFH Amendment, the Council has supplemented the information in the Amendment with additional information and analyses in several framework adjustments to the Groundfish, Scallop, and Monkfish FMPs, most notably Framework Adjustment 14 to the Sea Scallop FMP. The information in these framework documents is incorporated here by reference.

4.6.1.3 Definitions

The Magnuson-Stevens Act defines essential fish habitat as follows:

> **Definition of EFH: [16 U.S.C. 1802]**
> (10) The term "essential fish habitat" means those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.

For the purposes of interpreting this definition, “waters” includes aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species' full life cycle (EFH Final Rule, 67 FR 2343, January 17, 2002).

Fish habitat is where a species is found during some or all of its life. Fish habitat is used here both in the traditional sense where structure or substrate delineates its geographic boundaries (e.g., coral reefs, marshes, and kelp beds) and in the less conventional sense where boundaries are more fluid (e.g., turbidity zones, thermoclines, and fronts separating water masses). Historical fish habitat is the geographic area where a species was found at some point in time; this habitat may not be used now if the species distribution has changed or has been reduced, or access has been altered by man or natural events. Fish use habitat for spawning, breeding, migration, feeding and growth, and for shelter to reduce mortality. Most habitats provide only a subset of these functions. Fish habitat can change with life stage, abundance, the presence of other species, and with temporal and spatial variability in the environment. The type of habitat available, its attributes, and its functions are important to the productivity of a species.

4.6.1.4 Guidelines

On January 17, 2002, NMFS published the Final Rule (67 FR 2343) on essential fish habitat. This rule established guidelines to assist the Councils and the Secretary of Commerce in the implementation of the EFH provisions of the Magnuson-Stevens Act, including the description and identification of EFH in fishery management plans (FMPs), the identification of adverse impacts from both fishing and non-fishing activities on EFH, and identification of actions required to conserve and enhance EFH. The regulations also detailed procedures the Secretary (acting through NMFS), other federal agencies, state agencies, and the Councils will use to

coordinate, consult, or provide recommendations on federal and state activities that may adversely affect EFH.

According to the NMFS EFH Guidelines, EFH must be designated according to the level of information available on the species distribution, abundance, and habitat-productivity relationships. The levels of information, excerpted from the EFH Final Rule, are:

- **Level 1:** Distribution data are available for some or all portions of the geographic range of the species. At this level, only distribution data are available to describe the geographic range of a species (or life stage). Distribution data may be derived from systematic presence/absence sampling and/or may include information on species and life stages collected opportunistically. In the event that distribution data are available only for portions of the geographic area occupied by a particular life stage of a species, habitat use can be inferred on the basis of distributions among habitats where the species has been found and on information about its habitat requirements and behavior. Habitat use may also be inferred, if appropriate, based on information on a similar species or another life stage.
- **Level 2:** Habitat-related densities of the species are available. At this level, quantitative data (i.e., density or relative abundance) are available for the habitats occupied by a species or life stage. Because the efficiency of sampling methods is often affected by habitat characteristics, strict quality assurance criteria should be used to ensure that density estimates are comparable among methods and habitats. Density data should reflect habitat utilization, and the degree that a habitat is utilized is assumed to be indicative of habitat value. When assessing habitat value on the basis of fish densities in this manner, temporal changes in habitat availability and utilization should be considered.
- **Level 3:** Growth, reproduction, or survival rates within habitats are available. At this level, data are available on habitat-related growth, reproduction, and/or survival by life stage. The habitats contributing the most to productivity should be those that support the highest growth, reproduction, and survival of the species (or life stage).
- **Level 4:** Production rates by habitat are available. At this level, data are available that directly relate the production rates of a species or life stage to habitat type, quantity, quality, and location. Essential habitats are those necessary to maintain fish production consistent with a sustainable fishery and the managed species' contribution to a healthy ecosystem.

4.6.2 Identification and Description of EFH for Skates

4.6.2.1 Introduction

The EFH Final Rule (67 FR 2343) directs the Council to describe EFH in text that provides information on the biological requirements for each life history stage of the species. Tables are provided in individual species reports and summarize all available information on environmental and habitat variables that control or limit distribution, abundance, reproduction, growth, survival, and productivity of the managed species.

The EFH Final Rule also directs the Council to present the general distribution and geographic limits of EFH for each life history stage in the form of maps. These maps are presented as fixed in space and time, but they encompass all appropriate known temporal and spatial variability in

the distribution of EFH. The EFH maps are a means to visually present the EFH described in the amendment.

There are two distinct but related components of the process to comply with the guidelines of the Final Rule: (1) developing the text description of essential fish habitat; and, (2) identifying the geographic extent of essential fish habitat. Together, they provide a picture of the EFH for Council-managed species.

To support the Council, NMFS develops individual species reports for most species managed by the Council. These reports consist of literature reviews documenting the life history and habitat requirements of the species, as well as food habits information and distribution and abundance information by life history stage. The species reports for the seven species of skates in the skate complex were developed by NMFS and are provided in Volume III, Appendix A of this FMP. The information presented in the species reports was used to develop the EFH text descriptions.

The text descriptions of essential fish habitat define the environmental parameters within the areas represented by the map designations. The EFH Final Rule requires that the text description take precedence when the text and EFH maps differ. These text descriptions identify the habitat requirements for each species by life history stage. They include the general geographic area(s) preferred by the species, the preferred substrate (if demersal), and ideal ranges of water temperature, depth, and salinity (where known). The descriptions reflect the best available information on the species' habitat requirements collected from the scientific literature and observations made during research surveys. To include information on the distribution and relative abundance of the skate complex in the estuaries and embayments of the Northeast, the Council is utilizing NOAA's Estuarine Living Marine Resources (ELMR) program reports. These reports are described and the process for including them in the EFH designations is explained in the Omnibus EFH Amendment (NEFMC 1998).

There are two parts to every EFH designation. The first part of the EFH designation for each species includes a text-based description of the habitat characteristics considered essential for that species at each major life history stage. The text descriptions include physical as well as oceanographic parameters. The second part of the EFH designation for each species includes a set of maps indicating the geographical extent of the EFH designation and the range of the species. A unique map is created for each major life history stage. The intent of the two-part EFH designation is for the map to indicate the geographical extent within which the text description applies. Thus, if the map indicates that eastern Georges Bank was EFH for a particular species and the text description indicates that sandy habitats within a depth range of 50 - 100 meters was EFH, then only those portions of eastern Georges Bank that met the physical characteristics would actually be considered EFH.

4.6.2.2 EFH Text Descriptions

4.6.2.2.1 Barndoor Skate (*Dipturus laevis*)

In its *Report to Congress: Status of the Fisheries of the United States* (January 2001), NMFS determined that barndoor skate is in an overfished condition, based on stock size assessment. Because recent assessments determined that more information is needed to draw valid conclusions regarding the status of this stock, it is not known whether overfishing is occurring. For barndoor skate, essential fish habitat is described as those areas of coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated on Figure 1-Figure 2 and meet the following conditions:

Eggs: There is no information available on the habitat associations or distribution of the egg stage for this species.

Larvae: No larval life stage exists for this species. Upon hatching, they are fully developed juveniles (ELMR Report Number 12, March 1994).

Juveniles: Bottom habitats with mud, gravel, and sand substrates in the eastern Gulf of Maine, eastern Georges Bank, southern New England and the Mid-Atlantic Bight down to the Hudson Canyon. Generally, the following conditions exist where barndoor skate juveniles are found: *Depth:* Occurs from shoreline to 750 meters, but are most abundant at depths less than 150 meters. *Temperature:* Broad temperature range from 1.2-20 °C, but found in highest abundance between 4-11 °C. *Salinity:* Preferred range is 31-35 ppt.

Adults: Bottom habitats with mud, gravel, and sand substrates in the eastern Gulf of Maine, eastern Georges Bank, southern New England and the Mid-Atlantic Bight down to the Hudson Canyon. Generally, the following conditions exist where barndoor skate adults are found: *Depth:* Occurs from shoreline to 750 meters, but are most abundant at depths less than 150 meters. *Temperature:* Broad temperature range from 1.2-20 °C, but found in highest abundance over a range of 3-16 °C. *Salinity:* Preferred range is 31-35 ppt.

A table presenting summary information on the habitat affinities and requirements for each life stage of barndoor skate is provided in Appendix A of Volume III (EFH Supporting Materials). The Council acknowledges that there may be some potential seasonal and spatial variability of the environmental conditions generally associated with this species.

4.6.2.2.2 Clearnose Skate (*Raja eglanteria*)

In its *Report to Congress: Status of the Fisheries of the United States* (January 2001), NMFS determined that clearnose skate is not in an overfished condition, based on stock size assessment. Because recent assessments determined that more information is needed to draw valid conclusions regarding the status of this stock, it is not known whether overfishing is occurring. For clearnose skate, essential fish habitat is described as those areas of coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated on Figure 3 – Figure 4 and in Table 5 and meet the following conditions:

Eggs: There is no information available on the habitat associations or distribution of the egg stage for this species.

Larvae: No larval life stage exists for this species. Upon hatching, they are fully developed juveniles (ELMR Report Number 12, March 1994).

Juveniles: Bottom habitats with a substrate of soft bottom along the continental shelf and rocky or gravelly bottom, ranging from the Gulf of Maine south along the continental shelf to Cape Hatteras, North Carolina (the southern boundary of the NEFMC management unit). Generally, the following conditions exist where clearnose skate juveniles are found: *Depth:* Their full range is from the shore to 500 meters, but they are most abundant at depths less than 111 meters. *Temperature:* Occurs over a temperature range of 9-30 °C, but are most abundant from 9-21 °C in the northern part of its range and 19-30 °C around North Carolina.

Adults: Bottom habitats with a substrate of soft bottom along the continental shelf and rocky or gravelly bottom, ranging from the Gulf of Maine south along the continental shelf to Cape Hatteras, North Carolina (the southern boundary of the NEFMC management unit). Generally, the following conditions exist where clearnose skate adults are found: *Depth:* Their full range is from the shore to 400 meters, but they are most abundant at depths less than 111 meters. *Temperature:* Occurs over a temperature range of 9-30 °C, but are most abundant from 9-21 °C in the northern part of its range and 19-30 °C around North Carolina.

A table presenting summary information on the habitat affinities and requirements for each life stage of clearnose skate is provided in Appendix A of Volume III of this FMP. The bays and estuaries identified in Table 5 for the skate species complex apply to the above clearnose skate descriptions. The Council acknowledges that there may be some potential seasonal and spatial variability of the environmental conditions generally associated with this species.

4.6.2.2.3 Little Skate (*Leucoraja erinacea*)

In its *Report to Congress: Status of the Fisheries of the United States* (January 2001), NMFS determined that little skate is not in an overfished condition and that overfishing of this stock is not occurring, based on stock size assessment. For little skate, essential fish habitat is described as those areas of coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated on Figure 5 – Figure 6and in Table 5 and meet the following conditions:

Eggs: Bottom habitats with a sandy substrate from Georges Bank through to Southern New England to the Middle Atlantic Bight. Generally, the following conditions exist where little skate eggs are found: *Depths*: Less than 27 meters. *Temperature*: Greater than 7 ºC.

The EFH Source Document for little skate (Volume III, Appendix A) does identify the sediment type, depth, and temperature where little skate eggs are found. However, there is no map to accompany this designation because all of the EFH maps for the skate species are based on NMFS survey data, and there are no survey data for skate eggs. Therefore, only a text definition is provided for little skate eggs.

Larvae: No larval life stage exists for this species. Upon hatching, they are fully developed juveniles (ELMR Report Number 12, March 1994).

Juveniles: Bottom habitats with a sandy or gravelly substrate or mud, ranging from Georges Bank through the Mid-Atlantic Bight to Cape Hatteras, North Carolina. Generally, the following conditions exist where little skate juveniles are found: *Depth:* Full range is from the shore to 137 meters, with the highest abundance from 73-91 meters. *Temperature:* Most found between 4-15°C.

Adults: Bottom habitats with a sandy or gravelly substrate or mud, ranging from Georges Bank through the Mid-Atlantic Bight to Cape Hatteras, North Carolina. Generally, the following conditions exist where little skate adults are found: *Depth:* Full range is from the shore to 137 meters, with the highest abundance from 73-91 meters. *Temperature:* Most found between 2-15°C.

A table presenting summary information on the habitat affinities and requirements for each life stage of little skate is provided in Appendix A of Volume III of this FMP. The bays and estuaries identified in Table 5 for the skate species complex apply to the above little skate descriptions. The Council acknowledges that there may be some potential seasonal and spatial variability of the environmental conditions generally associated with this species.

4.6.2.2.4 Rosette Skate (*Leucoraja garmani)*

In its *Report to Congress: Status of the Fisheries of the United States* (January 2001), NMFS determined that rosette skate is not in an overfished condition, based on stock size assessment. Because recent assessments determined that more information is needed to draw valid conclusions regarding the status of this stock, it is not known whether overfishing is occurring. For rosette skate, essential fish habitat is described as those areas of coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated on Figure 7 – Figure 8 and meet the following conditions:

Eggs: There is no information available on the habitat associations or distribution of the egg stage for this species.

Larvae: No larval life stage exists for this species. Upon hatching, they are fully developed juveniles (ELMR Report Number 12, March 1994).

Juveniles: Bottom habitats with a soft substrate, including sand/mud bottoms, mud with echinoid and ophuiroid fragments, and shell and pteropod ooze, ranging from Nantucket Shoals and southern edge of Georges Bank to Cape Hatteras, North Carolina. Generally, the following conditions exist where rosette skate juveniles are found: *Depth:* Occurs from 33-530 meters but is most common between 74-274 meters. Rosette skate may have a more limited depth range in the southern part of its geographic range. *Temperature:* Most found at a temperature range of 5.3-15 °C but collected in waters as low as 4 °C and high as 25 °C.

Adults: Bottom habitats with a soft substrate, including sand/mud bottoms, mud with echinoid and ophuiroid fragments, and shell and pteropod ooze, ranging from Nantucket Shoals and southern edge of Georges Bank to Cape Hatteras, North Carolina. Generally, the following conditions exist where rosette skate adults are found: *Depth:* Occurs from 33-530 meters but is most common between 74-274 meters. Rosette skate may have a more limited depth range in the southern part of its geographic range. *Temperature:* Most found at a temperature range of 5.3-15 °C but collected in waters as low as 4 °C and high as 25 °C.

A table presenting summary information on the habitat affinities and requirements for each life stage of rosette skate is provided in Appendix A of Volume III of this FMP. The Council acknowledges that there may be some potential seasonal and spatial variability of the environmental conditions generally associated with this species.

4.6.2.2.5 Smooth Skate (*Malacoraja senta*)

In its *Report to Congress: Status of the Fisheries of the United States* (January 2001), NMFS determined that smooth skate is in an overfished condition, based on stock size assessment. Because recent assessments determined that more information is needed to draw valid conclusions regarding the status of this stock, it is not known whether overfishing is occurring. For smooth skate, essential fish habitat is described as those areas of coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated on Figure 9 – Figure 10 and meet the following conditions:

Eggs: There is no information available on the habitat associations or distribution of the egg stage for this species.

Larvae: No larval life stage exists for this species. Upon hatching, they are fully developed juveniles (ELMR Report Number 12, March 1994).

Juveniles: Bottom habitats with a substrate of soft mud (silt and clay) bottoms and also on sand, broken shells, gravel and pebbles on offshore banks of the Gulf of Maine. Generally, the following conditions exist where smooth skate juveniles are found: *Depth:* Found at depths from 31-874 meters and most abundant between 110-457 meters. *Temperature:* Found over a range of 1-16 °C with most found between 5-7 °C.

Adults: Bottom habitats with a substrate of soft mud (silt and clay) bottoms and also on sand, broken shells, gravel and pebbles on offshore banks of the Gulf of Maine. Generally, the following conditions exist where smooth skate adults are found: *Depth:* Found at depths from 31-874 meters and most abundant between 110-457 meters. *Temperature:* Found over a range of 1-16 °C with most found between 5-7 °C.

A table presenting summary information on the habitat affinities and requirements for each life stage of smooth skate is provided in Appendix A of Volume III of this FMP. The Council acknowledges that there may be some potential seasonal and spatial variability of the environmental conditions generally associated with this species.

4.6.2.2.6 Thorny Skate (*Amblyraja radiata*)

In its *Report to Congress: Status of the Fisheries of the United States* (January 2001), NMFS determined that thorny skate is in an overfished condition, based on stock size assessment. Because recent assessments determined that more information is needed to draw valid conclusions regarding the status of this stock, it is not known whether overfishing is occurring. For thorny skate, essential fish habitat is described as those areas of coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated on Figure 11 – Figure 12 and meet the following conditions:

Eggs: There is no information available on the habitat associations or distribution of the egg stage for this species.

Larvae: No larval life stage exists for this species. Upon hatching, they are fully developed juveniles (ELMR Report Number 12, March 1994).

Juveniles: Bottom habitats with a substrate of sand, gravel, broken shell, pebbles, and soft mud in the Gulf of Maine and Georges Bank. Generally, the following conditions exist where thorny skate juveniles are found: *Depth:* The full depth range is from 18-2000 meters, but they are most abundant between 111-366 meters. T*emperature:* Juveniles are found in waters with temperatures ranging from –1.3 °C to 17 °C, with most found between 5-9 °C.

Adults: Bottom habitats with a substrate of sand, gravel, broken shell, pebbles, and soft mud in the Gulf of Maine and Georges Bank. Generally, the following conditions exist where thorny skate adults are found: *Depth:* The full depth range is from 18-2000 meters, but they are most abundant between 111-366 meters. *Temperature:* Adults are found in waters with temperatures ranging from –1.3 °C to 17 °C, with most found between 5-8 °C.

A table presenting summary information on the habitat affinities and requirements for each life stage of thorny skate is provided in Appendix A of Volume III of this FMP. The Council acknowledges that there may be some potential seasonal and spatial variability of the environmental conditions generally associated with this species.

4.6.2.2.7 Winter Skate (*Leucoraja ocellata*)

In its *Report to Congress: Status of the Fisheries of the United States* (January 2001), NMFS determined that winter skate is in an overfished condition and that overfishing of this stock is occurring, based on stock size assessment. For winter skate, essential fish habitat is described as those areas of coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated on Figure 13 – Figure 14 and in Table 5 and meet the following conditions:

Eggs: There is no information available on the habitat associations or distribution of the egg stage for this species.

Larvae: No larval life stage exists for this species. Upon hatching, they are fully developed juveniles (ELMR Report Number 12, March 1994).

Juveniles: Bottom habitats with a substrate of sand and gravel or mud in Cape Cod Bay, on Georges Bank, the southern New England shelf, and through the Mid-Atlantic Bight to North Carolina. Generally, the following conditions exist where winter skate juveniles are found: *Depth:* Range from shoreline to about 400 meters and most abundant at depths less than 111 meters. *Temperature:* Range from -1.2°C to around 21°C, with most found from 4-16 °C, depending on the season.

Adults: Bottom habitats with a substrate of sand and gravel or mud in Cape Cod Bay, on Georges Bank, the southern New England shelf, and through the Mid-Atlantic Bight to North Carolina. Generally, the following conditions exist where winter skate adults are found: *Depth:* Range from shoreline to 371 meters and most abundant at depths 111 meters. *Temperature:* Range from –1.2 °C to around 20 °C, with most found from 5-15 °C, depending on the season.

A table presenting summary information on the habitat affinities and requirements for each life stage of winter skate is provided in Appendix A of Volume III of this FMP. The bays and estuaries identified in Table 5 for the skate species complex apply to the above winter skate descriptions. The Council acknowledges that there may be some potential seasonal and spatial variability of the environmental conditions generally associated with this species.

Table 5 Distribution and Abundance of the Skate Complex in Northeast Bays and Estuaries

Estuaries and Embayments	Eggs	Juveniles	Mating	Adults
Waquoit Bay				
Buzzards Bay	L,W	L,W	L,W	L,W
Narragansett Bay	L,W	L,W	L,W	L,W
Long Island Sound	L,W	L,W	L,W	L,W
Connecticut River		L,W		L,W
Gardiners Bay		L,W		L,W
Great South Bay		L,W		L,W
Hudson River/Raritan Bay	C,L,W	C,L,W	C,L,W	C,L,W
Barnegat Bay				C,L,W
New Jersey Inland Bays				C,L,W
Delaware Bay				C,L,W
Delaware Inland Bays				C,L,W
Chincoteague Bay				
Chesapeake Bay Mainstem	C,L,W	C,L,W		C,L,W
Chester River				
Choptank River				
Patuxent River				
Potomac River				
Tangier/Pocomoke Sound				
Rappahannock River				
York River				
James River				

The EFH information presented in this table are based on the NOAA Estuarine Living Marine Resource (ELMR) program (Jury et al. 1994; Stone et al. 1994). Unfortunately, the information presented in the ELMR reports does not differentiate among the species of skates in the complex. Thus, we know that skates occur in these bays and estuaries, but we cannot be certain of the particular species. The above table has been prepared in an attempt to identify the skate species that occur most proximate to these bays and estuaries and are therefore most likely to occur in the bays and estuaries. For the purposes of designating EFH, the bays and estuaries listed above are incorporated into the EFH designations for the species identified in the table (C=clearnose skate; L=little skate; and W=winter skate). The Council recognizes that there may be spatial and temporal variability in the environmental conditions generally associated with these species in the bays and estuaries identified above.

4.6.2.3 EFH Designation Methodology – NMFS Survey Data

In most of the Council's previous EFH designations (NEFMC 1998), the areal extent of the EFH designations, as reflected in the EFH maps, were based upon an index of catch-per-unit-effort (CPUE) data resulting from the NMFS' Bottom Trawl and MARMAP Ichthyoplankton surveys (one of the few exceptions is deep-sea red crab, for which there are very few survey data available and the species distribution is located outside the survey area). All survey catches, on a per tow basis, were binned and averaged for each ten minute square of latitude and longitude. The averaged catch-per-tow data were then ranked from highest average catch-per-tow (per ten minute square) to lowest positive average catch-per-tow. Starting with the ten minute square with the highest average catch-per-tow, the averages for each ten minute square were summed and the cumulative percentage of the total average catch-per-tow was calculated for each ten minute square.

The ten minute squares were then categorized, using the cumulative percentages, into 50%, 75%, 90% and 100% groups. The 50% category represented the top two quartiles of ten minute squares, the 75% category the top three quartiles, the 90% the top nine deciles and the 100% category represented the full geographic range of the species within the survey. Because these categories reflect an index of catch, not area, the areal percentage of the range of the species is always less. For example, the 50% category of ten minute square includes the top two quartiles of catches and because the species is therefore more abundant (or concentrated) in these ten minute squares, there will be fewer ten minute squares in this category than in the bottom two quartiles. Thus, the 50% category might only represent 25-30% of the overall range of the species. The percentages selected as the basis for the EFH designation were determined on a species by species basis.

This approach was developed based on the available data (from the NMFS surveys) and is consistent with the regulations and technical guidance developed by NMFS on how to designate EFH based on the level of information available. NMFS described four levels of information to be used, from basic presence/absence data (Level 1) to habitat-specific production data (Level 4). The availability of relative abundance data from the NMFS surveys provided what were considered Level 2 data for most species managed by the New England Council. As such, the regulations and technical guidance indicated use of relative abundance data to differentiate areas with relatively greater abundance of a species as EFH in contrast to areas with relatively lower abundance. Ecologically, it follows that one can infer areas of relatively high abundance or density as indicative of more suitable habitats. Research has demonstrated that as populations decline, their range contracts and they focus in on areas of best suited habitat.

The EFH designations included in the omnibus EFH Amendment also utilized a variety of other information considered important in the identification and description of EFH. Because the NMFS surveys focus on offshore waters, several sources of information were needed to identify important areas in inshore areas. One such source of information was the Massachusetts Inshore Trawl Survey. Data from the Connecticut Long Island Sound Survey were also used in some cases. The NOAA Estuarine Living Marine Resources Program (ELMR) provided information on the presence/absence of many Council-managed species in a number of estuaries and

embayments along the coast of New England and the Mid-Atlantic. Those bays and estuaries identified as supporting skates at the "common," "abundant," or "highly abundant" levels would be included as part of the EFH designation for those skate species most proximate to the bay or estuary. Historical information was also used in some cases, as was information provided by members of the fishing industry.

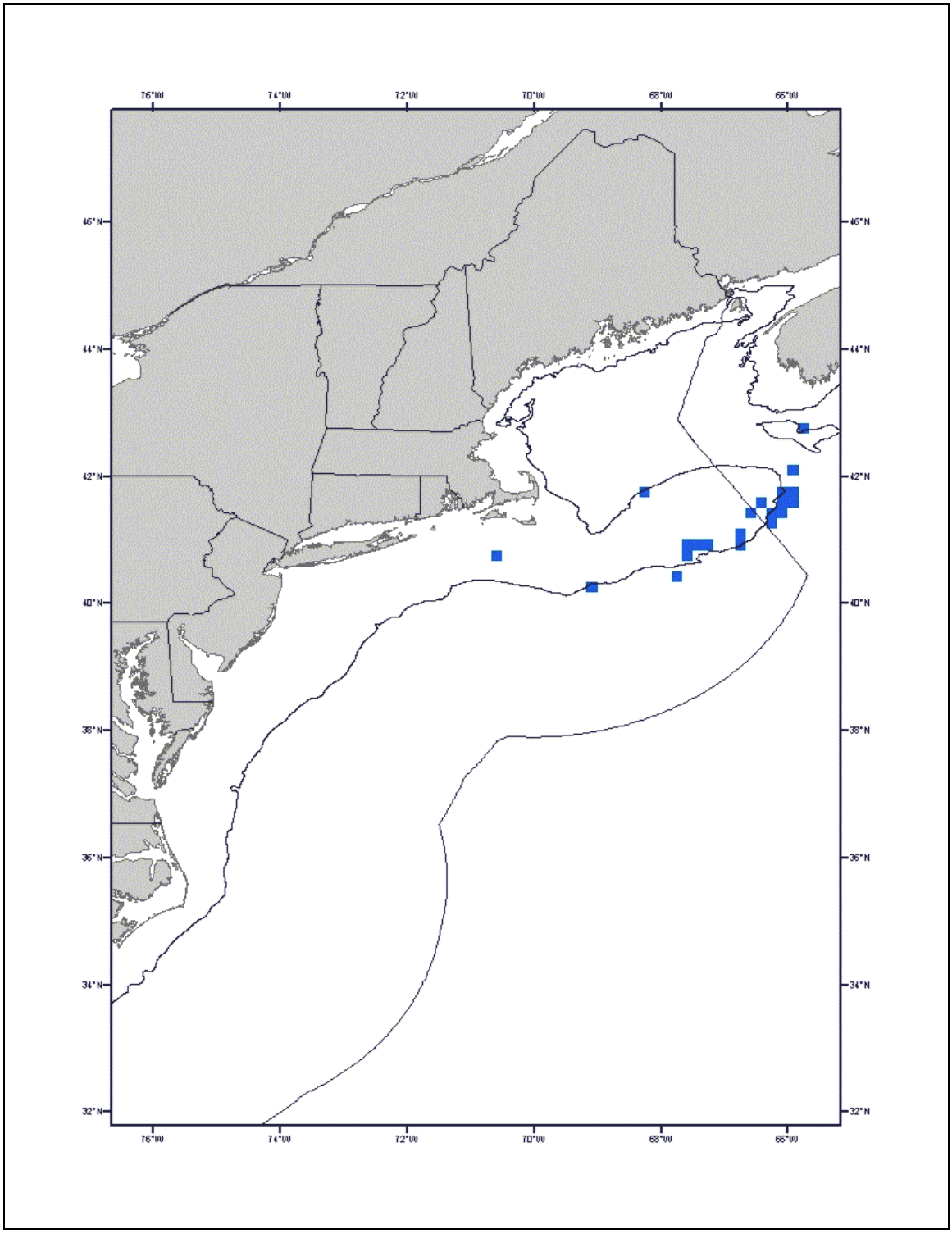
Skates are captured in the NMFS otter trawl survey and are reflected in the survey data. This approach would utilize the best available information on the distribution and relative abundance of the skate species. There are data available in the Massachusetts Inshore Trawl Survey on all but barndoor skate, and there are data available in the Hudson-Raritan Trawl Survey for little and clearnose skates. The NOAA ELMR program information does not differentiate between different species of skates, but provides information on the occurrence of skate species in the estuaries and embayments of New England and the Mid-Atlantic for the skate complex (identified as *Raja* spp.) as a whole.

4.6.2.4 Maps of EFH Designations

The following set of maps (Figure 1 – Figure 14) represents the EFH designation option chosen by the Council for each life stage (juveniles and adults) of each species of skate. The Council followed the recommendations of the Habitat Oversight Committee in designating EFH for all species. The Habitat Oversight Committee considered designating overfished skate stocks (barndoor, thorny and smooth) at the 100% level, but in looking at currently assigned EFH designations only halibut and redfish were so designated. The Committee instead passed a motion to designate barndoor skate at the 100% level and all other species at the 90% level.

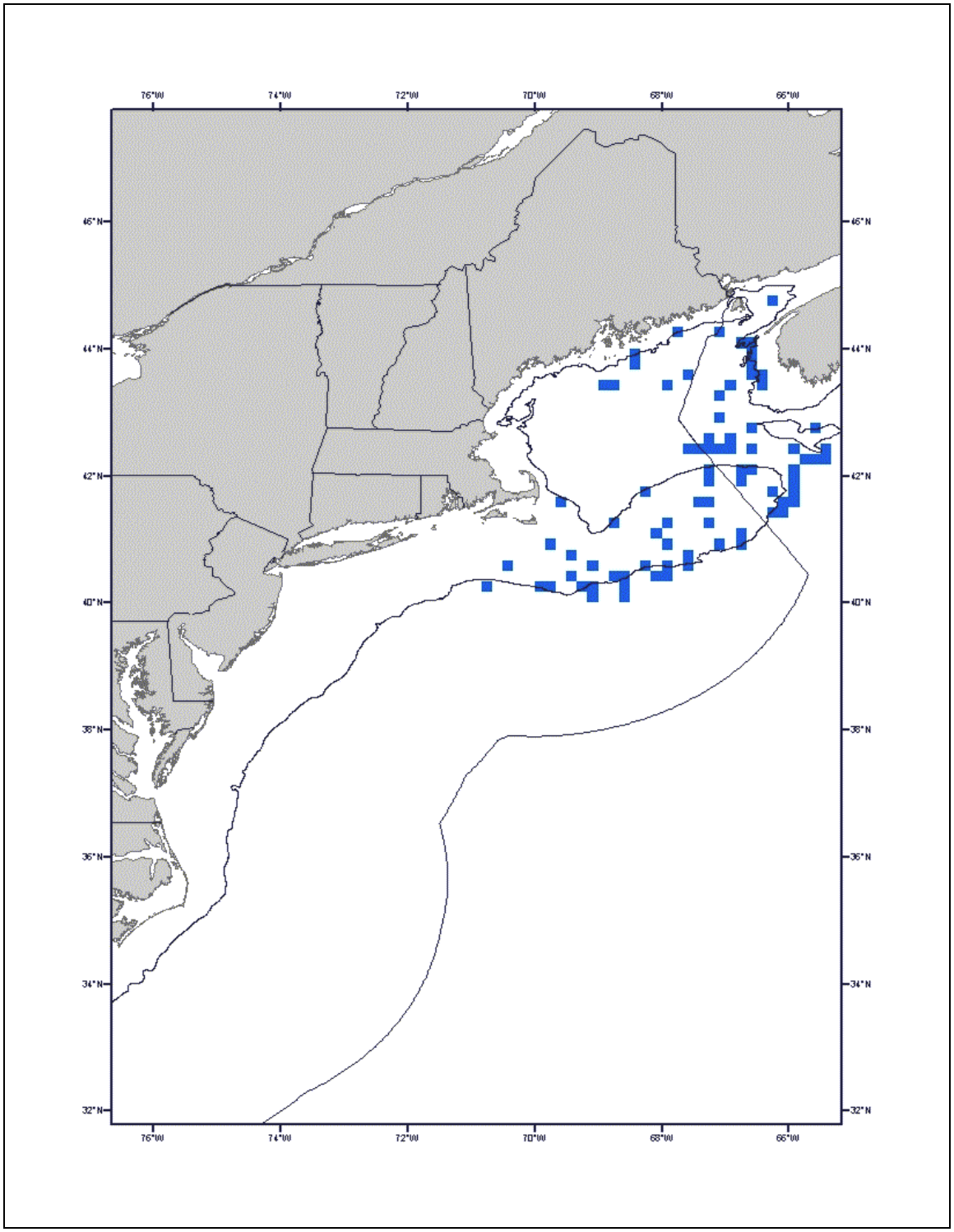
The EFH regulations require that EFH be designated only in U.S. waters, so while there may be important skate habitat in Canadian waters, this area will not be considered in the final EFH designations. Also, EFH for these species will not be designated outside the boundary of the Council's management unit, which is set at Cape Hatteras, North Carolina.

Figure 1 Barndoor Skate EFH Juvenile (100%)



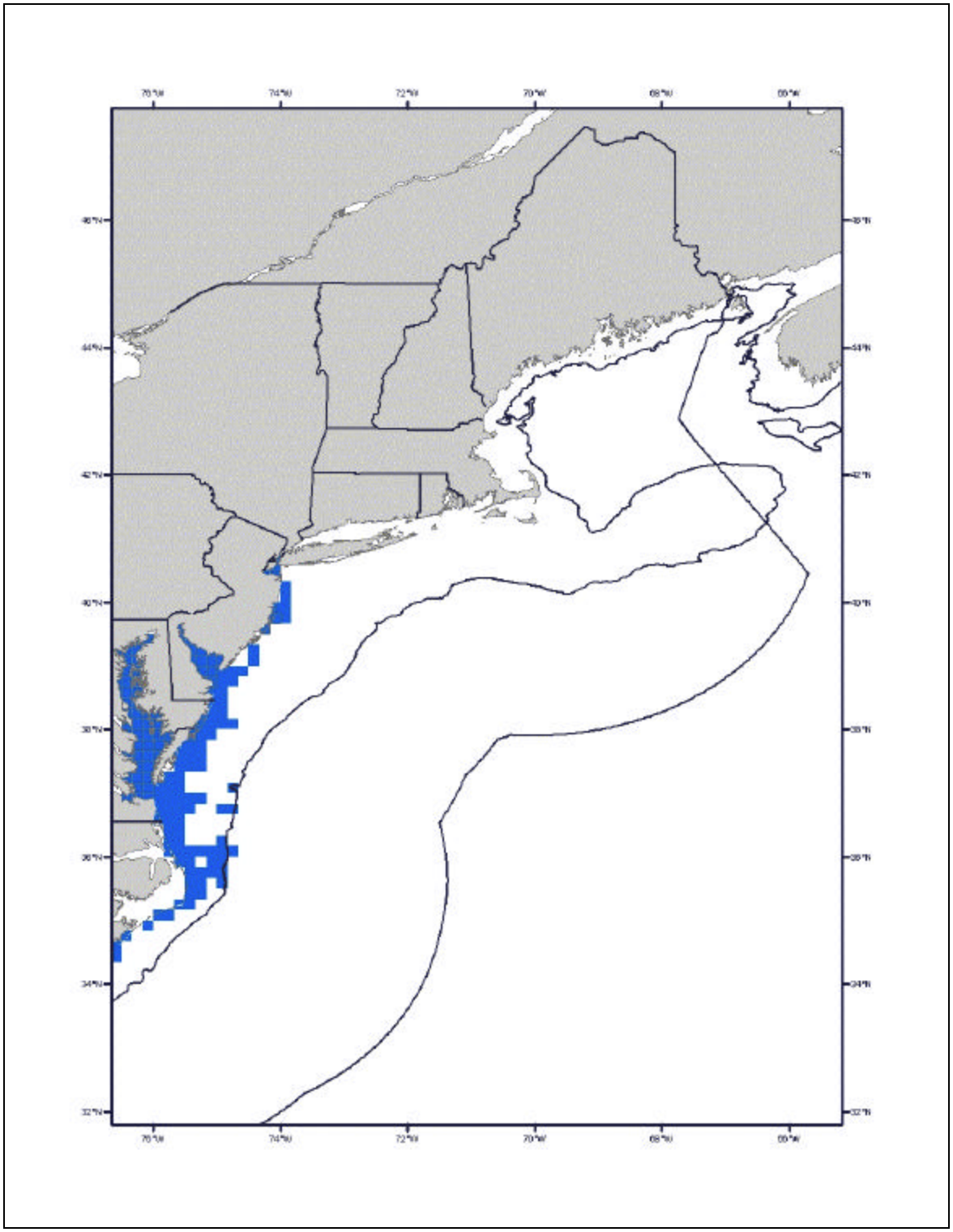
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999). Only bottom habitats with mud, gravel, and sand substrates that occur within the shaded areas would be designated as EFH. This option represents 100% of the observed range of this life stage.

Figure 2 Barndoor Skate EFH Adult (100%)



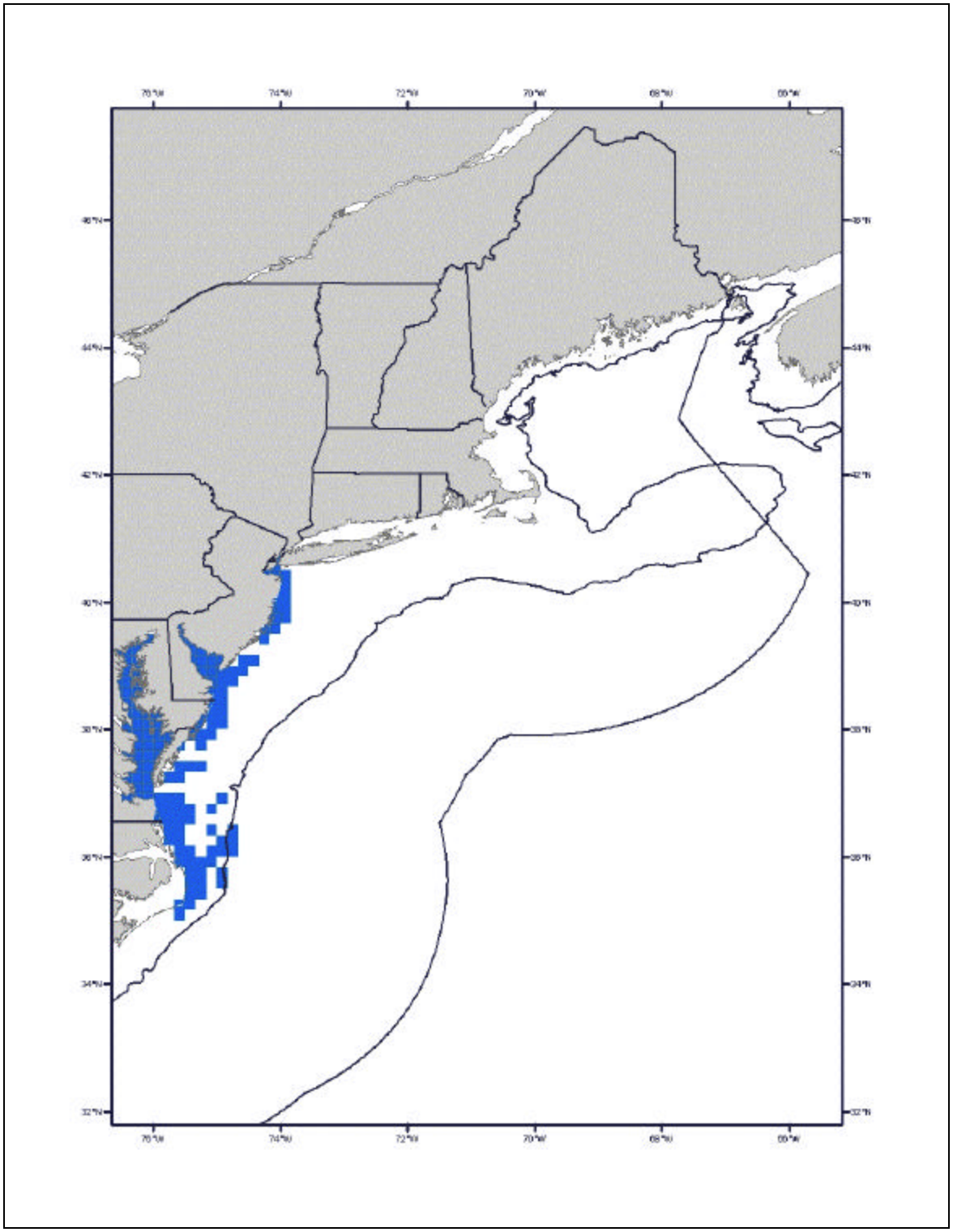
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999). Only bottom habitats with mud, gravel, and sand substrates that occur within the shaded areas would be designated as EFH. This option represents 100% of the observed range of this life stage.

Figure 3 Clearnose Skate EFH Juvenile (90%)



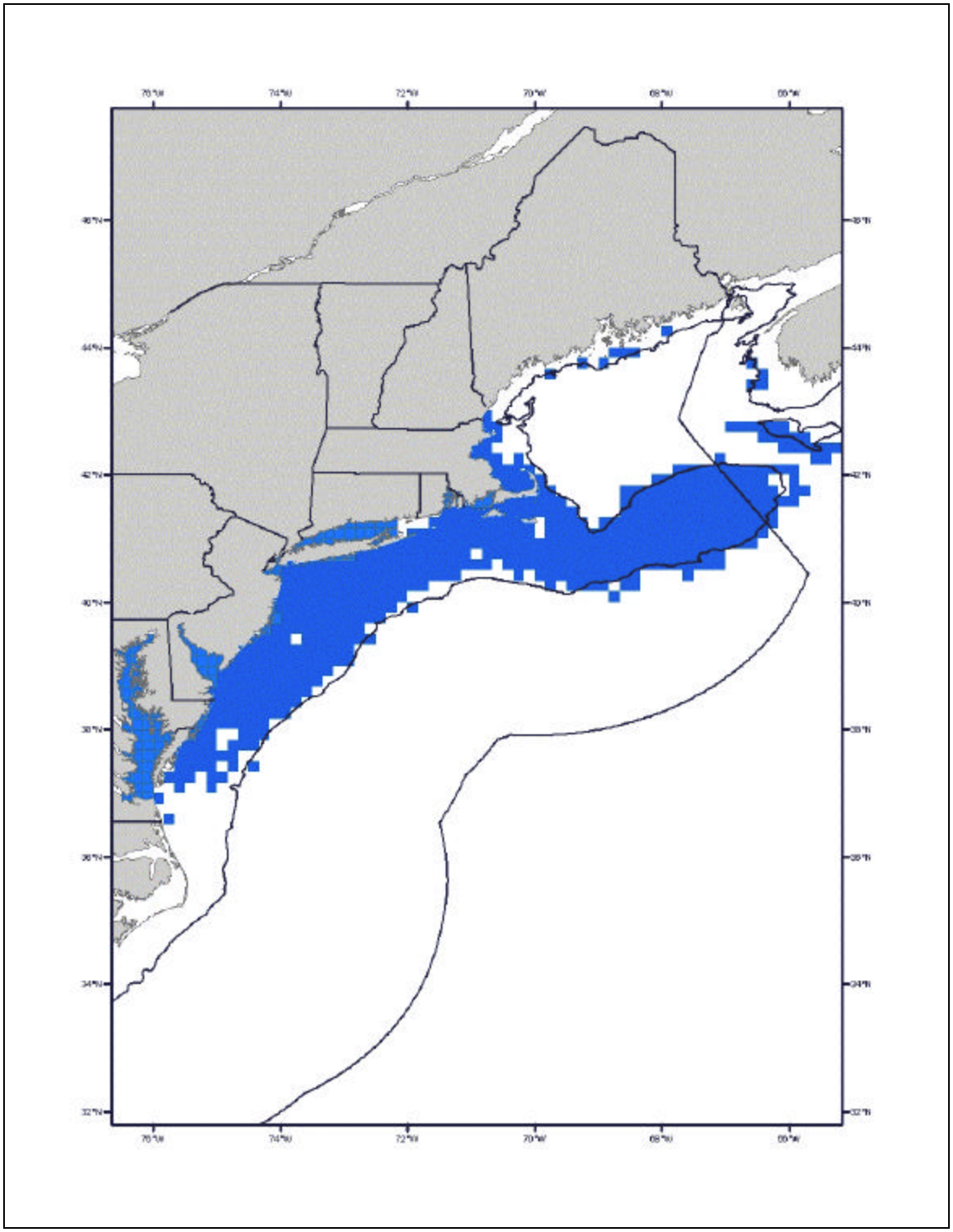
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999) and ELMR data presented in Table 5. Only habitats with soft bottom, rocky or gravelly substrates that occur within the shaded areas would be designated as EFH. This option represents 62% of the observed range of this life stage.

Figure 4 Clearnose Skate EFH Adult (90%)



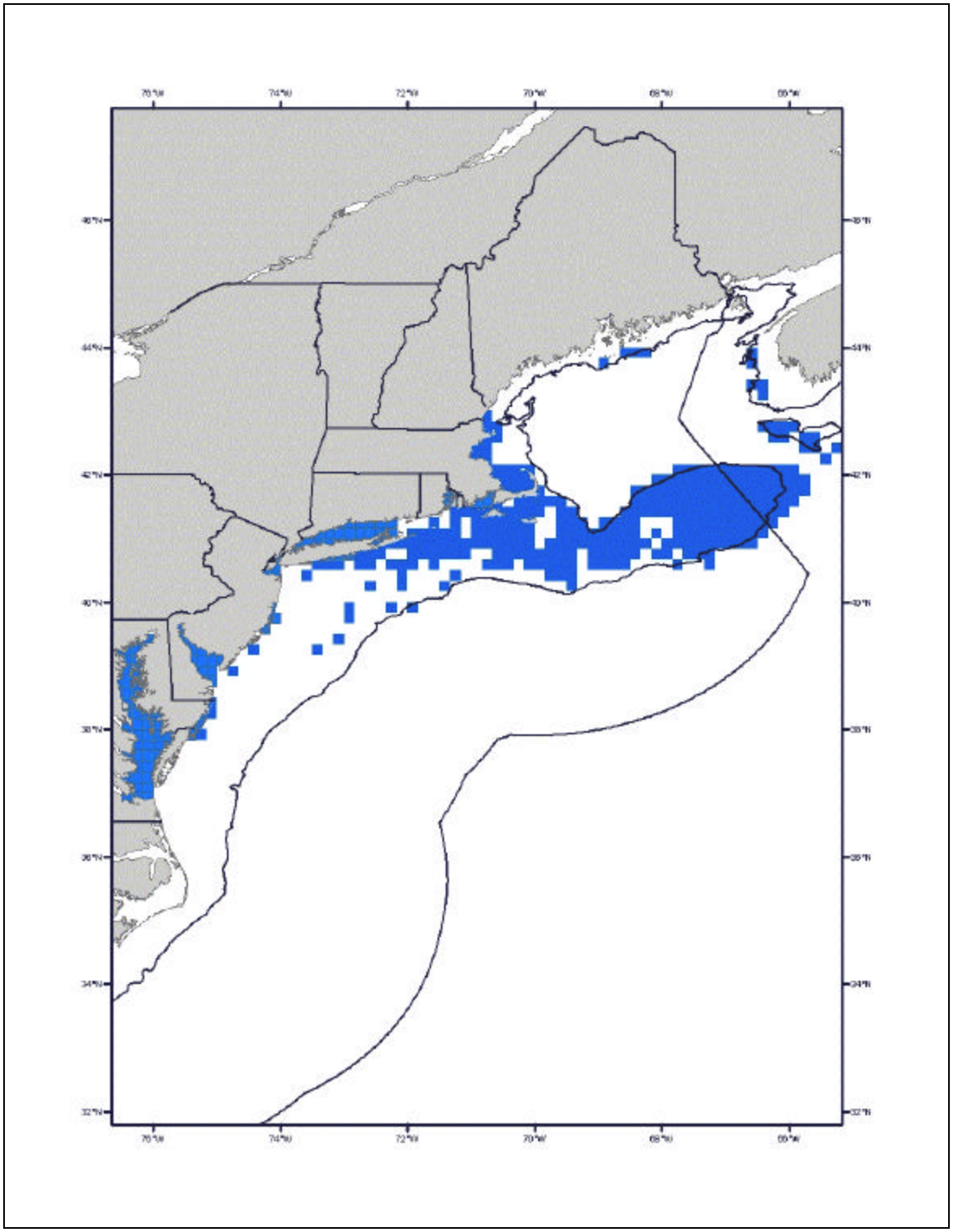
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999) and ELMR data presented in Table 5. Only habitats with soft bottom, rocky or gravelly substrates that occur within the shaded areas would be designated as EFH. This option represents 67% of the observed range of this life stage.

Figure 5 Little Skate EFH Juvenile (90%)



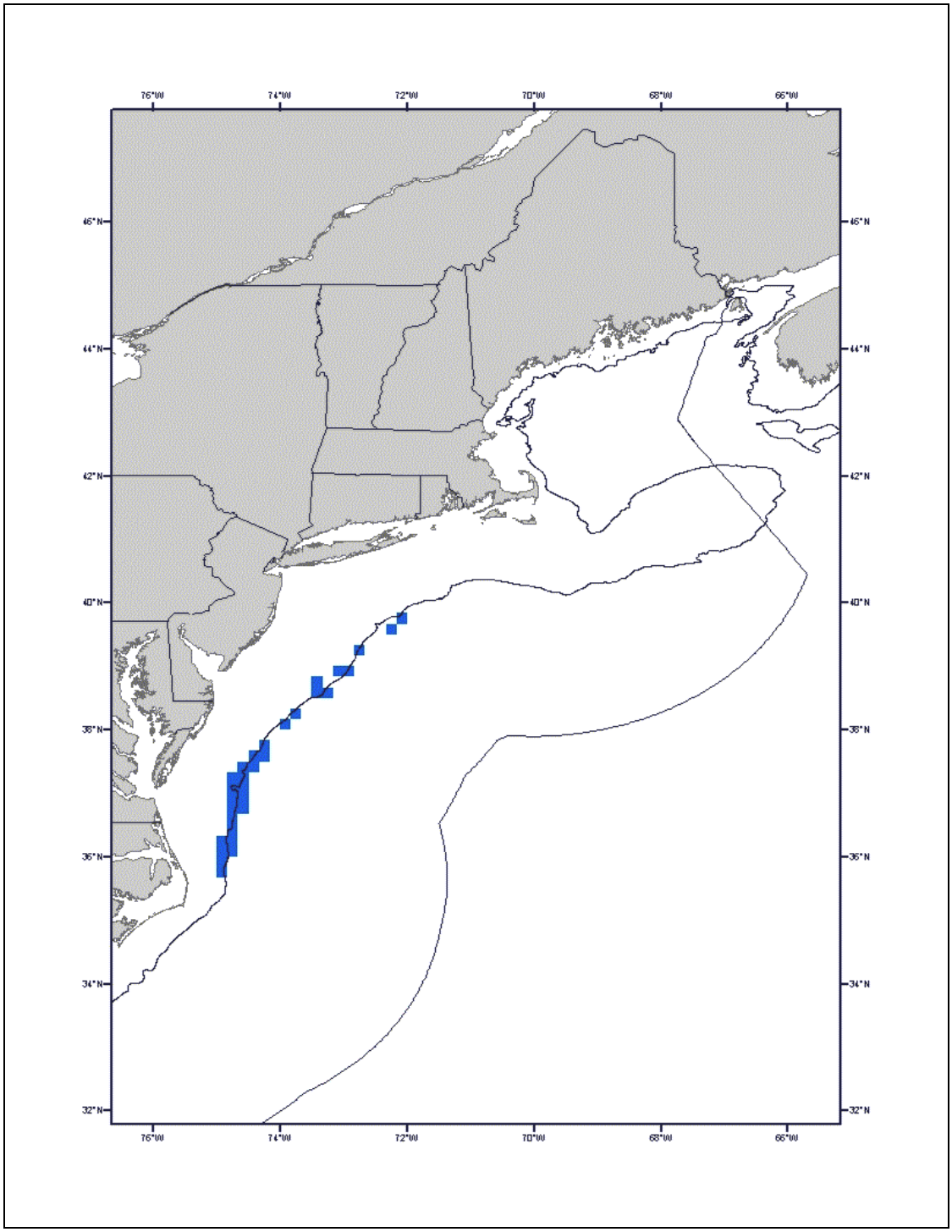
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999) and ELMR data presented in Table 5. Only habitats with sandy, gravelly, or mud substrates that occur within the shaded areas would be designated as EFH. This option represents 58% of the observed range of this life stage.

Figure 6 Little Skate EFH Adult (90%)



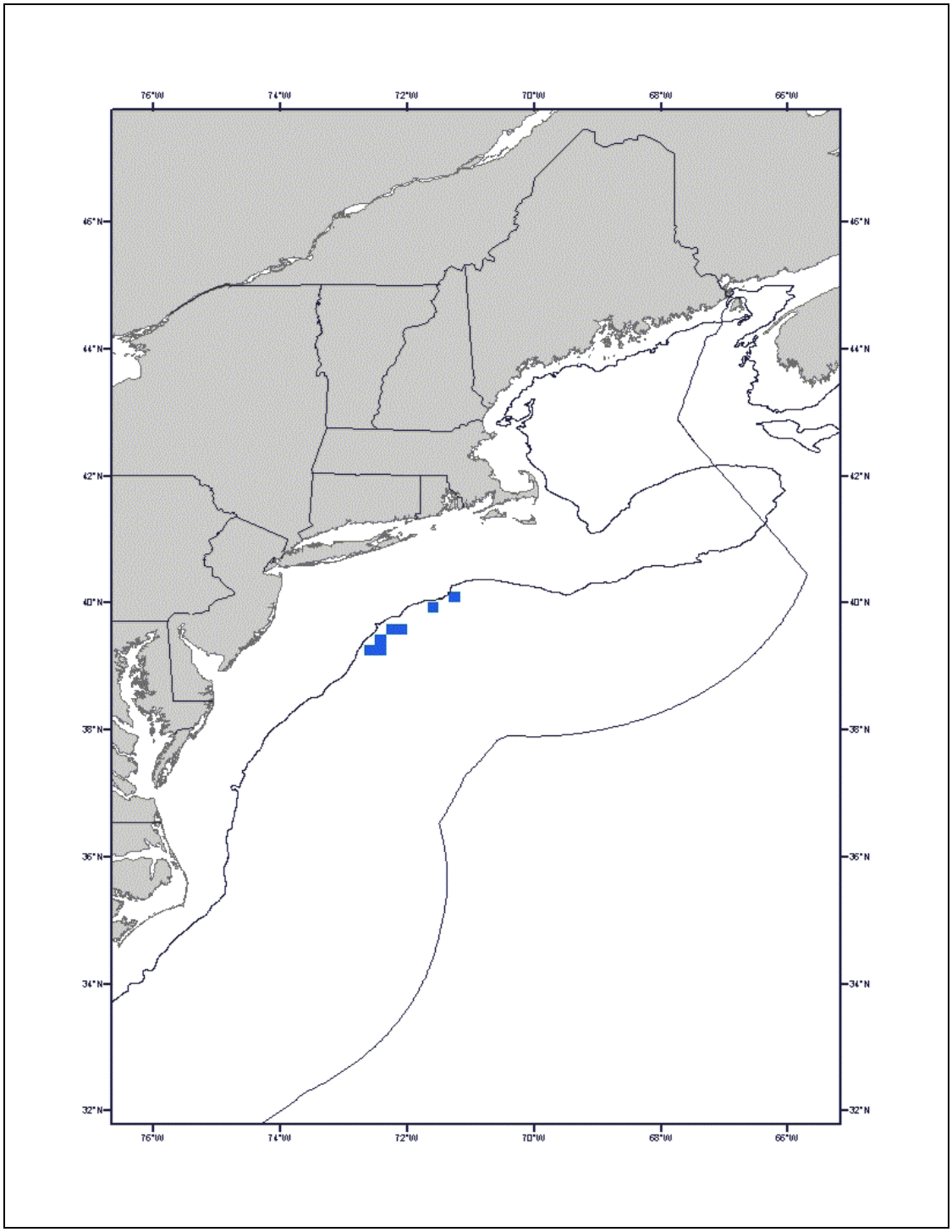
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999) and ELMR data presented in Table 5. Only habitats with sandy, gravelly, or mud substrates that occur within the shaded areas would be designated as EFH. This option represents 57% of the observed range of this life stage.

Figure 7 Rosette Skate EFH Juvenile (90%)



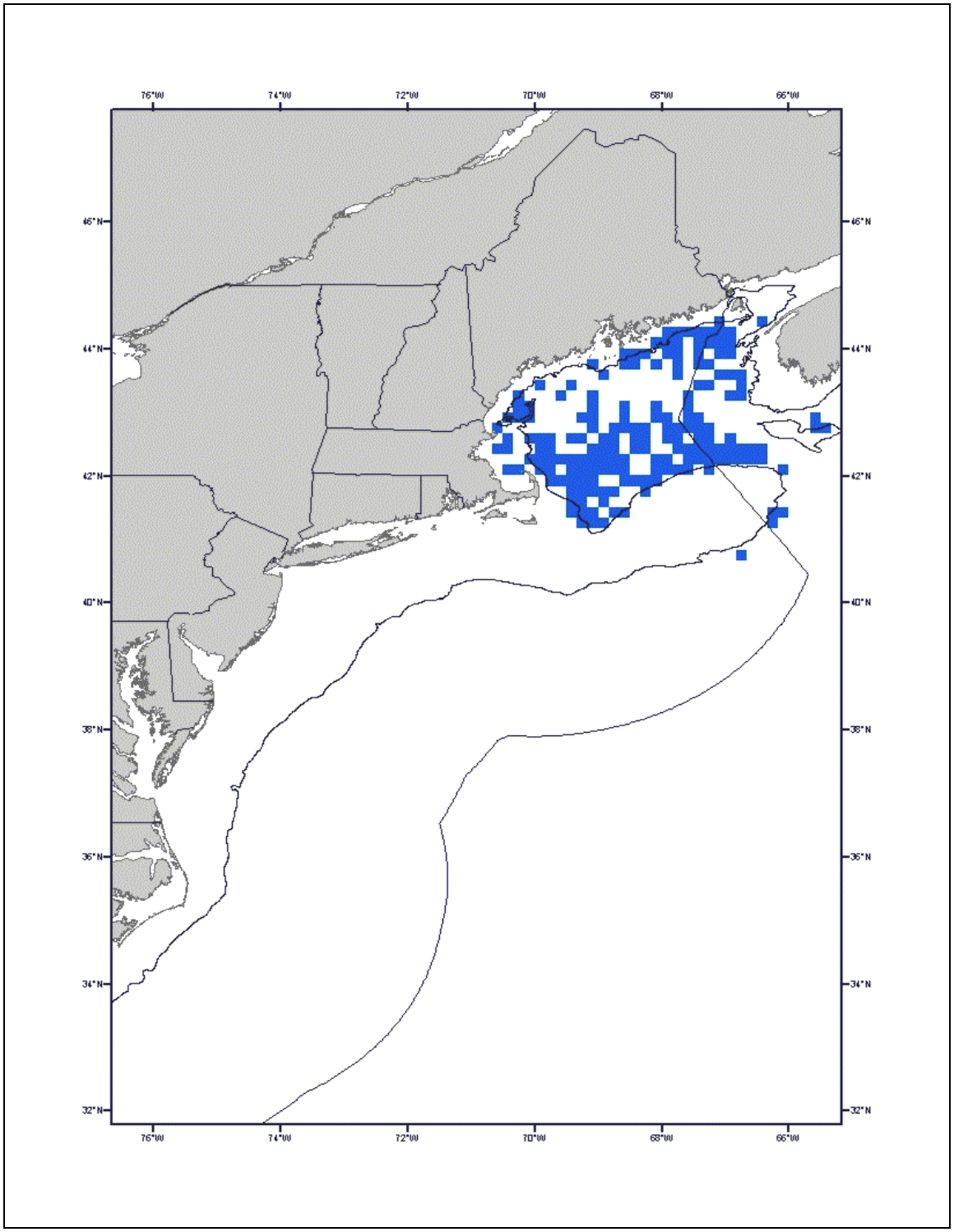
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999). Only habitats with a soft substrate, including sand/mud bottoms, mud with echinoid and ophuiroid fragments, and shell and pteropod ooze that occur within the shaded areas would be designated as EFH. This option represents 63% of the observed range of this life stage.

Figure 8 Rosette Skate EFH Adult (90%)



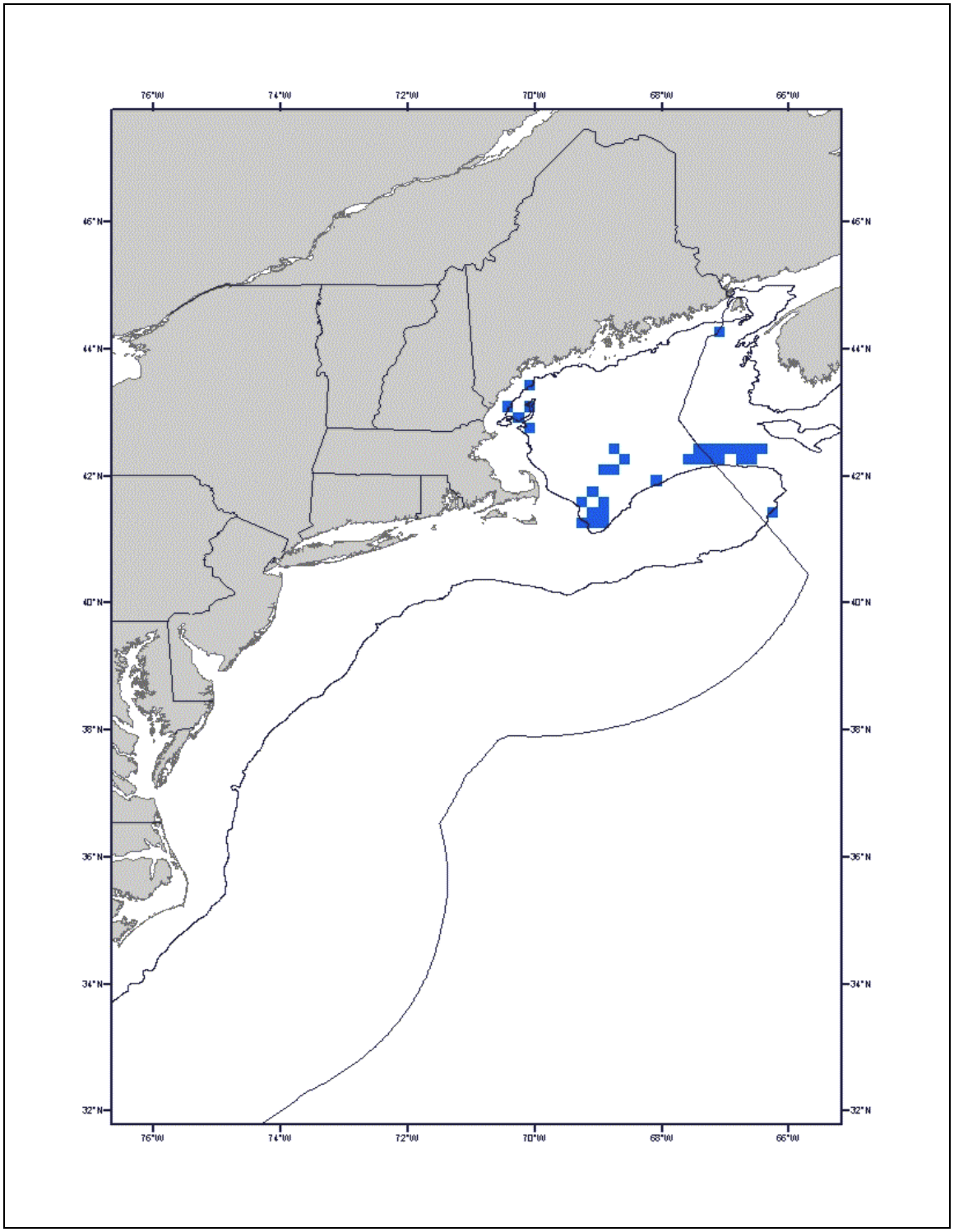
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999). Only habitats with a soft substrate, including sand/mud bottoms, mud with echinoid and ophuiroid fragments, and shell and pteropod ooze that occur within the shaded areas would be designated as EFH. This option represents 70% of the observed range of this life stage.

Figure 9 Smooth Skate EFH Juvenile (90%)



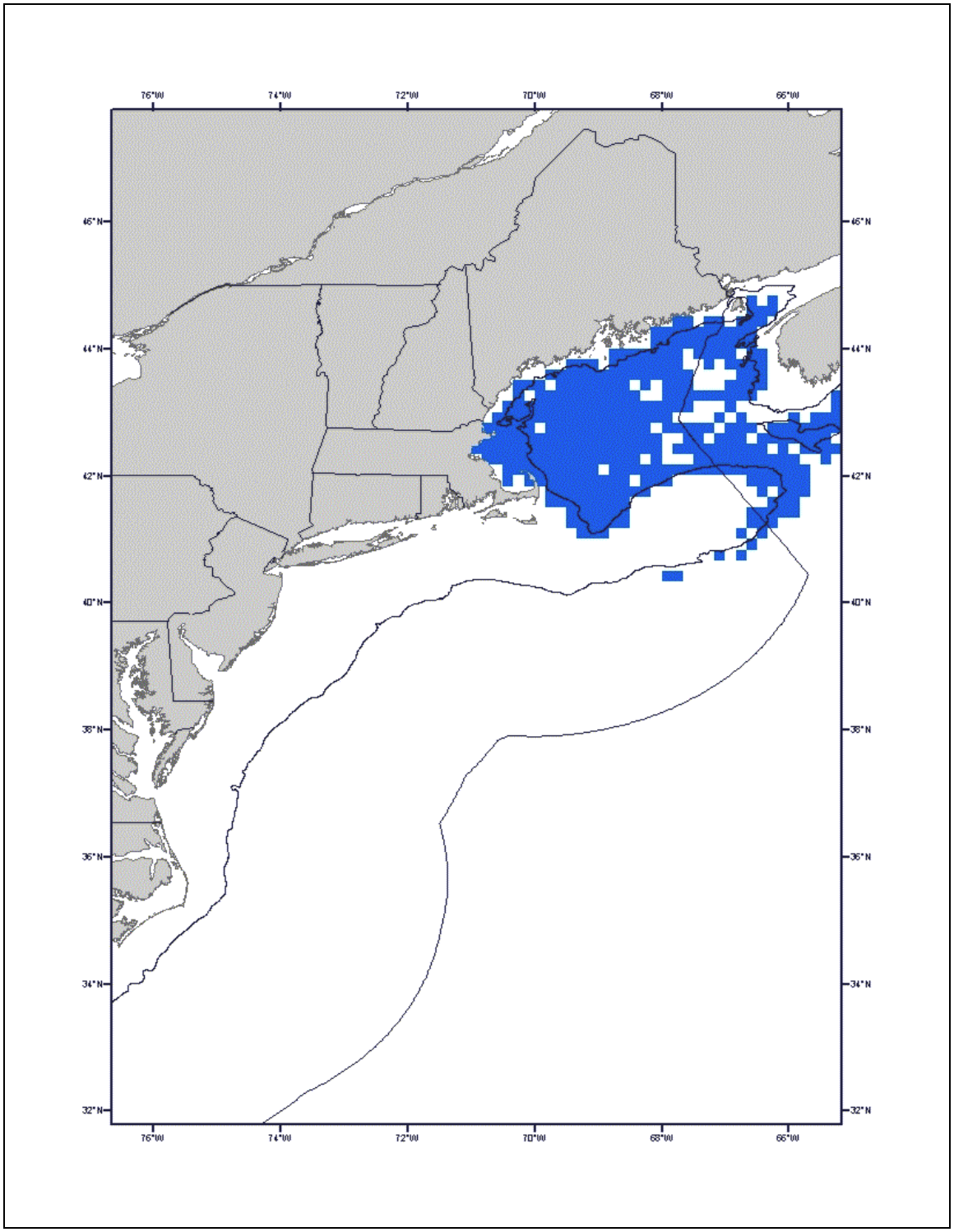
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999). Only habitats with a substrate of soft mud and also on sand, broken shells, gravel and pebbles that occur within the shaded areas would be designated as EFH. This option represents 63% of the observed range of this life stage.

Figure 10 Smooth Skate EFH Adult (90%)



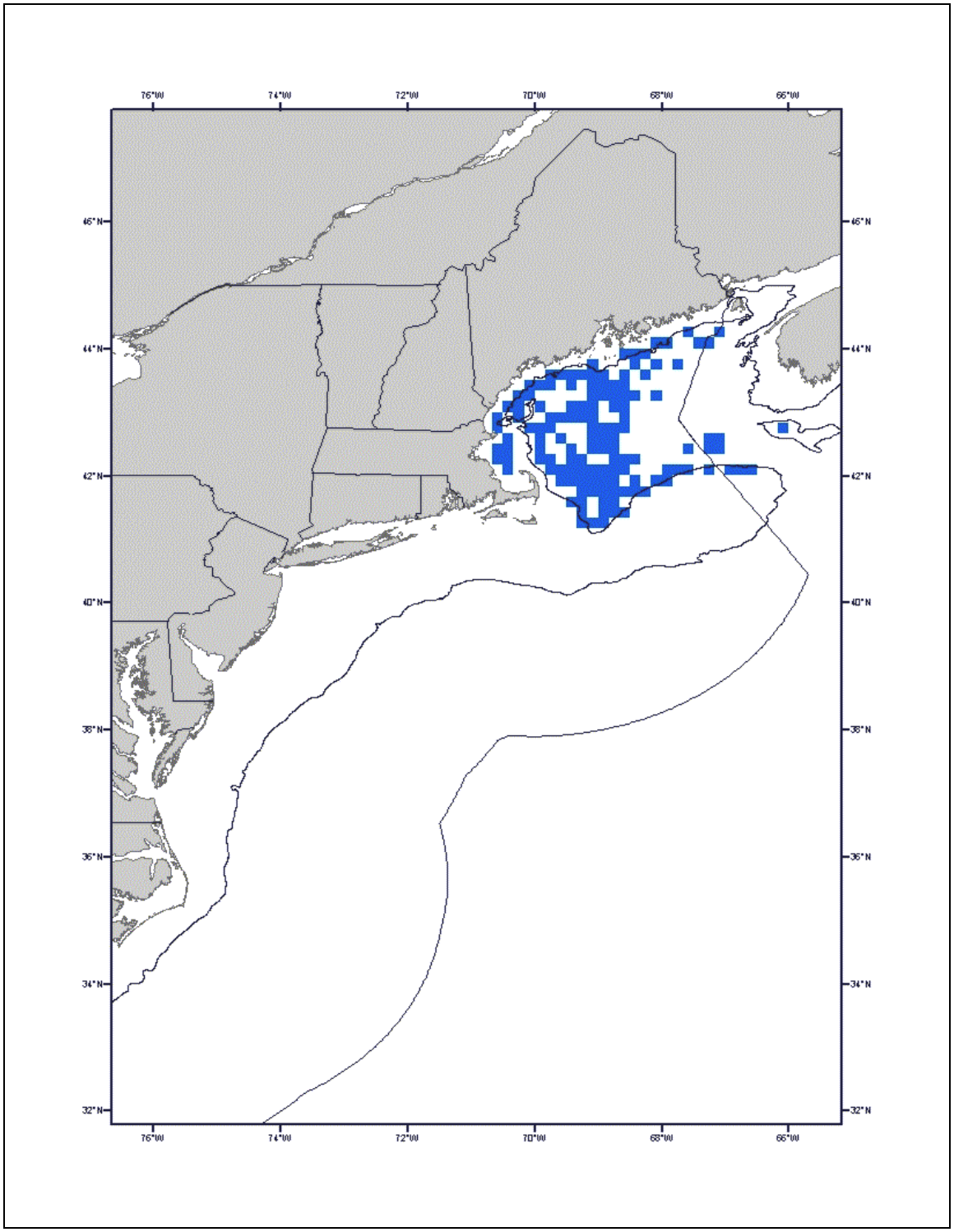
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999). Only habitats with a substrate of soft mud and also on sand, broken shells, gravel and pebbles that occur within the shaded areas would be designated as EFH. This option represents 70% of the observed range of this life stage.

Figure 11 Thorny Skate EFH Juvenile (90%)



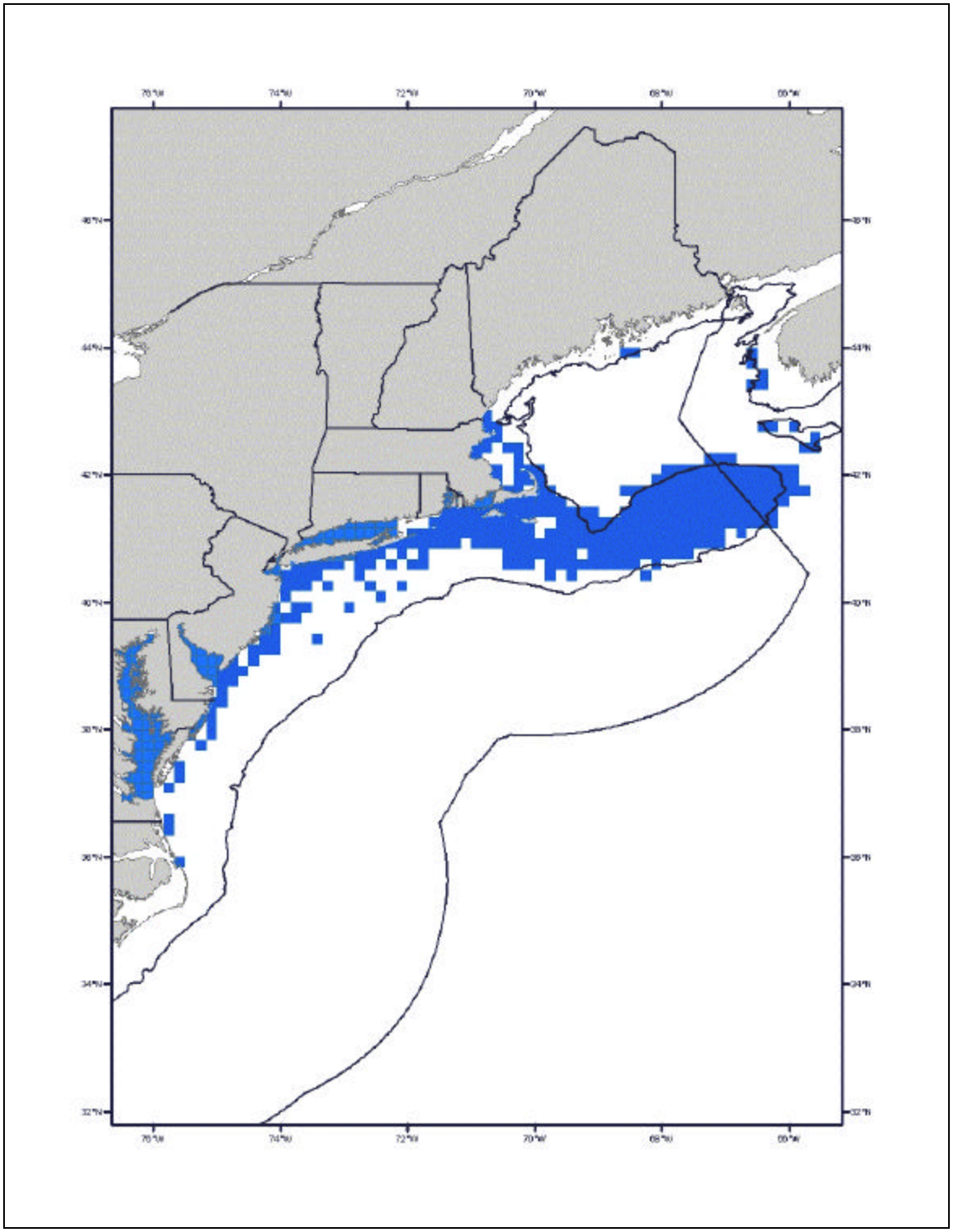
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999). Only habitats with a substrate of sand, gravel, broken shell, pebbles, and soft mud that occur within the shaded areas would be designated as EFH. This option represents 66% of the observed range of this life stage.

Figure 12 Thorny Skate EFH Adult (90%)



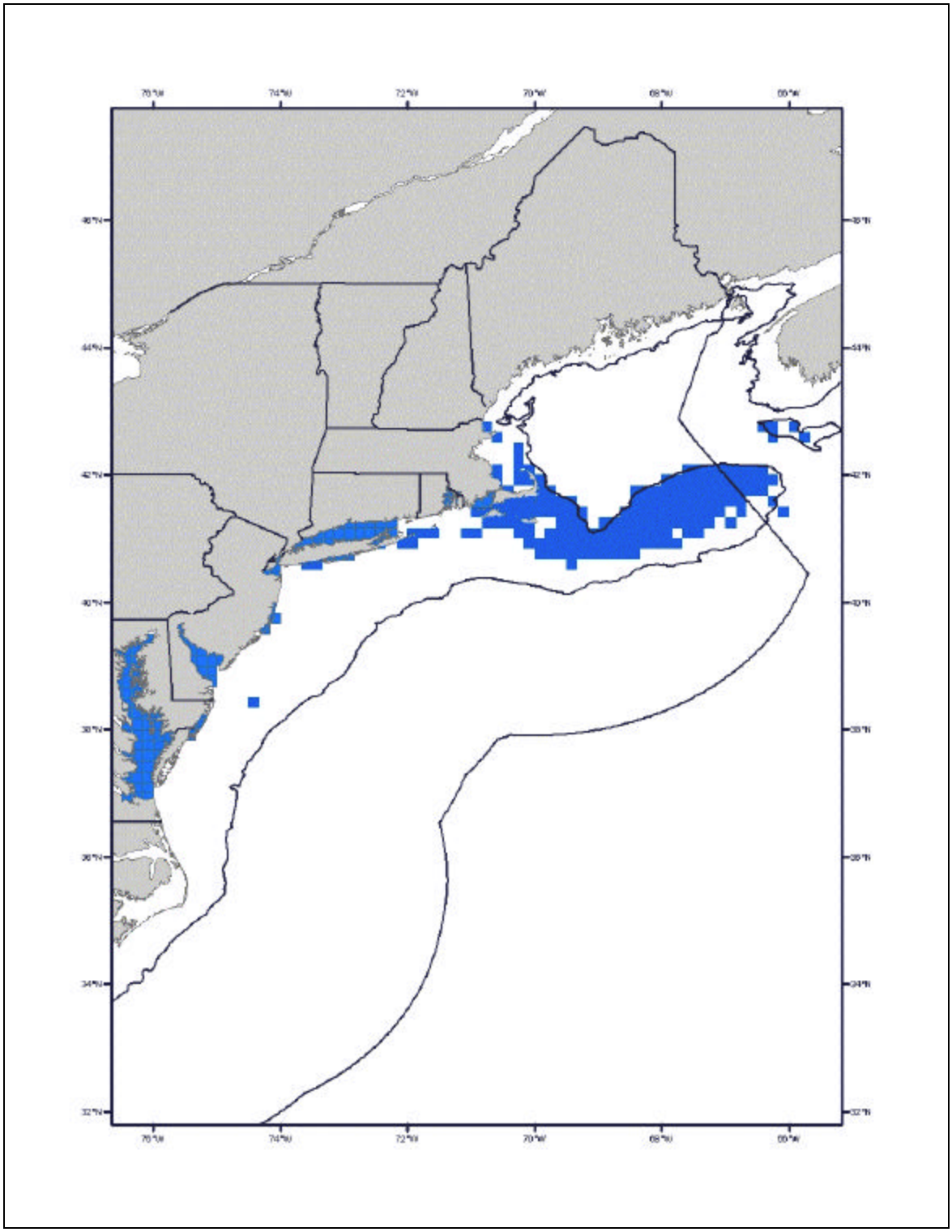
This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999). Only habitats with a substrate of sand, gravel, broken shell, pebbles, and soft mud that occur within the shaded areas would be designated as EFH. This option represents 66% of the observed range of this life stage.

Figure 13 Winter Skate EFH Juvenile (90%)



This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999) and ELMR data presented in Table 5. Only habitats with a substrate of sand and gravel or mud that occur within the shaded areas would be designated as EFH. This option represents 48% of the observed range of this life stage.

Figure 14 Winter Skate EFH Adult (90%)



This map represents an option for the designation of EFH for this life history stage based on the areas of highest relative abundance of this species, based on the NMFS trawl survey (1963 - 1999) and ELMR data presented in Table 5. Only habitats with a substrate of sand and gravel or mud that occur within the shaded areas would be designated as EFH. This option represents 44% of the observed range of this life stage.

4.6.3 Review Process for Changes to the Measures to Minimize Adverse Effects of Skate Fishing on EFH

This FMP establishes a process for reviewing significant changes to the measures to minimize adverse effects of skate fishing on essential fish habitat as implemented by Amendment 13 to the Northeast Multispecies Plan. It has been determined that: 1. The Skate fishery is prosecuted predominantly under the Multispecies Fishery and 2. Skate fishing may adversely affect essential fish habitat. Because these adverse impacts are not minimized directly within the Skate FMP and are instead linked to the measures to minimize adverse impacts from groundfishing on EFH in Amendment 13 to the Northeast Multispecies FMP, it is necessary to establish a review process within the Skate FMP that anticipates and corrects any changes to the Multispecies FMP in the future that would result in the adverse impacts from skate fishing to no longer be minimized to the extent practicable. This approach establishes a concrete link between skates and management measures in the multispecies fishery that impact skates. Significant changes are defined as those that make measures less restrictive and/or substantially change the nature and scope of the measures in question. Changes that will further minimize the adverse effects of skate fishing without substantially changing the nature and scope of the measures will not be subject to the following review.

If the Council develops an action after Amendment 13 that may significantly change or make less restrictive one or more of the measures identified in Amendment 13, the Essential Fish Habitat Technical Team will evaluate the potential impacts of the proposed changes on habitat and develop, if necessary, management measures (or modifications to the proposed action) to mitigate the impacts of the changes on skate EFH. After reviewing the proposed changes to the measure(s), the EFH Technical Team also may recommend no action. If the EFH Technical Team recommends mitigating action, however, the Council will strive to adopt, within the timeline and context of the triggering action, measures to offset the changes to the measure(s). The mitigating measures adopted by the Council may be one or more of the measures recommended by the EFH Technical Team, or other suitable measures developed by the Council or its Habitat Oversight Committee. If the Council fails to act when the EFH Technical Team recommends action and cannot justify a lack of action, the Regional Administrator may implement one or more of the measures recommended by the EFH Technical Team through an agency framework adjustment to the relevant FMP.

The following outline summarizes the process described above.

I. Council initiates action in another FMP that significantly changes and/or makes less restrictive skate EFH protection;

II. EFH Technical Team reviews proposed changes to the measures and assess potential impacts on EFH from the skate fishery;

III. If necessary, EFH Technical Team develops recommendations for Council consideration to address adverse impacts on EFH by the skate fishery within the context of the triggering action (if time permits, the EFH Technical Team will forward its recommendations to the Habitat and Multispecies Oversight Committees for consideration prior to the full Council);

IV. Council finalizes action to change the measure(s), including considerations for protecting essential fish habitat, as necessary; the Council will not make any final decisions on the triggering action until the EFH Technical Team has completed its review of the potential impacts on the ability to minimize adverse effects of skate fishing on EFH and forwarded its recommendations to the Habitat and Multispecies Committees and/or the full Council.

4.6.4 Habitat Areas of Particular Concern

According to the EFH Final Rule (67 FR 2343), EFH that is judged to be particularly important to the long-term productivity of populations of one or more managed species, to be particularly vulnerable to degradation, or to be particularly rare should be identified as a "habitat area of particular concern" (HAPC) to help provide additional focus for conservation efforts. The rule provides four considerations for an HAPC designation:

(1) the importance of the ecological function provided by the habitat;
(2) the extent to which the habitat is sensitive to human-induced environmental degradation;
(3) whether, and to what extent, development activities are, or will be, stressing the habitat type; and,
(4) the rarity of the habitat type.

The EFH Final Rule also specifies that habitats that are particularly vulnerable to fishing activities should be identified for possible designation as habitat areas of particular concern. The intent of the HAPC designation is to identify those areas that are known to be important to species and which are in need of additional levels of protection from adverse impacts (fishing or non-fishing). Designation of habitat areas of particular concern is intended to determine what areas within EFH should receive more of the Council's and NMFS' attention when providing comments on federal and state actions, and in establishing higher standards to protect and/or restore such habitat.

For the purposes of the Council's HAPC designation process, the criteria identified by NMFS in the EFH Final Rule are considered to be defined as follows:

Importance of *Historic* Ecological Function - The area or habitat feature proposed for HAPC designation at one time provided an important ecological function to a currently managed species, but no longer provides that function due to some form of degradation. An important ecological function could include, but is not limited to, protection from predation, increased food supply, appropriate spawning sites, egg beds, etc. The importance of the ecological function should be documented in scientific literature and based on either field studies, laboratory experiments, or a combination of the two.

Importance of *Current* Ecological Function - The area or habitat feature proposed for HAPC designation currently provides an important ecological function to a managed species. An important ecological function could include, but is not limited to, protection from predation, increased food supply, appropriate spawning sites, egg beds, etc. The importance of the ecological function should be documented in scientific literature and based on either field studies, laboratory experiments, or a combination of the two.

Sensitivity to Anthropogenic Stresses – The area or habitat feature proposed for HAPC designation is particularly sensitive (either in absolute terms or relative to other areas and/or habitat features used by the target species) to the adverse effects associated with anthropogenic activities. These activities may be fishing or non-fishing related. The stress or activity must be a recognizable threat to the area of the proposed HAPC.

Extent of Current or Future Development Stresses – The area or habitat feature proposed for HAPC designation faces either an existing and on-going development-related threat or a planned or foreseeable development-related threat. Development-related threats may result from, but are not limited to, activities such as sand mining for beach nourishment, gravel mining for construction or other purposes, the filling of wetlands, salt marsh, or tidal pools, shoreline alteration, channel dredging (but not including routine maintenance dredging), dock construction, marina construction, etc.

Rarity of the Habitat Type – The habitat feature proposed for HAPC designation is considered "rare" either at the scale of the New England region or at the scale of the range of at least one life history stage of one or more Council-managed species. A "rare" habitat feature is that which is considered to occur infrequently, is uncommon, unusual, or highly valued owing to its uniqueness. Keep in mind that the term "rare" usually implies unusual quality and value enhanced by permanent infrequency. We may usually think of rare habitats or features as those that are spatially or temporally very limited in extent, but it could also be applied to a unique combination of common features that occur only in a very few places.

The Council has reviewed the available information on skates and their habitat (see Appendix A in Volume III), and is not proposing any HAPCs for skates at this time. The current information suggests no areas or habitat types identified as EFH for skates that meet any of the considerations specified for an HAPC. If new or additional information on skates and their habitat is obtained by the Council that indicates there are specific areas or habitat types designated as EFH for skates that meet one or more of the above HAPC criteria, the Council would consider designating an HAPC at the appropriate time.

For example, barndoor skate recently has attracted attention as a species subject to significant depletion and possibly being threatened or endangered. The 1999 Stock Assessment Review Committee (SARC) reviewed the available information on barndoor skate and found that there was no evidence that it was in danger of extinction or likely to become endangered within the foreseeable future throughout all or a significant portion of its range (NEFMC 2001). Regarding habitat and potential impacts to habitat, the SARC concluded that the available evidence does not suggest that the habitat or range of barndoor skate has been destroyed, modified, or curtailed to an extent that threatens the existence of the species, and there is no scientific evidence to suggest that barndoor skate has been subject to unusual natural or anthropogenic factors that threaten its continued existence (NEFMC 2001).

The Council has developed a formal process for the solicitation, preparation, review and designation of potential HAPCs based on the best available information. This process is described in the Council's 2000 Habitat Annual Review Report (NEFMC 2000b). This process