Essential Fish Habitat Designation Framework

Atlantic Herring Fishery Management Plan

Framework Adjustment 12

Monkfish Fishery Management Plan

Framework Adjustment 18

Northeast Multispecies Fishery Management Plan

Framework Adjustment 70

Northeast Skate Complex Fishery Management Plan

Framework Adjustment 13

Final

July 7, 2026

Prepared by the

New England Fishery Management Council

In consultation with the

National Marine Fisheries Service

FRAMEWORK ADJUSTMENT 12 TO THE ATLANTIC HERRING FISHERY MANAGEMENT PLAN

FRAMEWORK ADJUSTMENT 18 TO THE MONKFISH FISHERY MANAGEMENT PLAN

FRAMEWORK ADJUSTMENT 70 TO THE NORTHEAST MULTISPECIES FISHERY MANAGEMENT PLAN

FRAMEWORK ADJUSTMENT 13 TO THE NORTHEAST SKATE COMPLEX FISHERY MANAGEMENT PLAN

Proposed Action: Revise Essential Fish Habitat designations for all life history stages of Atlantic herring, monkfish, Atlantic cod, smooth skate, thorny skate, barndoor skate, little skate, winter skate, clearnose skate, and rosette skate.

Responsible Agencies:

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Abstract:

The New England Fishery Management Council, in consultation with NOAA's National Marine Fisheries Service and the Mid-Atlantic Fishery Management Council, has prepared this framework adjustment to multiple Council Fishery Management Plans (FMPs). Through this action, the Council has developed revised Essential Fish Habitat designations for a subset of its managed species.

Document history:

Initial Framework Meeting:	April 15, 2025
Final Framework Meeting:	September 24, 2025
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1.0 EXECUTIVE SUMMARY

The New England Fishery Management Council (NEMFC, Council) prepared this framework adjustment to the Northeast Multispecies, Atlantic Herring, Monkfish, and Skate Complex Fishery Management Plans, which recommends updated Essential Fish Habitat (EFH) designations for Atlantic cod, Atlantic herring, monkfish, little skate, winter skate, barndoor skate, smooth skate, thorny skate, rosette skate, and clearnose skate. EFH designations for these species were previously updated by the Council via Omnibus Habitat Amendment 2 (OHA2), which became effective on April 18, 2018. EFH regulations recommend review of habitat information every five years. The Council completed a comprehensive EFH 5-Year Technical Review in January 2025. This review included development of model-based EFH designation methods, which were used to develop updated maps and text descriptions in this framework. OHA2 EFH designations and EFH 5-Year Review materials are available at https://www.nefmc.org/library/essential-fish-habitat-efh-information.

The framework includes two alternatives, a no action alternative which would continue to use existing EFH designations from OHA2, and an action alternative which updates these designations using recent data and methods. The Council recommends revising EFH designations for all ten species via the action alternative.

This framework also evaluates the effects of fishing with respect to updated EFH designations, building upon the general evaluation included in the EFH 5-Year Technical Review. Considering the entire northeast region and all gears combined, percent disturbance to habitat was around 11% in 2022. Percent disturbance within the various EFH designation areas updated via this action ranges from 4%-21%, indicating varying degrees of spatial overlap between EFH areas and areas with higher intensities of fishing and/or more vulnerable benthic habitats.

EFH designations, while important tools for habitat conservation, are generally administrative and do not require revisions to fishery regulations. No direct impacts are expected to result from the alternatives in this action on managed species, the physical environment, protected species, or human communities. Indirect positive impacts to fishery resources and the physical environment are anticipated to result from using updated EFH designations for development of habitat conservation recommendations. This action does not alter previously designated Habitat Areas of Particular Concern, which are subsets of EFH intended to receive greater conservation focus, or Habitat Management Areas, which have restrictions on gears and methods of fishing in order to minimize the impacts of fishing on EFH.

The EFH designations in this action do not individually or cumulatively have a significant effect on the human environment. Therefore, it has been preliminarily determined that the action qualifies for a categorical exclusion from the need for NEPA review as it is primarily administrative in nature.

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2.4 Acronyms

CFR	Code of Federal Regulations
EcoMon	Ecosystem Monitoring
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
FMP	Fishery management plan
FW	Framework
GARFO	Greater Atlantic Regional Fisheries Office
GB	Georges Bank
GLOBEC	Global Ocean Ecosystem Dynamics
GOM	Gulf of Maine
HAPC	Habitat Area of Particular Concern
HMA	Habitat Management Area
MADMF	Massachusetts Division of Marine Fisheries
MARMAP	Marine Resources Monitoring and Assessment and Prediction
MSA	Magnuson-Stevens Act; Magnuson-Stevens Fishery Conservation and Management Act
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
SNE	Southern New England
USC	United States Code
WOTUS	Waters of the United States

3.0 INTRODUCTION

3.1 MSA EFH REQUIREMENTS

The Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1801-1882 (1976) includes provisions concerning the identification and conservation of Essential Fish Habitat (EFH). The Magnuson-Stevens Act (MSA) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (MSA, 16 U.S.C. § 1802) The regional fishery management councils and National Marine Fisheries Service (NMFS) must describe and identify EFH in fishery management plans (FMPs), minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH.

Descriptions and identification of EFH consist of written summaries (text descriptions), tables, and maps in the FMPs and are developed for individual life history stages (eggs, larvae, juveniles, adults) when sufficient information exists to do so. The EFH regulations provide guidance on pertinent habitat information that, where available, should be included in the EFH text descriptions for each life stage (50 CFR § 600.815(a)(1)):

- Habitats or habitat types determined to be EFH;
- Specific geographic location or extent of habitats described as EFH (e.g., using longitude and latitude, isotherms, isobaths, political boundaries, and major landmarks);
- Patterns of temporal and spatial variation in the distribution of each major life stage to aid in understanding habitat needs;
- Physical, biological, and chemical characteristics of EFH and, if known, how these characteristics influence the use of EFH by the species/life stage and/or control or limit distribution, abundance, reproduction, growth, survival, and productivity of managed species;
- Life history information necessary to understand each species' relationship to, or dependence on, its various habitats;
- Current and historic stock size as it affects occurrence in available habitats

In addition, the EFH regulations provide an approach to organize the information necessary to describe and identify EFH (50 CFR § 600.815(a)(1)(iii)(A)). When designating EFH, the Council should strive to describe and identify EFH information in the FMPs at the highest level possible:

- *Level 1:* Distribution data are available for some or all portions of the geographic range of the species.
- *Level 2:* Habitat-related densities or relative abundance of the species are available.
- *Level 3:* Growth, reproduction, or survival rates within habitats are available.
- *Level 4:* Production rates by habitat are available.

NEFMC EFH text and maps, including all of those revised via this action, rely on level 2 data for most species, although a few NEFMC managed species use distribution data only (level 1). We elaborate on how these habitat information requirements are addressed through the designation methods in Section 3.6 and how this information can be used in EFH consultations in Section 3.7.

Federal agencies that authorize, fund, or undertake actions that may adversely affect EFH must consult with NMFS; for state agencies, an EFH consultation is not required for state actions that would adversely affect EFH. However, in both cases, NMFS must provide conservation recommendations to federal and state agencies regarding actions that would adversely affect EFH. This EFH consultations process is

described in Appendix C. Regional fishery management councils also have the authority to comment on federal or state agency actions that would adversely affect the habitat, including EFH, of managed species.

3.2 Northeast Regional Habitat Assessment

In late 2017, a Steering Committee composed of leadership from the major habitat conservation, restoration, and science organizations in the region, met and agreed to identify ways to improve fish habitat science within the region. They concluded that a Northeast Regional Marine Fish Habitat Assessment was needed to describe and characterize estuarine, coastal, and offshore fish habitat distribution, abundance, and quality in the Northeast. The assessment assembled habitat and species distribution and abundance data in both inshore and offshore regions and included development of species distribution models and a crosswalk of habitat distribution and vulnerability information. The major work of the assessment was completed between 2018-2022 and served as a foundation for the subsequent EFH 5-Year Review and this EFH Framework. Future updates and enhancements to data products are planned for 2026. The results of the assessment are provided in the NRHA Data Explorer: https://nrha.shinyapps.io/dataexplorer/#!/.

3.3 NEFMC EFH 5-Year Review

Federal regulations at 50 CFR 600.815(a)(10) state that the Councils and NMFS should periodically review the EFH provisions of FMPs and revise or amend EFH provisions as warranted based on best available information. Building upon the Northeast Regional Habitat Assessment and working collaboratively with the Mid-Atlantic Fishery Management Council, the Council completed an EFH Review in January 2025 which included the following elements for all managed species:

1. Model-based methods for EFH descriptions and identification,
2. Spatially and temporally explicit summary of fishing activities that may adversely affect EFH using the Fishing Effects model,
3. A report summarizing non-Magnuson-Stevens Act fishing activities in state waters that may adversely affect EFH,
4. A report describing new information about non-fishing activities that may adversely affect EFH,
5. A discussion of approaches to cumulative impacts analysis and opportunities for future work,
6. A summary of existing EFH conservation measures implemented by the Council,
7. Food habits for each managed species by region, time period, and fish size,
8. A summary of currently implemented Habitat Areas of Particular Concern (HAPC) and considerations for future HAPC identification, and
9. A list of research and information needs generated throughout the course of the review.

EFH 5-Year Review materials are available at https://www.nefmc.org/library/essential-fish-habitat-efh-information. The component 1 report was revised during October 2025 to reflect adjustments made to the EFH designations during the development of this framework and MAFMC's EFH Amendment, and is included with this action as Appendix E.

3.4 Problem Statement and Objective for this Action

This action follows directly from the methods developed during the Northeast Regional Habitat Assessment and EFH 5-Year Review.

Problem statement: During the EFH 5-year technical review completed in January 2025, the Council recognized the need to update EFH designations for its managed species based on recent species

distribution and abundance data and species distribution model outputs. The current designations are based on data through approximately 2005 and may not reflect current habitat use by Council-managed species.

The **objective** of this action is to revise EFH text descriptions and maps for all life history stages of Atlantic herring, monkfish, Atlantic cod, smooth skate, thorny skate, barndoor skate, little skate, winter skate, clearnose skate, and rosette skate.

3.5 MANAGEMENT REGIME AND STOCK UNITS

This document was developed in accordance with the MSA. The species for which EFH is being revised via this action are managed via four Fishery Management Plans (FMPs). The management regime for these fisheries is detailed in their respective FMPs available at: https://www.nefmc.org/, and in the comprehensive descriptions of the current regulations as detailed in the Code of Federal Regulations (CFR) at: https://www.fisheries.noaa.gov/content/greater-atlantic-region-regulations. Reports on stock status for these fishery resources can be found at: https://www.fisheries.noaa.gov/national/sustainable-fisheries/status-stocks-reports.

EFH may be described by Councils wherever it occurs within the waters of the U.S. (WOTUS; defined in 33 CFR § 328.3), and in the exclusive economic zone (EEZ; defined in 50 CFR § 600.10). In simple terms, WOTUS generally includes navigable waters like large rivers and lakes, interstate waters as well as wetlands adjacent to those waters, and territorial seas (which end at 3 nautical miles from the coastal states baseline). The EEZ generally extends from the territorial sea up to 200 nautical miles from the coastal states baseline. Therefore, EFH may be designated and described by Councils in WOTUS and out to the edge of the EEZ. The inland extent of EFH is determined by the habitat requirements of the managed fish species. EFH is not designated in international waters, although important fish habitat and adverse effects to it can be addressed in accordance with international agreements between the United States and the foreign nation(s).

Councils can designate EFH wherever it occurs, including in areas where other Councils have management jurisdiction (the inter-council boundaries are described in 50 CFR § 600.105). EFH is designated for the management unit, rather than by stock, where there are multiple stocks within a management unit. In addition, Councils are not constrained to only describing EFH within the current management unit for a specific species in areas of WOTUS or the EEZ, as EFH may occur for the species outside that management unit. Current management units, stock definitions, and both common and scientific names for the Council's managed species are given below.

Table 1. Common and scientific name, management unit, and stocks for New England Council managed species where EFH updates are being considered via this management action.

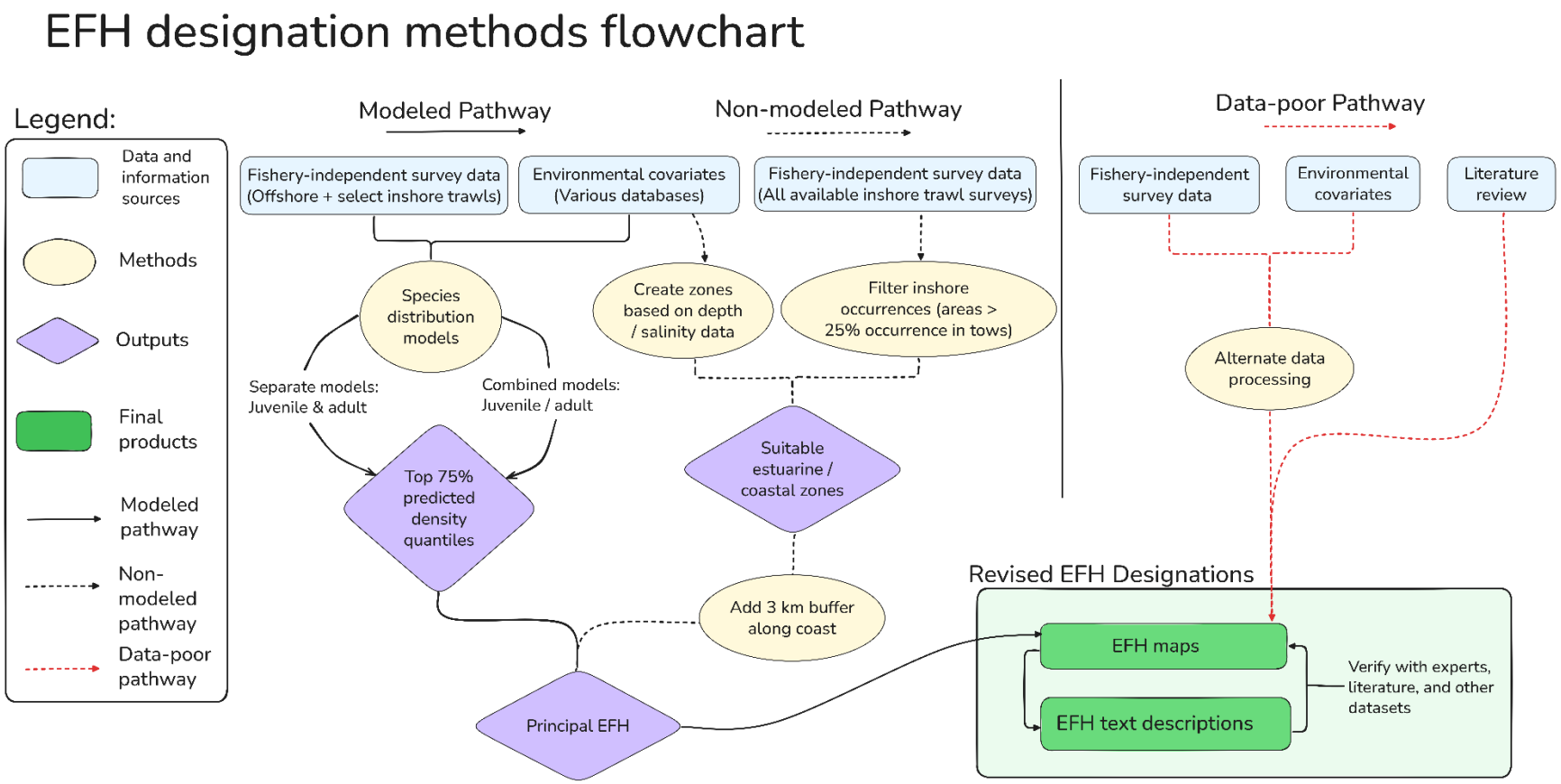
Common Name	Management Unit and Scientific Name
Atlantic cod	The management unit is the multispecies finfish fishery that occurs from Eastern Maine through Southern New England, encompassing all commercial and recreational harvesting sectors in New England and all fish species that factor into a fishery within a trip, from trip to trip and from season to season, except those species managed under other fishery management plans under the Magnuson Stevens Act. It is necessary that each species specifically regulated under this FMP shall be regulated throughout its range. Atlantic cod (*Gadus morhua*) is currently managed as two stocks, Gulf of Maine and Georges Bank. A revision of the stock definitions to four units, Eastern Gulf of Maine, Western Gulf of Maine, Georges Bank, and Southern New England, was proposed by the Council in Amendment 25 to the Northeast Multispecies FMP.

Common Name	Management Unit and Scientific Name
Atlantic herring	The management unit is defined as the Atlantic sea herring resource (*Clupea harengus*) throughout the range of the species within U.S. waters of the northwest Atlantic Ocean from the shoreline to the seaward boundary of the Exclusive Economic Zone (EEZ). The management unit does not include the entire range of the Atlantic herring stock complex, which includes herring in Canadian waters, beyond the range of management under the Council's FMP. Herring are managed as a unit stock in US waters, with annual catch limits distributed among four management areas (Inshore Gulf of Maine 1A, Offshore Gulf of Maine 1B, South Coastal Area 2, and Georges Bank 3).
Monkfish	For monkfish (*Lophius americanus*), its range is the EEZ north of the North Carolina/South Carolina border (Maine through North Carolina). There are two separate management units within that range: the Northern Fishery Management Area (NFMA) and the Southern Fishery Management Area (SFMA). The boundary between the NFMA and the SFMA runs south along the 70° W longitude line from the south-facing shoreline of Cape Cod, MA, to 41° N latitude, then eastward to the U.S.-Canada maritime boundary.
Skate complex (barndoor skate, clearnose skate, little skate, rosette skate, smooth skate, thorny skate, winter skate)	The management unit is the Northeast Region (Maine–North Carolina). The northern and western boundaries of the management unit are the coastline of the continental United States, and the eastern boundary is the Hague Line and the outer edge of the U.S. Exclusive Economic Zone (EEZ). The southern boundary of the management unit is Cape Hatteras, North Carolina (35º 15.3' North Latitude). The species in the skate complex (*Dipturus laevis* - barndoor, *Raja eglanteria* - clearnose, *Leucoraja erinacea* - little, *Leucoraja garmani* - rosette, *Malacoraja senta* - smooth, *Amblyraja radiata* - thorny, *Leucoraja ocellata* - winter) are each managed as unit stocks throughout their ranges.

3.6 SUMMARY OF EFH DESIGNATION METHODS USED IN THIS ACTION

The EFH designation approach employed for this action combines several complementary methods to map the extent of EFH for each species, which are depicted as a flowchart in Figure 1. As previously noted, these methods represent the culmination of several years of work completed via the Northeast Regional Habitat Assessment (2018-2022, with updates ongoing) and the EFH 5-Year Review (2024-2025). A full description of these methods is available in Appendix E, which will be a revised version of the EFH Review Component 1 Report. The model-based portion of the EFH mapping workflow is generally as described in the EFH Review, with some adjustments to data sources used, while the non-modeled estuarine and coastal aspects of the mapping workflow were substantively refined after the review. Methods to develop EFH text descriptions were developed during the EFH 5-Year Review and further refined during preparation of this action.

Figure 1. Flowchart summarizing updated Essential Fish Habitat (EFH) designation methods. With sufficient fish abundance data, designation methods use modeled and non-modeled pathways to update and revise the EFH designations.



For species and lifestages with sufficient abundance data in federal and state fishery-independent surveys, the EFH designation map consists of a modeled component and non-modeled component that are joined into a single footprint for each life stage and species and trimmed to the U.S. Exclusive Economic Zone (EEZ). The resulting joined EFH footprint is defined as the **principal EFH area**, terminology borrowed from the North Pacific Council's 5-Year EFH Review (NPFMC 2023). In the following subsections, we describe the modeled and non-modeled workflows. Generally, the modeled component supports EFH mapping within inshore to offshore areas and relies on federal, regional inshore, and state fishery independent surveys. The non-modeled component refines the inshore areas of the EFH map based on additional regional inshore and state fisheries survey data not included in the species distribution models, paired with depth and salinity data. Table 2, below, lists the various survey and environmental datasets used throughout these parallel processes. All species in this framework have sufficient abundance data for use in both parts of the workflow. For species that are data-poor (e.g., New England Council species: Atlantic salmon, Atlantic wolffish, and deep-sea red crab), EFH designation updates will rely on alternate data processing methods and literature reviews. These data-poor designations will be developed via a future Council action, so the methods are not detailed here.

Modeled pathway

For the modeled component, life stage-specific species distribution models (SDMs) for each managed species were built using abundance data from offshore and select inshore fisheries-independent surveys and using environmental covariates (Table 2). SDMs estimate the habitat "niche" of organisms by relating observed densities (abundance) to the environmental covariates, which can then be used to "predict" species density beyond the survey-sampled locations. To translate these model outputs into mapped EFH areas, we identified the locations (1 km^2 grids) representing the top 75% of model-predicted species density, constrained to each species' occupied habitat[1] area. Additionally, the SDM prediction grid was constrained to conditions representing marine (> 30 ppt) or polyhaline (18-30 ppt) salinity values to match the range of conditions available as model inputs, given that the fishery-independent surveys did not frequently catch fish in salinities fresher than approximately 18 ppt. Therefore, the resulting SDMs are not especially useful for predicting species density in lower salinity habitats. In addition, there are operational depth limits for survey vessels which precludes their use in shallow (< 3 m) waters. The fish abundance data used in the models comes from spring and fall surveys, such that the predictions represent the months of March through May and September through November.

On the seaward extent along the continental shelf / slope interface, the SDMs can be used to estimate species density to depths of approximately 400 m, given the maximum depths sampled in the Northeast Fisheries Science Center (NEFSC) bottom trawl survey. Some Council-managed species occur at or below these depths. The need to include deeper areas within the EFH map was evaluated based on the literature. Table 15 in Appendix B documents maximum continental slope depths reported in the literature. This table also includes slope depths described in OHA2, which were largely based on ranges reported in Moore et al. (2003).

Throughout the development of this action, a recurring point of discussion was the need to be relatively specific about which areas are essential habitat, vs. those areas that are within the range of the species but may be used more occasionally, or where the species and life stage occurs at lower density. Ultimately,

[1] As defined in the EFH Review Component 1 report, "occupied habitat" refers to areas where a species' encounter probability (which can be estimated from model-predicted density) is greater than 5%. For a detailed description, see Laman et al. (2022) and the North Pacific Council's recent 5-Year EFH Review (NPFMC 2023).

the SDM output representing the top 75% of predicted density was selected as the foundation for the EFH maps. The top 95% of model-predicted species density was considered for this purpose but ultimately not used as a foundation for the EFH maps due to concerns that it is too general. Similarly, smaller percentages (e.g., 50% or 25%) were not used for developing EFH maps as they are potentially too specific, and risk leaving areas out of the designation that could be important to the species and life stage, potentially during seasons not represented in the spring and fall survey data. All percentiles are presented in the ancillary products that serve as a companion to the EFH designation maps and text (see Appendix D).

The distinction between juvenile and adult fish was determined based on length at 50% maturity. Some species considered in this action had a large enough sample size of survey data to be able to model juveniles and adults separately, while a single model each for all sizes of fish was used for barndoor, rosette, smooth, and thorny skates.

Non-modeled pathway

For inshore areas, we applied an alternate, non-modeled approach to designate EFH based on suitable environmental conditions combined with fish abundance data. Specifically, we identified estuary and coastal zones based on depth and salinity thresholds (Table 3) and overlaid species occurrence data from additional inshore surveys (Table 2) to identify which zones represented suitable conditions for each species and life stage. Zones with occurrences were added to the EFH map, and additional zones were added to the EFH map only if they matched the environmental conditions of other suitable zones and were directly adjacent to or within the geographic range of the top 75% of model-predicted species density. Once zones with occurrences and suitable habitat conditions in the range of the species were added to the map, we added a 3-km buffer around these estuarine and coastal zones to ensure coverage of habitats that are difficult to sample or prone to shifting (e.g., marsh) and to account for the coarse resolution of the coastline. Finally, these buffered estuarine and coastal zones were joined to the model-based 75% density grid to produce the revised EFH designation footprints, trimmed to the U.S. Exclusive Economic Zone (EEZ). The resulting map based on this 75% threshold is defined as the **principal EFH area**, terminology borrowed from the North Pacific Council's 5-Year EFH Review (NPFMC 2023).

Egg and larval maps

Limited and/or incomplete data are available for egg and larvae life stages. Specifically, the Ecosystem Monitoring Survey (ECOMON) only samples areas that are part of the federal trawl survey, limiting the scope of information on egg and larvae data to that region only. Compiling limited plankton data on areas in state waters, or outside the federal survey area, was not feasible given staff resources during the EFH 5-Year Review and framework development processes. In addition, the data available from ECOMON are patchy even within the survey's sampling range, rarely provided identification for both early life stages (only data for eggs or larvae; recently, only for larvae), and for some species only provided identification of early life stages at the family level (not at species level). Overall, this confounded our ability to delineate EFH for egg and larvae life stages using ichthyoplankton data directly. Given the limited and incomplete nature of the egg and larval data, juvenile and adult EFH maps or map components were used as proxies for egg and larval EFH maps. Generally, combining the juvenile and adult map areas together provides a conservative approach to egg and larval EFH designation. These approaches were validated by consulting experts and literature, and ECOMON egg and/or larval datasets were used to validate maps where available.

For the purposes of creating EFH maps that are used to initiate EFH consultations, combining life stages does not preclude the ability of NOAA Fisheries consultation staff to delve into life stage specific details

for a specific project site, if more detailed data are available. In addition, this does prevent further refinement of maps by life stage in the future, as more refined methods and data permit.

Text descriptions

The EFH text for each species and life stage is intended to align with and complement the EFH map designations. To address the EFH requirements described in Section 3.1, EFH text descriptions were revised to be consistent with the updated map footprints and include the following information where applicable: geographic range of the species (as depicted in the maps); appropriate depth, temperature, and salinity ranges (described below); associated habitat types (substrates such as sands and gravels, submerged aquatic vegetation, etc.); and other life history information relevant to species distributions and habitat (e.g., seasonal migrations, spawning areas). For these revisions, we drew upon best available sources as required by the EFH regulations (50 CFR 600.815(a)(1)(ii)(B)), specifically including the following: survey data and model outputs, peer-reviewed literature including the EFH Source Documents, and consultations with species experts.

For each species and life stage combination, the EFH text references specific depth, temperature, and salinity ranges, which were derived by pooling depth, temperature, and salinity data associated with unique occurrences in offshore and inshore survey tows (Table 2). These ranges do not reflect lethal limits or the full range of conditions each species can inhabit, especially since the underlying surveys cannot exhaustively sample each species. These ranges are compiled in Appendix B (Table 14).

For salinity and temperature ranges, the lower and upper 2.5% of values were trimmed (i.e., retaining the interior 95% quantile) to represent a relatively broad range of values. Full salinity (34-36 ppt) is the upper bound for salinity range, regardless of species, but the lower bounds vary somewhat, and fishery independent surveys are limited in low salinity areas, so there are fewer data to support estimates of the lower bound of the salinity ranges. Temperature varies seasonally and by location. While the spring and fall trawl surveys are expected to reflect the coldest and warmest temperature periods, respectively, using 95% of the temperature range avoids a definition of EFH that is too narrow and does not reflect conditions experienced throughout the year.

For depth, the text includes both a “full” depth range and the range that roughly matches the EFH map based on the 75% model outputs (i.e., depth at which the species is more common). The “full” depth range trims out the upper and lower 0.5% to exclude unrealistic, extreme outliers. The 75% depth range trims the upper and lower 12.5% (i.e., retaining the interior 75% quantile) to highlight the depth range at which the species is more “frequently” found. For the text descriptions, we rounded these values outward (i.e., rounding down for lower bounds and rounding up for upper bounds) to the nearest whole number. We also note that many of the surveys used for these range analyses cannot sample in extremely shallow areas, so the lower bound of the “full” range does not capture intertidal or very shallow habitat use. To address this issue, we followed the approach in OHA2 where we report the minimum depth as 0 meters and explicitly reference the intertidal zone in the text description if species and/or life stages are known to utilize intertidal habitats.

On the seaward extent of the continental shelf / slope interface, there are limits to the maximum depths sampled by the NEFSC bottom trawl surveys. For species with potential deepwater habitat usage, we cross-referenced the text descriptions in OHA2 with the literature to update these continental slope depths where appropriate (see below). Abundance data are somewhat limited for these slope depths, with occurrences more often reported in the literature. We used best professional judgment, combining information from the literature with SDM outputs, to evaluate whether portions of the continental slope below 400 m should be identified as EFH, as follows:

- If the species occurs at slope depths but was described in the literature as being most common or primarily occurring at depths shallower than 400 m, we used the maximum depth derived from

the survey data used in the SDMs (trimming the upper 2.5% of values) as the maximum depth of EFH (i.e., Atlantic cod, rosette skate).

- Absent information about relative abundance in shallower vs. deeper areas of the continental slope, we relied on the SDM outputs. For species where higher density areas (=the top 25% density quantile) runs along the shelf-slope break (i.e., barndoor skate, monkfish), we inferred that deeper areas adjacent to but beyond the domain of the model are likely to harbor relatively high densities of the species and lifestage and thus should be included in the EFH designation. For these species, we based the maximum depth of EFH on values reported in the literature for the Northeast U.S. region, defaulting to the OHA2 / No Action depth limit unless more recent data were available. These depths were added to the text description, noting the geographic extent, and to the EFH map in locations adjacent to the 25% quantile only.
- For species where lower density areas (=the top 50% or 75% quantiles) run along the shelf-slope break (i.e., smooth skate, thorny skate), and decreasing density with increasing depth is indicated, we inferred that deeper areas adjacent to but beyond the domain of the model are likely to be relatively less important to the species as compared to shallower areas of the shelf-slope region, and thus should not be included in the EFH designation. For these species, we limited the EFH map to the 75% quantile of the SDM output, and did not add the slope depths to the text description.

Table 15 in Appendix B compares the maximum depths described in the No Action (OHA2) designation and those reported in the literature. The depths provided in the text indicate the full range of depths that are designated as EFH as well as the depths at which the species is more common.

Table 2. Data sources for modeled and non-modeled components of updated EFH designations.

Data Source	Data type	Modeled component	Non-modeled estuarine / inshore component
GEBCO global gridded bathymetry, ~500m resolution	Bathymetry		X
Estuarine Bathymetric DEM, 30m resolution	Bathymetry		X
NOAA Atlantic Regional Climatology, 1/10 degree	Surface and bottom temperature and salinity		X
Chesapeake Bay Atlas, ~600m resolution	Surface and bottom temperature and salinity		X
Wetland Salinity Maps of Select Estuary Sites in the United States, 2020	Salinity		X
Estuarine salinity zones in US East Coast, Gulf of Mexico, and US West Coast	Salinity zones		X
Marine Ecoregions of North America	Zones with common physiographic, oceanographic, biological characteristics		X
GLORYS 1/12th deg reanalysis (2000-2006)	Surface and bottom temperature and salinity	X	
DOPPIO ~1/16th deg reanalysis (2007-2019)	Surface and bottom temperature, salinity, currents	X	
ADCIRC EC2015 Tidal Database	Tidal current velocities	X	
NREL WPTO wave hindcast	Wave Bottom orbital velocities	X	
NCEI 1-arcsecond Coastal Relief Model	Bathymetry & derived variables Bathymetric Position Index (BPI) and complexity	X	
USGS sediment texture & USSEABED databases	Sediment Grain Size	X	
NEFSC Bottom Trawl	Fish abundance	X	
NEAMAP Bottom Trawl	Fish abundance	X	X
Maine-New Hampshire Inshore Trawl	Fish abundance	X	X
Massachusetts Bottom Trawl	Fish abundance	X	X
Rhode Island Narragansett Bay Trawl	Fish abundance		X
Connecticut Long Island Sound Trawl	Fish abundance	X	X
New Jersey Delaware Bay Juvenile Trawl	Fish abundance		X

Data Source	Data type	Modeled component	Non-modeled estuarine / inshore component
New Jersey Ocean Stock Assessment	Fish abundance		X
Delaware 30ft Bottom Trawl	Fish abundance		X
Delaware Bay Juv. Finfish Trawl	Fish abundance		X
Maryland Bottom Trawl	Fish abundance		X
ChesMMAP	Fish abundance	X	X
VIMS Juvenile Finfish Trawl Survey	Fish abundance		X
North Carolina Nursery Area Juv. Survey (NC120)	Fish abundance		X
North Carolina Pamlico Sound Survey (N195)	Fish abundance		X
SEAMAP-SA Coastal Trawl Survey	Fish abundance		X

Table 3. Estuarine and inshore habitat zone definitions.

		Depths		
		Channel (> 75th percentile depth)	**Mid (2 m – 75th percentile)**	**Shallow (< 2 m)**
Salinities	**Marine (> 30 ppt)**	Marine Channel	Marine Mid	Marine Shallow
	Polyhaline (18-30 ppt)	Polyhaline Channel	Polyhaline Mid	Polyhaline Shallow
	Mixing (0.5-18 ppt)	Mixing Channel	Mixing Mid	Mixing Shallow
	Tidal Fresh (< 0.5 ppt)	Tidal Fresh Channel	Tidal Fresh Mid	Tidal Fresh Shallow

3.7 USE OF EFH DESIGNATIONS IN CONSULTATION

The EFH maps, text, and detailed ancillary information from the species distribution models are intended to be used in combination to support EFH consultation (see Appendix C for details on the consultation process). The model-based EFH designation approach relates multiple different environmental variables to observed fish abundance across space and time to generate predicted species densities. A threshold is applied to the model outputs to determine whether a location is or is not EFH, and consultation should be triggered in any location mapped as EFH that meets the description provided in the text. Within the mapped EFH extent, the full depth range and 95% temperature and salinity ranges represent EFH for the species and life stage. Additional details about seasonality in habitat use as well as preferred conditions such as bottom substrates should also be used to determine whether a proposed activity is likely to impact EFH for a species and life stage, depending on where and when that activity occurs.

One advantage of this updated approach is that, within the EFH area, the species distribution models and underlying abundance and environmental data can provide additional, detailed information for use during EFH consultations. In particular, this ancillary information can help inform which areas within the EFH designation are likely to support the highest densities of each species and life stage. For example, the areas representing the top 50% and top 25% quantiles of density predictions may merit additional attention during the consultation process (maps with color-coded quantiles are provided in Appendix D).

Within the surveys' temporal domain (i.e., spring and fall), monthly density prediction maps can also be used to understand seasonal variability in habitat use, though this also comes with the limitation that predictions will not reflect differences in habitat use during the summer and winter seasons. Similarly, the full depth range and 95% salinity and temperature ranges reflect the range of conditions that may be found within designated EFH, and EFH conservation recommendations should be developed for any habitats meeting these conditions. The narrower 75% depth range provided in the text as well as the narrower salinity and temperature ranges provided in Table 14 in Appendix B indicate conditions under which higher species densities are predicted.

Overall, the updated EFH designations are intended to be relatively broad to capture many of the areas used by the species and serve as an entry point for EFH consultation. Additional detailed information can be used to focus attention and conservation on relatively more important areas, at the discretion of consultation staff.

4.0 ALTERNATIVES UNDER CONSIDERATION

4.1 NO ACTION EFH DESIGNATIONS

Under the No Action alternative, no changes would be made to the description and identification of EFH for all FMPs and managed species.

The No Action EFH designations were developed via OHA2 and implemented in April 2018. See Appendix A: No Action EFH Designations for the current text and maps that comprise this alternative. The methods for developing the No Action designations differ from the methods used for this action (see OHA2 Volume 2[2] and OHA2 Appendix A[3]). The approach used to develop the No Action EFH designation maps is summarized in the table below.

Table 4. Summary of EFH designation approach used in Omnibus EFH Amendment 2. Generally, survey data were summarized based on ten-minute squares (TMS) of latitude and longitude.

Species	Egg	Larval	Juvenile	Adult
Atlantic cod	Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (90%) + abundance of **eggs** in 1978-1987 MARMAP surveys (90%) + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **eggs** were identified as 'common' or 'abundant'.	Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (90%) + abundance of **larvae** in 1978-1987 MARMAP surveys (90%) + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **larvae** were identified as 'common' or 'abundant'.	Abundance of **juveniles** in spring and fall bottom trawl surveys (90%) + adjacent areas with suitable depth and temperature conditions + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **juveniles** were identified as 'common' or 'abundant'.	Abundance of **adults** in spring and fall bottom trawl surveys (90%) + adjacent areas with suitable depth and temperature conditions + TMS where **adults** occurred in at least 10% of inshore survey tows + estuaries and embayments where **adults** were identified as 'common' or 'abundant'.
Atlantic herring	Egg bed locations from current and historical observations plus abundance of larvae <=10 mm between 1971-2013.	Abundance of **larvae** during 1978-1987 MARMAP surveys (90%) + estuaries and embayments where **larvae** were identified as 'common' or 'abundant'.	Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (75%) + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **juveniles** were identified as 'common' or 'abundant' + unsurveyed TMS identified as habitat by the Council.	Abundance of **adults** in spring and fall bottom trawl surveys (75%) + TMS where **adults** occurred in at least 10% of inshore survey tows + estuaries and embayments where **adults** were identified as 'common' or 'abundant' + unsurveyed TMS identified as habitat by the Council.

[2] Available at https://d23h0vhsm26o6d.cloudfront.net/OA2-FEIS_Vol_2_FINAL_171025.pdf

[3] Available at https://d23h0vhsm26o6d.cloudfront.net/Appendix_A_EFH_Designation_Methods_v2.pdf.

Species	Egg	Larval	Juvenile	Adult
Monkfish	Abundance of **adults** in 1968-2005 spring and fall bottom trawl surveys (100%) + abundance of **larvae** in 1978-1987 MARMAP surveys (100%) + TMS where **adults** occurred in at least 10% of inshore survey tows + depths of 1000-1500 m on the continental slope.		Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (75%) + adjacent areas with suitable depth and temperature conditions + depths to 1000 m on the continental slope.	Abundance of **adults** in 1968-2005 spring and fall bottom trawl surveys (75%) + adjacent areas with suitable depth and temperature conditions + depths to 1000 m on the continental slope.
Barndoor skate	*No designation*	*No designation*	Abundance of **juveniles** and **adults** combined in 1968-2005 spring and fall bottom trawl surveys (90%) + adjacent areas with suitable depth and temperature conditions + continental slope to 750 m.	
Clearnose skate	*No designation*	*No designation*	Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (75%) + adjacent areas with suitable depth and temperature conditions + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **juveniles** were identified as 'common' or 'abundant'.	Abundance of **adults** in 1968-2005 spring and fall bottom trawl surveys (75%) + adjacent areas with suitable depth and temperature conditions + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **adults** were identified as 'common' or 'abundant'.
Little skate	*No designation*	*No designation*	Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (75%) + adjacent areas with suitable depth and temperature conditions + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **juveniles** were identified as 'common' or 'abundant'.	Abundance of **adults** in 1968-2005 spring and fall bottom trawl surveys (75%) + adjacent areas with suitable depth and temperature conditions + TMS where **adults** occurred in at least 10% of inshore survey tows + estuaries and embayments where **adults** were identified as 'common' or 'abundant'.
Rosette skate	*No designation*	*No designation*	Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (75%) + adjacent areas with suitable depth and temperature conditions (few adults were caught in surveys during this time period)	

Species	**Egg**	**Larval**	**Juvenile**	**Adult**
Smooth skate	*No designation*	*No designation*	Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (90%) + adjacent areas with suitable depth and temperature conditions + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **juveniles** were identified as 'common' or 'abundant' + continental slope to 400 m.	Abundance of **adults** in 1968-2005 spring and fall bottom trawl surveys (90%) + adjacent areas with suitable depth and temperature conditions + TMS where **adults** occurred in at least 10% of inshore survey tows + estuaries and embayments where **adults** were identified as 'common' or 'abundant' + continental slope to 400 m.
Thorny skate	*No designation*	*No designation*	Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (75%) + adjacent areas with suitable depth and temperature conditions + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **juveniles** were identified as 'common' or 'abundant' + continental slope to 900 m.	Abundance of **adults** in 1968-2005 spring and fall bottom trawl surveys (90%) + adjacent areas with suitable depth and temperature conditions + TMS where **adults** occurred in at least 10% of inshore survey tows + estuaries and embayments where **adults** were identified as 'common' or 'abundant' + continental slope to 900 m.
Winter skate	*No designation*	*No designation*	Abundance of **juveniles** in 1968-2005 spring and fall bottom trawl surveys (90%) + adjacent areas with suitable depth and temperature conditions + TMS where **juveniles** occurred in at least 10% of inshore survey tows + estuaries and embayments where **juveniles** were identified as 'common' or 'abundant'.	Abundance of **adults** in 1968-2005 spring and fall bottom trawl surveys (90%) + adjacent areas with suitable depth and temperature conditions + TMS where **adults** occurred in at least 10% of inshore survey tows + estuaries and embayments where **adults** were identified as 'common' or 'abundant'.

4.2 Updated EFH Designations (Preferred Alternative)

Under the Updated EFH Designation alternative, description and identification of EFH for all FMPs and managed species would be updated as described in the following sections. As noted in Section 3.6, we generally applied the model-based approach to mapping EFH separately for both juveniles and adults when there was sufficient data to do so, which was then combined with a non-modeled inshore map footprint based on suitable estuarine and coastal zones and fish abundance data. For four skate species there were insufficient data to model juveniles and adults separately (barndoor, rosette, smooth, and thorny). Juvenile, adult, or combined model outputs were used as proxies for egg and larval EFH maps.

These EFH designation approaches, including egg and larval proxy sources, are summarized by species in the table below. Additional model outputs that are not formally part of these designations, but which can be considered during Council activities and NOAA's EFH consultations, are provided in Appendix B.

Rationale: These updated methods and the resulting designation maps and text use a more recent and shorter time series of data as compared to the designations under No Action and therefore better reflect current patterns of distribution. While the No Action designations include depth and temperature information in addition to relative abundance data, the species distribution models used in the updated designations include additional environmental covariates beyond depth and temperature to better explain patterns of habitat use. These include salinity, tidal current velocities, bottom orbital velocities, bathymetric position index, topographic complexity, sediment grain size, and sediment mobility (see Appendix E). Further, model-based approaches improve our ability to estimate habitat use in areas where fish surveys are not conducted as compared to prior data processing techniques.

In addition, the species distribution models directly integrate some state and regional surveys, including major surveys in the New England region (Maine-New Hampshire Trawl, Massachusetts Trawl, Northeast Area Monitoring and Assessment Program), rather than simply appending these areas to the offshore designation area as was done with the No Action maps. Finally, the estuarine and inshore methods use the highest spatial resolution data available to map zones within estuaries based on their depth and salinity, rather than identifying entire estuaries as EFH, including lower salinity mixing or tidal fresh that are not suitable habitat for some species.

Table 5. Summary of map approaches to life stage-specific EFH designation updates.

Species	Egg	Larval	Juvenile	Adult
Atlantic herring	Adult fall distribution	Union of juvenile and adult maps	Model-based	Model-based
Atlantic cod	Union of juvenile and adult maps		Model-based	Model-based
Monkfish	Union of juvenile and adult maps		Model-based	Model-based
Barndoor skate	Combined juvenile/adult map	*No designation*	Combined model-based	
Clearnose skate	Adult map	*No designation*	Model-based	Model-based
Little skate	Adult map	*No designation*	Model-based	Model-based
Rosette skate	Combined juvenile/adult map	*No designation*	Combined model-based	
Smooth skate	Combined juvenile/adult map	*No designation*	Combined model-based	
Thorny skate	Combined juvenile/adult map	*No designation*	Combined model-based	
Winter skate	Adult map	*No designation*	Model-based	Model-based

4.2.1 Atlantic cod

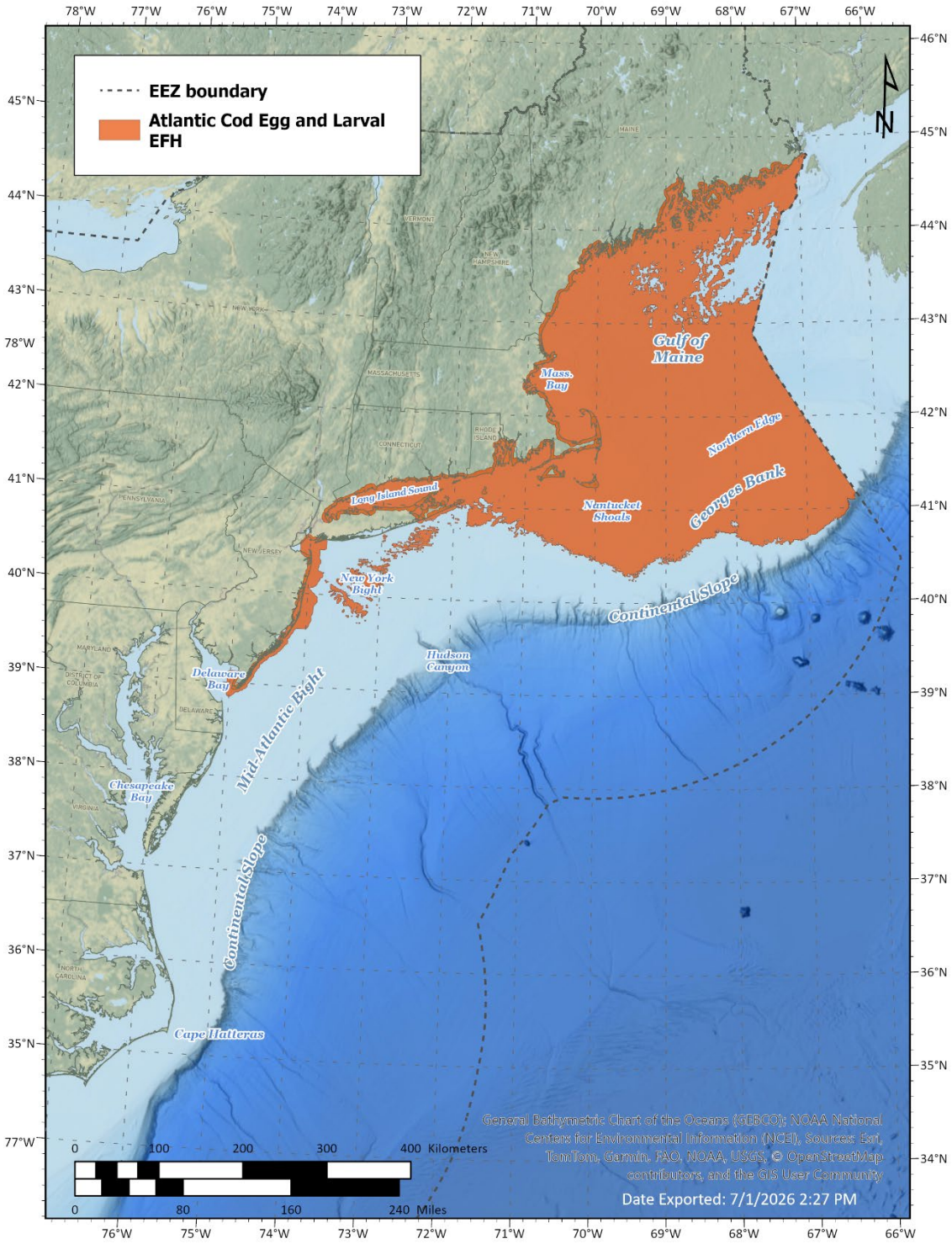
Essential fish habitat for Atlantic cod (*Gadus morhua*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

Eggs and Larvae: Essential fish habitat (EFH) for cod eggs and larvae is based off the distribution of juveniles and adults as a proxy and includes pelagic habitats in the Gulf of Maine, on Georges Bank, and in the Mid-Atlantic region. Atlantic cod eggs are buoyant and may be transported away from seasonal spawning grounds prior to hatching. Incubation time ranges between 1-3 weeks but is temperature-dependent and thus varies seasonally. See adult designation for description of spawning grounds. After hatching, cod larvae are pelagic planktivores that undergo diel vertical migrations and thus may be transported away from spawning grounds. Larvae transition to benthic life as they grow (at ~3-5 cm TL), and this settlement time varies between spawning groups due to seasonal and regional variation in temperature (e.g., ~90 days for spring spawners vs. ~150 days for winter spawners in the Gulf of Maine). Larval distributions are broadly consistent with the known major spawning grounds.

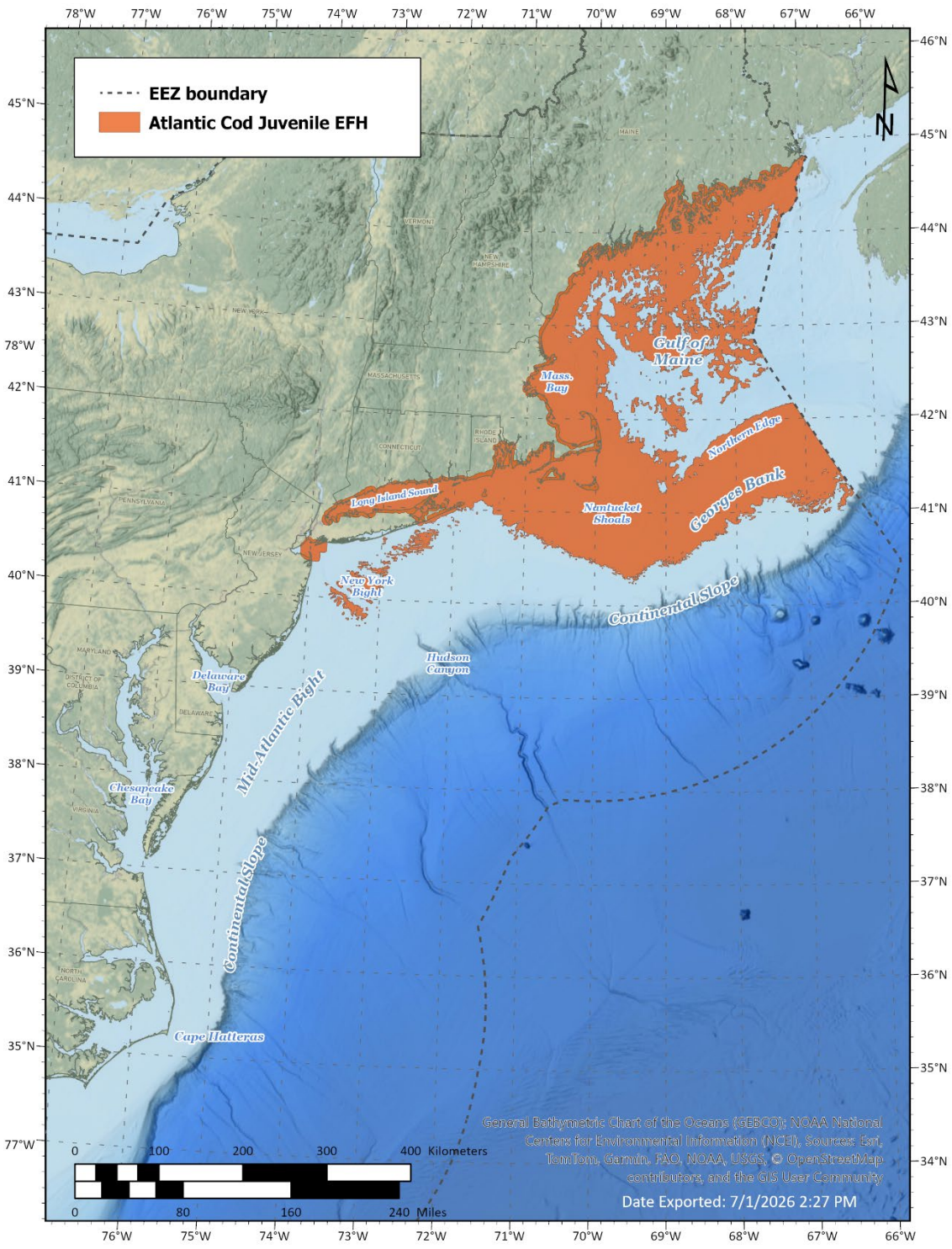
Juveniles: Essential fish habitat (EFH) for juvenile cod (TL < 35 cm) consists of the principal habitat area and includes intertidal and sub-tidal benthic habitats in the Gulf of Maine, on Georges Bank, and nearshore areas in Southern New England off the coast of Rhode Island and south of Cape Cod. Within the principal habitat area, juvenile EFH ranges from intertidal areas out to 201 meters depth, but juveniles most commonly occur between 14-100 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-14°C and polyhaline and marine waters between 26-35 ppt (Appendix B, Table 14). Recently settled juveniles appear to prefer depths < 30 meters and temperatures < 9°C, especially in the range of 5.6-6.9°C. Structurally complex habitats, including eelgrass, mixed sand and gravel, and rocky habitats (gravel pavements, cobble, and boulder) with and without attached macroalgae and emergent epifauna, are EFH for juvenile cod. In inshore waters, young-of-the-year juveniles prefer gravel and cobble habitats and eelgrass beds after settlement, but in the absence of predators also utilize adjacent un-vegetated sandy habitats for feeding. Survival rates for young-of-the-year cod are higher in more structured rocky habitats than in flat sand or eelgrass; growth rates are higher in eelgrass. Older juveniles move into deeper water and are associated with gravel, cobble, and boulder habitats, particularly those with attached organisms. Young-of-the-year juveniles on Georges Bank prefer gravel substrates and have also been observed along the small boulders and cobble margins of rocky reefs in the Gulf of Maine.

Adults: Essential fish habitat (EFH) for adult cod (TL ≥ 35 cm) consists of the principal habitat area and includes sub-tidal benthic habitats in the Gulf of Maine, on Georges Bank, and nearshore areas in Southern New England off the coast of Rhode Island. Within the principal habitat area, adult EFH ranges from 9-221 meters depth, but adults most commonly occur between 37-177 meters depth (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 3-13° and marine waters between 31-36 ppt (Appendix B, Table 14). Like recently settled juveniles, adults appear to prefer temperatures in the range of 5.6-6.9°C. Structurally complex hard bottom habitats composed of gravel, cobble, and boulder substrates with and without emergent epifauna and macroalgae are EFH for adult cod. Adult cod are also found on sandy substrates and frequent deeper slopes of ledges along shore. Studies have noted four primary spawning areas in the western Gulf of Maine, along the Northern Edge of Georges Bank, west of the Great South Channel and on Nantucket Shoals, and southwest of Cape Cod on Cox Ledge. The exact timing of seasonal spawning activity varies among these locations. South of Cape Cod, spawning occurs in nearshore areas and on the continental shelf, usually in depths less than 70 meters.

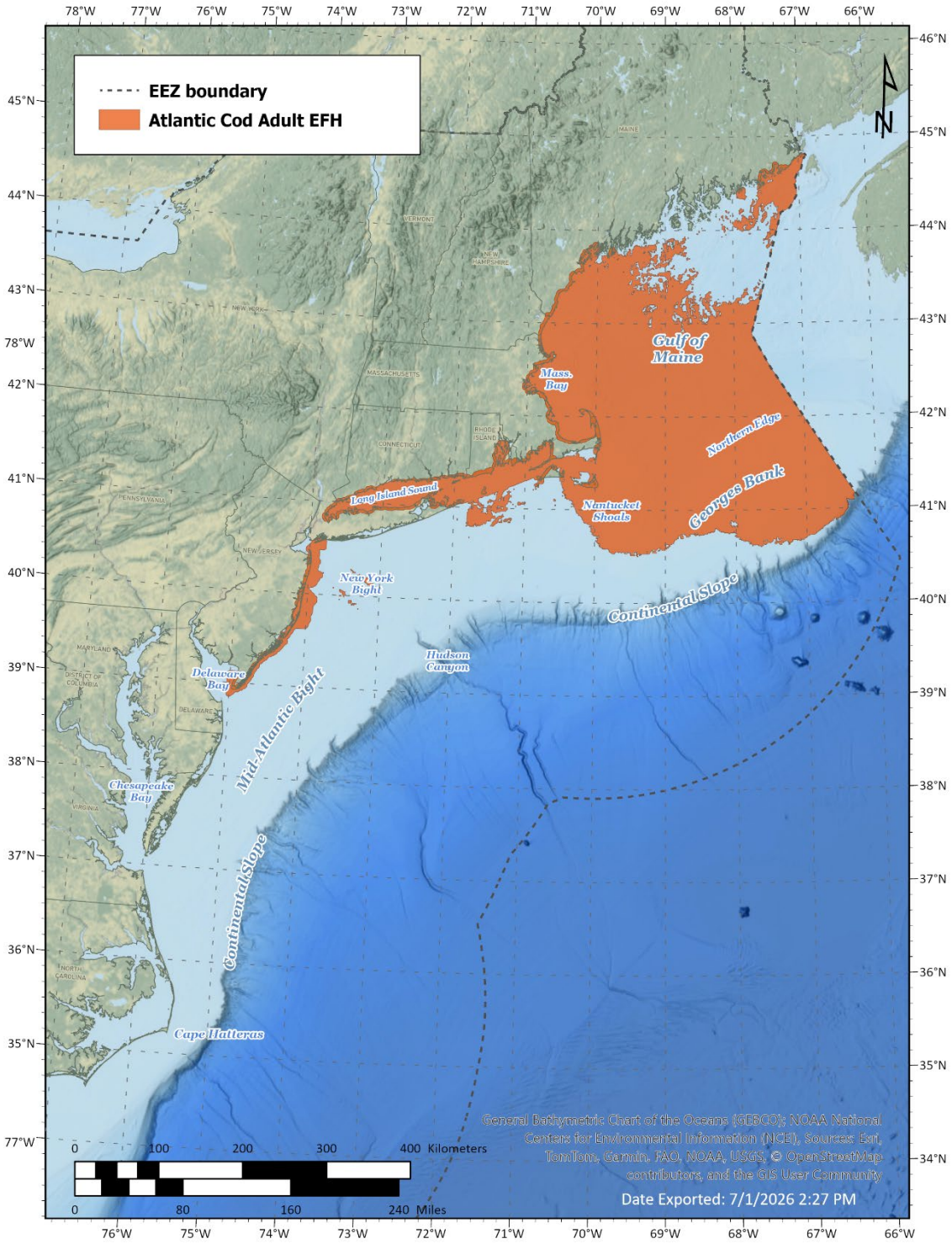
Map 1. Atlantic cod egg and larval EFH.



Map 2. Atlantic cod juvenile EFH.



Map 3. Atlantic cod adult EFH.



4.2.2 Atlantic herring

Essential fish habitat for Atlantic herring (*Clupea harengus*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

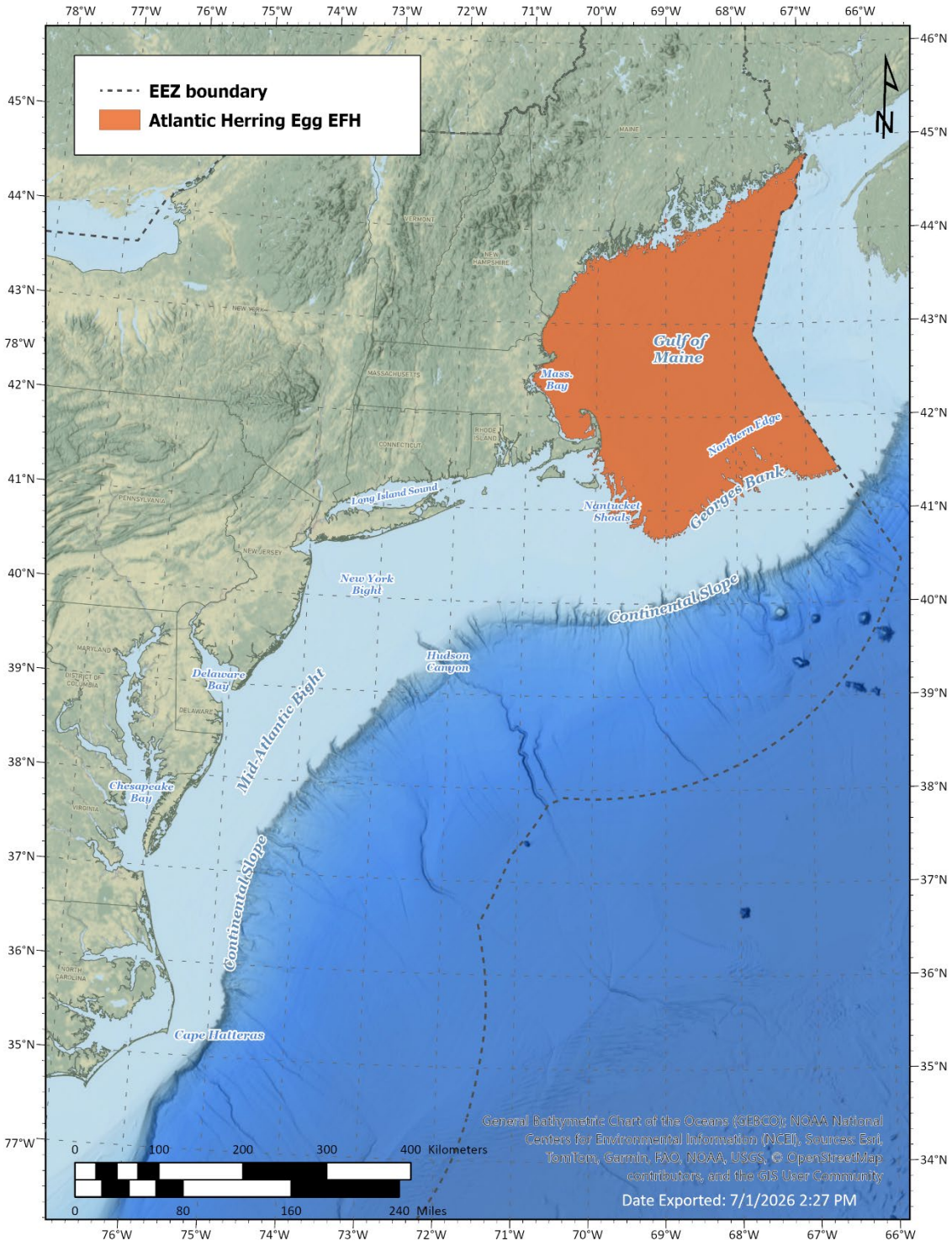
Eggs: Essential fish habitat (EFH) for herring eggs includes inshore and offshore benthic habitats in the Gulf of Maine and on Georges Bank in depths of 5 – 110 meters, but particularly within depths of 20-50 meters. Eggs adhere to the bottom, forming egg "beds" that may be many layers deep. Given that herring eggs are demersal and adhesive, the distribution of fall-spawning adult herring is used as a proxy for egg EFH. Egg habitat often includes areas with strong bottom currents and a variety of substrates such as coarse sand, pebbles, cobbles, boulders and/or macroalgae, but not muddy bottoms.

Larvae: Essential fish habitat (EFH) for herring larvae is based off the combined distribution of juveniles and adults as a proxy and includes inshore and offshore pelagic habitats in the Gulf of Maine, on Georges Bank, and in the upper Mid-Atlantic Bight. Atlantic herring have a very long larval stage, lasting 4-8 months, and are transported long distances to inshore and estuarine waters where they metamorphose into early-stage juveniles ("brit") in the spring.

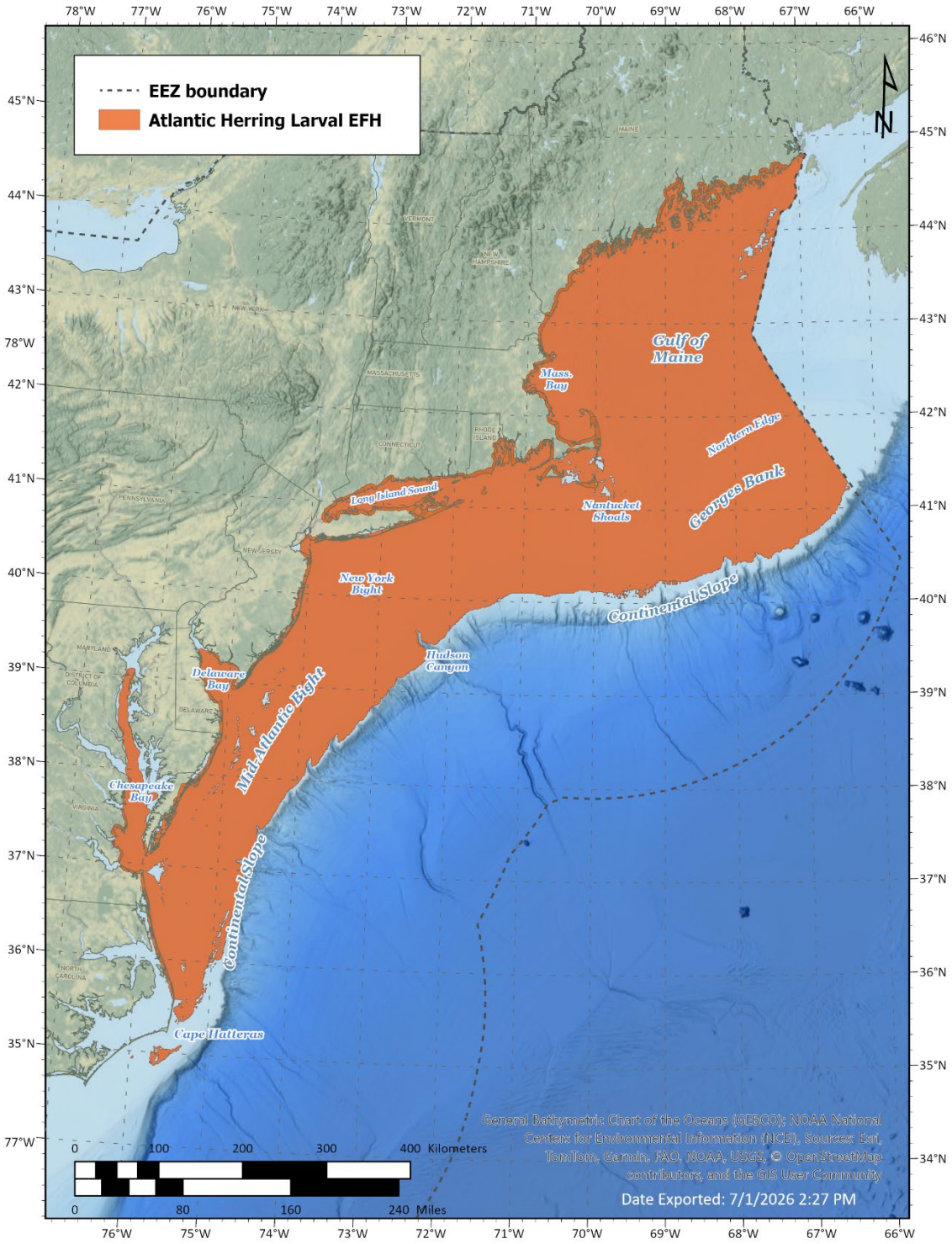
Juveniles: Essential fish habitat (EFH) for juvenile herring (TL < 25 cm) consists of the principal habitat area and includes intertidal and sub-tidal pelagic habitats as far north as the Eastern Gulf of Maine and as far south as Cape Hatteras. Within the principal habitat area, juvenile EFH ranges from intertidal habitats out to 265 meters depth, but juveniles most commonly occur between 13-149 meters depth (Appendix B, Table 14). Juvenile herring tend to avoid the deeper basins and are distributed more inshore than adults. One- and two-year old juveniles form large schools and make limited seasonal inshore-offshore migrations. Juvenile EFH also includes water temperatures between 2-21°C and salinities between 14-34 ppt (Appendix B, Table 14). Older juveniles are usually found in water temperatures of 3 to 15°C in the northern part of their range and as high as 22°C in the Mid-Atlantic. Young-of-the-year juveniles can tolerate low salinities, but older juveniles avoid brackish water. EFH for juvenile herring includes areas with fine sediments and lower tidal energy.

Adults: Essential fish habitat (EFH) for adult herring (TL ≥ 25 cm) consists of the principal habitat area and includes sub-tidal pelagic habitats as far north as the Eastern Gulf of Maine and as far south as Cape Hatteras. Within the principal habitat area, adult EFH ranges from 6-295 meters depth, but adults most commonly occur between 14-175 meters depth, especially in depths ~100 meters (Appendix B, Table 14). Adult EFH includes water temperatures between 2-16°C and salinities between 17-34 ppt (Appendix B, Table 14). Adults generally avoid water temperatures above 10°C and low salinities. During the spawning season, adults make extensive seasonal migrations to nearshore spawning grounds on Georges Bank and Gulf of Maine, with specific locations including Jeffreys Ledge, Stellwagen Bank, Nantucket Shoals, Penobscot Bay, and other locations along the Maine coast. Spawning takes place on the bottom generally in depths of 5-110 meters and on a variety of substrates including coarse sand, pebbles, cobbles, boulders and/or macroalgae, but not muddy bottoms. Herring spawning occurs in areas with strong bottom currents, relatively high temperatures (10-15°C), and high salinities. Spawning primarily begins in the fall or early winter and lasts approximately six weeks; however, the onset of spawning varies latitudinally, and there exists a less abundant spring spawning contingent. After spawning, herring return to their overwintering areas in southern New England and the Mid-Atlantic region.

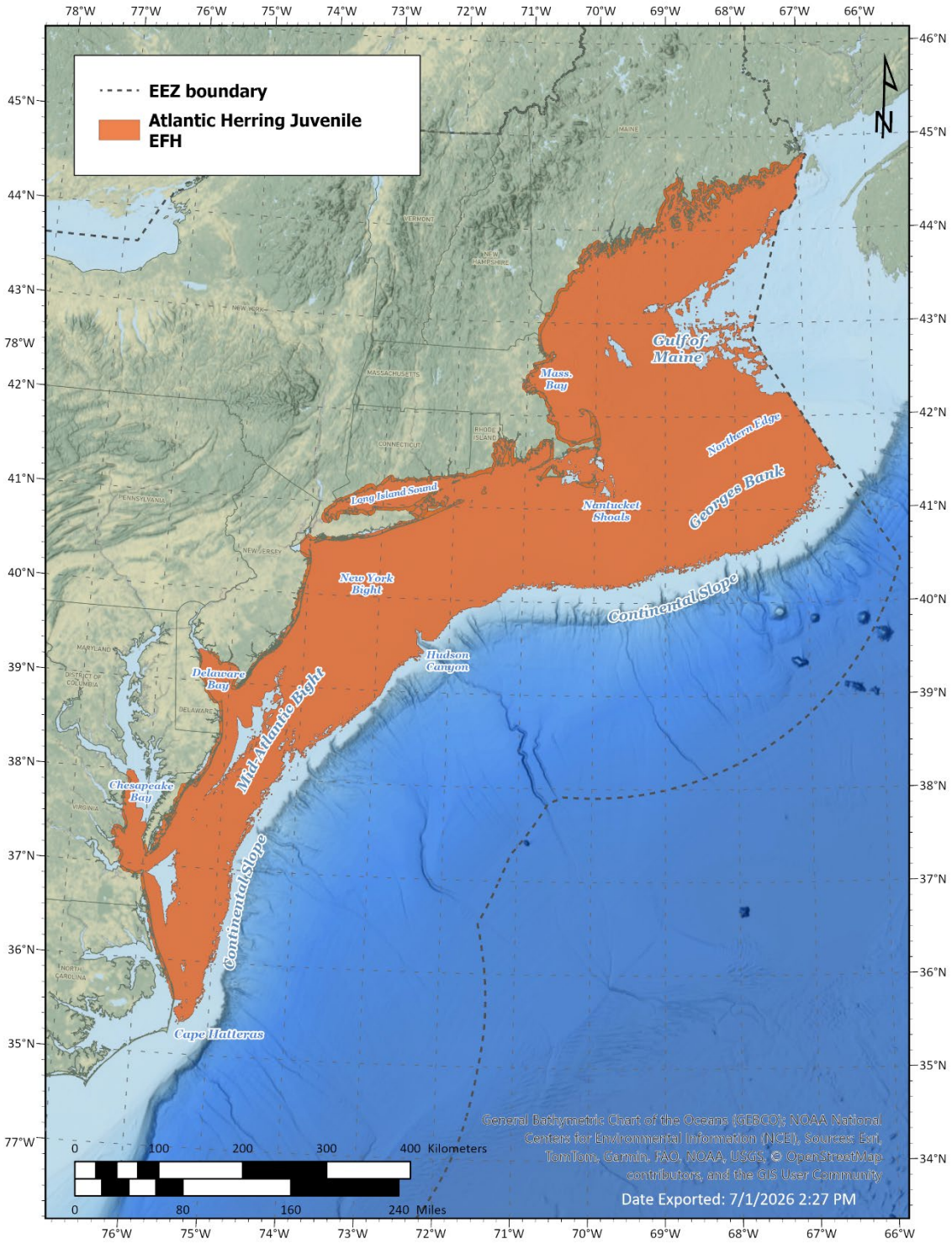
Map 4. Atlantic herring egg EFH.



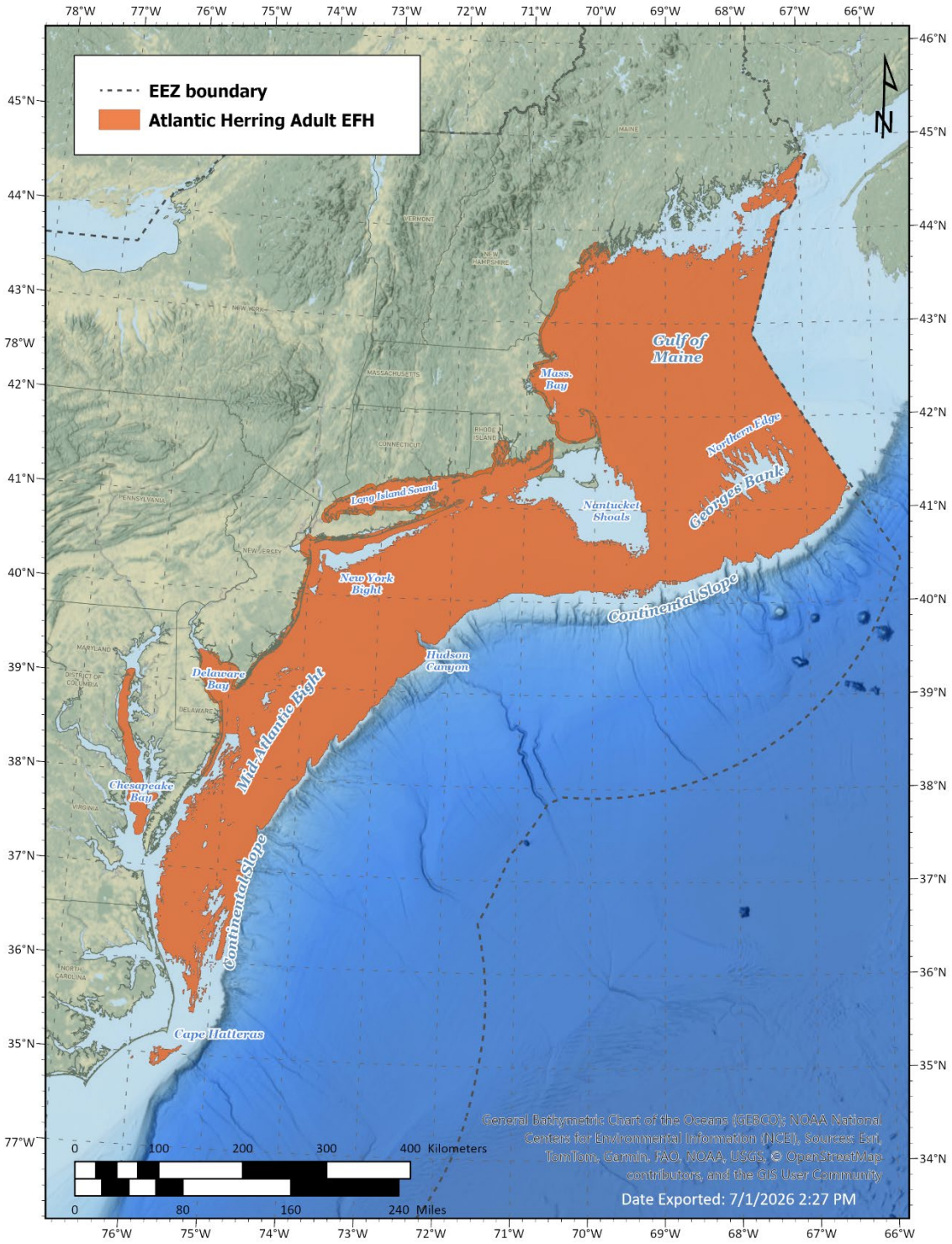
Map 5. Atlantic herring larval EFH.



Map 6. Atlantic herring juvenile EFH.



Map 7. Atlantic herring adult EFH.



4.2.3 Monkfish

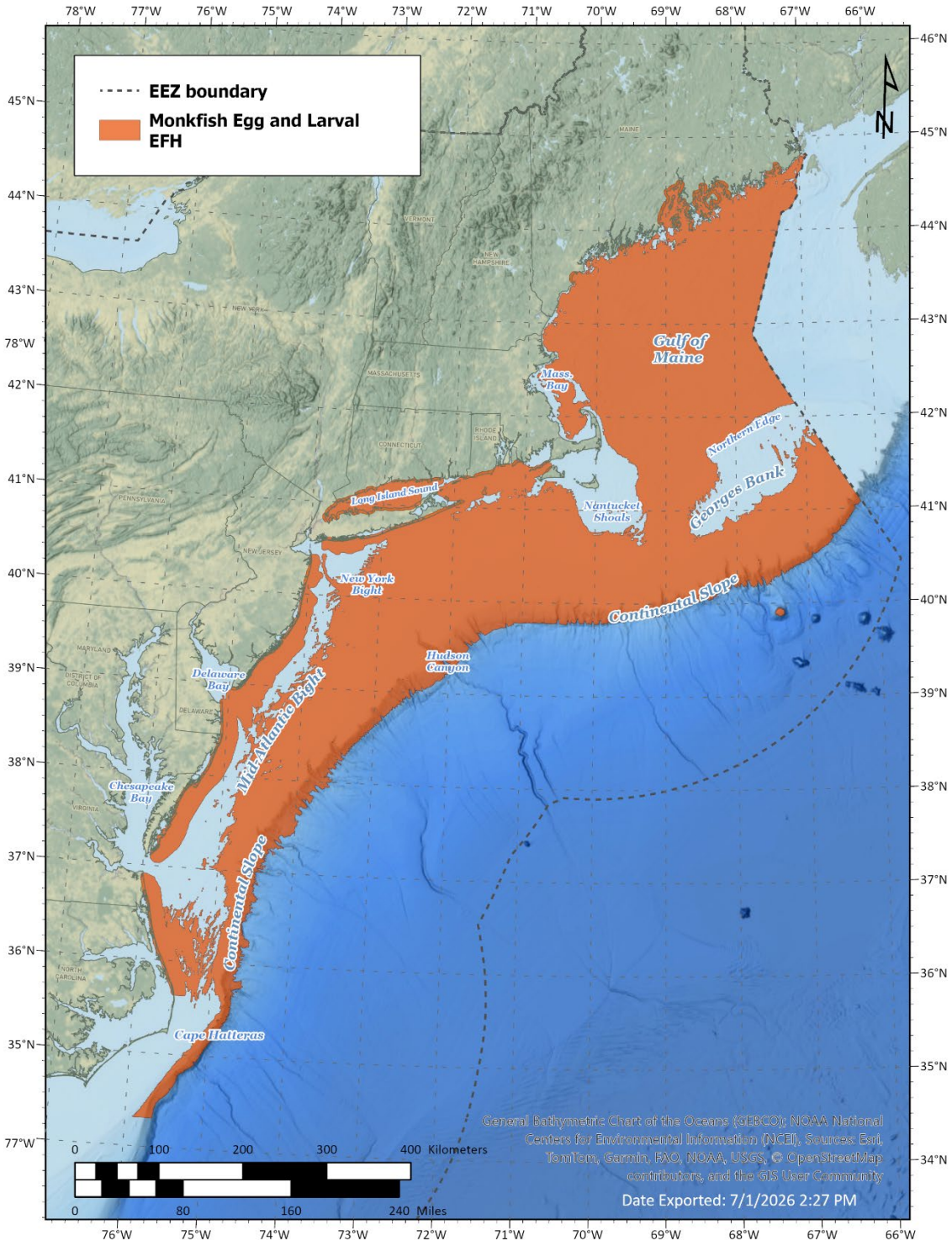
Essential fish habitat for monkfish (*Lophius americanus*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

Eggs and Larvae: Essential fish habitat (EFH) for monkfish eggs and larvae is based off the distribution of juveniles and adults as a proxy and includes pelagic habitats in inshore areas, and on the continental shelf and slope throughout the Northeast region. Monkfish eggs are shed in very large buoyant mucoidal egg "veils" and hatching time ranges between 7 days (at 15°C) and 21 days (at 5°C). Monkfish larvae are more abundant in the Mid-Atlantic region and occur over a wide depth range, from the surf zone to depths of 1000 to 1500 meters on the continental slope. One study noted that larvae in the Mid-Atlantic were predominantly found in deep water along the shelf edge in April but move across the shelf from May-July.

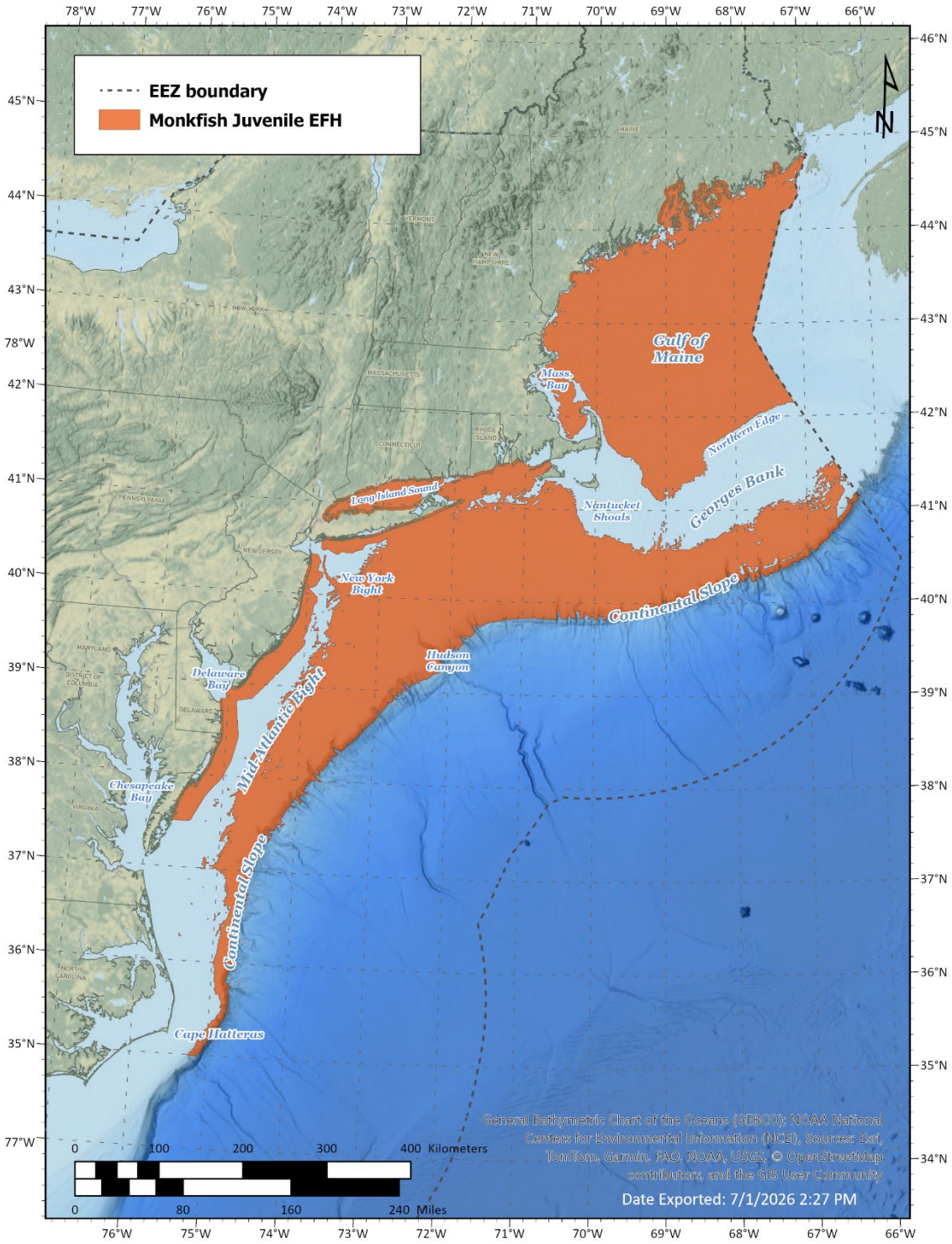
Juveniles: Essential fish habitat (EFH) for juvenile monkfish (TL < 37 cm) consists of the principal habitat area and includes sub-tidal benthic habitats in the Gulf of Maine, Southern New England, the southern edge of Georges Bank, and the Mid-Atlantic. The EFH footprint extends as far south as Cape Hatteras but does not include Nantucket Shoals or the shallowest portions of Georges Bank (i.e., < 50 m depth). Within the principal habitat area, juvenile EFH ranges from 10-340 meters depth, but juveniles most commonly occur between 44-203 meters (Appendix B, Table 14). On the continental slope, they can be found to a maximum depth of 1000 meters. Juvenile EFH also includes bottom temperatures between 3-15°C and marine waters between 31-36 ppt (Appendix B, Table 14). A variety of habitats are essential for juvenile monkfish, including hard sand, pebbles, gravel, broken shells, and soft mud; they also seek shelter among rocks with attached algae. Juveniles collected on mud bottom next to rock-ledge and boulder fields in the western Gulf of Maine were in better condition than juveniles collected on isolated mud bottom, indicating that feeding conditions in these edge habitats are better. Young-of-the-year juveniles have been collected primarily on the central portion of the shelf in the Mid-Atlantic, but also in shallow nearshore waters off eastern Long Island, up the Hudson Canyon shelf valley, and around the perimeter of Georges Bank.

Adults: Essential fish habitat (EFH) for adult monkfish (TL ≥ 37 cm) consists of the principal habitat area and includes sub-tidal benthic habitats on Georges Bank, the Gulf of Maine, Southern New England, and the Mid-Atlantic as far south as Cape Hatteras. Within the principal habitat area, adult EFH ranges from 9-360 meters depth, but adults most commonly occur between 42-223 meters (Appendix B, Table 14). On the continental slope, they can be found to a maximum depth of 1000 meters. Adult EFH also includes bottom temperatures between 4-15°C and marine waters between 31-36 ppt (Appendix B, Table 14). EFH for adult monkfish is composed of hard sand, pebbles, gravel, broken shells, and soft mud. They seem to prefer soft sediments (fine sand and mud) over sand and gravel, and, like juveniles, utilize the edges of rocky areas for feeding. Monkfish have a protracted reproductive season spanning January to August, though most spawning occurs between February and April. Spawning locations are not well understood, though one study suggests monkfish in the Gulf of Maine spawn in shallow water (< 50 m), while those in the Mid-Atlantic spawn in both shallow (< 50 m) and deep (> 200 m) water.

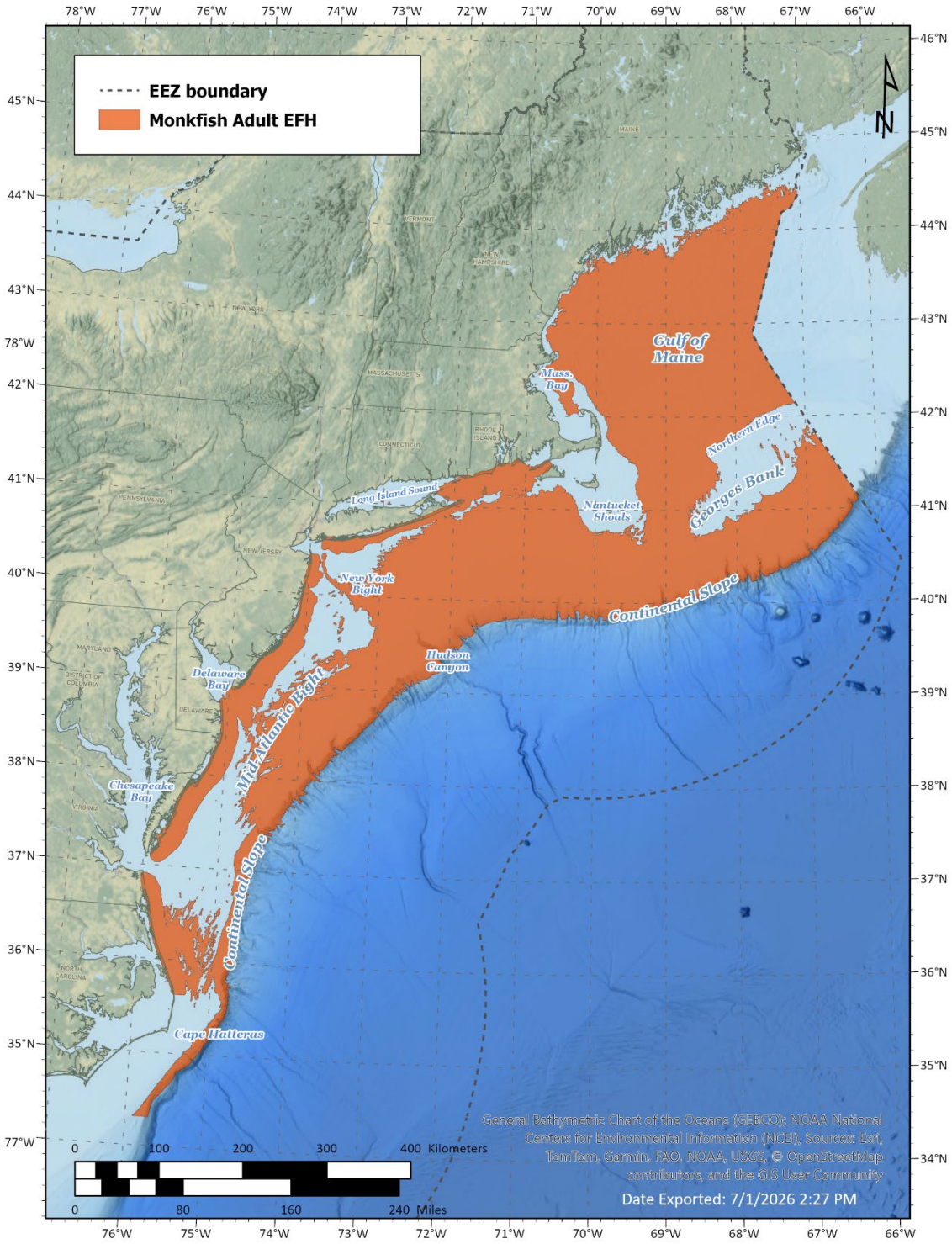
Map 8. Monkfish egg and larval EFH.



Map 9. Monkfish juvenile EFH.



Map 10. Monkfish adult EFH.



4.2.4 Barndoor skate

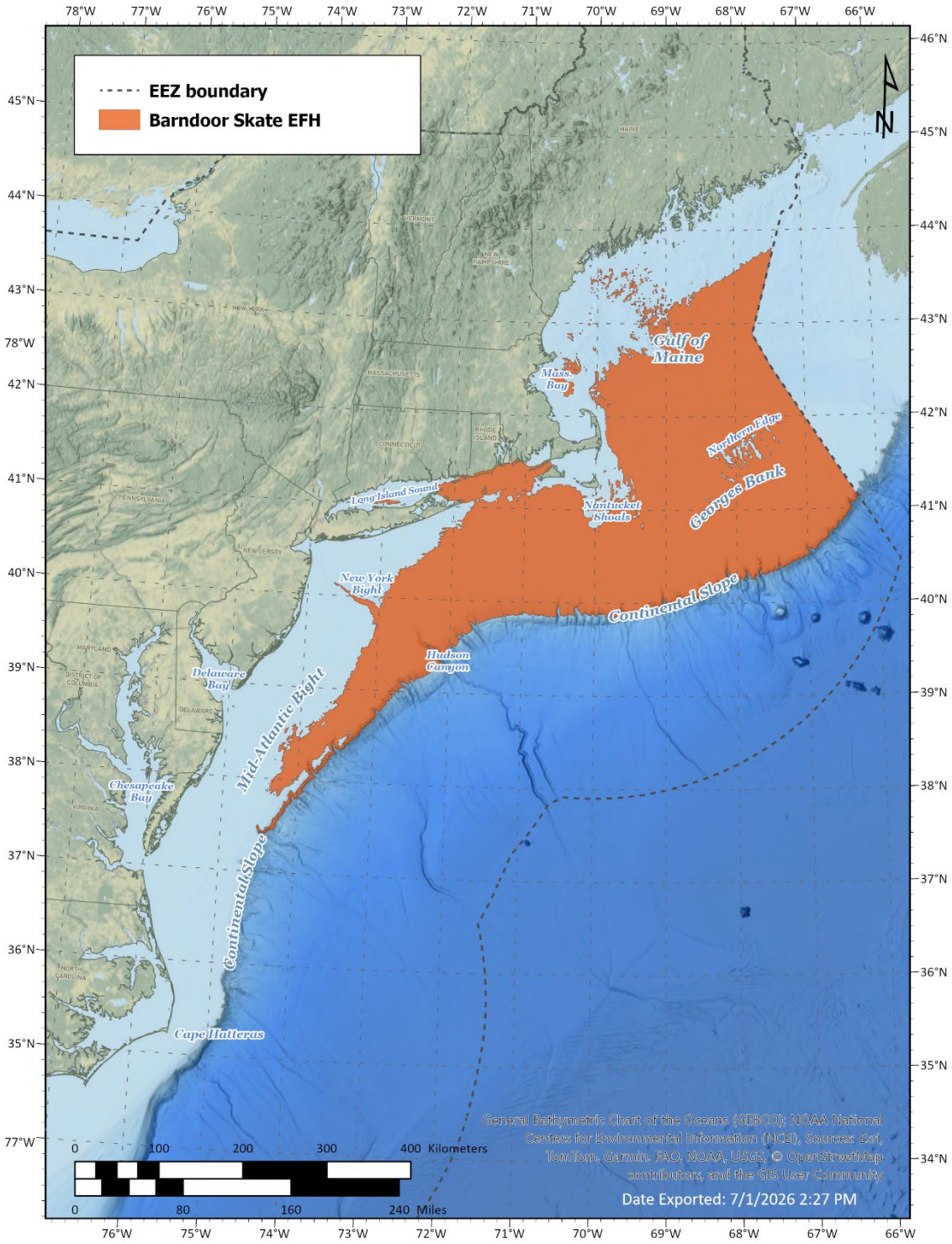
Essential fish habitat for barndoor skate (*Dipturus laevis*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

Eggs: Essential fish habitat (EFH) for barndoor skate eggs uses the adult distribution as a proxy and includes benthic habitats on the continental shelf, on Georges Bank and in Southern New England, extending into the Gulf of Maine and as far south as Cape Hatteras. See adult description for depth, temperature, and salinity ranges associated with adult EFH. Female barndoor skates deposit leathery capsules, each containing a single egg, on the seabed. The oblong capsules are attached to the substrate via adhesive threads and curved horns that extend from each corner. The seasonality of egg case deposition is not well understood, and the incubation period for skates may be many months to over a year, such that egg cases in various stages of development may be present on the seabed year-round. There is no distinct larval stage as the skates emerge from their egg cases as fully formed juveniles.

Juveniles and adults: Barndoor skates are approximately 18-19 cm at the time of hatching. Essential fish habitat (EFH) for juvenile (TL < 102 cm) and adult (TL ≥ 102 cm) barndoor skate consists of the principal habitat area and includes benthic continental shelf habitats in the Gulf of Maine, on Georges Bank, and in Southern New England, extending as far south as Poor Man's Canyon. Within the principal habitat area, juvenile EFH ranges from 27-358 meters depth, but juveniles most commonly occur between 58-208 meters (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 4-17°C (Appendix B, Table 14).

Within the principal habitat area, adult EFH ranges from 32-361 meters depth, but adults most commonly occur between 61-248 meters depth (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 5-16°C (Appendix B, Table 14). EFH for both juveniles and adults includes marine waters between 32-36 ppt and occurs on mud, sand, and gravel substrates. On the continental slope, juveniles and adults can be found to a maximum depth of 750 meters.

Map 11. Barndoor skate egg, juvenile, and adult EFH.



4.2.5 Clearnose skate

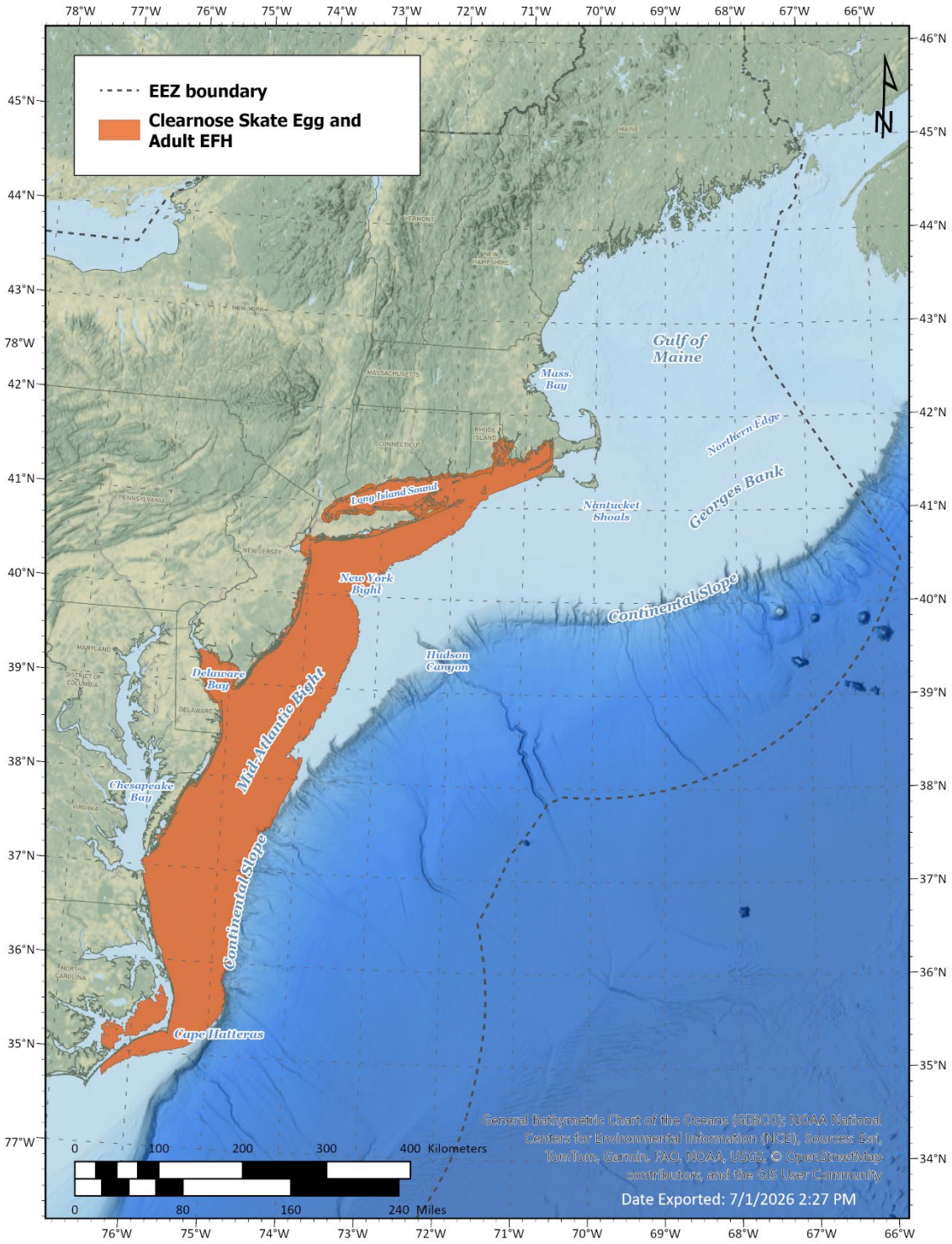
Essential fish habitat for clearnose skate (*Rostroraja eglanteria*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

Eggs: Essential fish habitat (EFH) for clearnose skate eggs uses the adult distribution as a proxy and includes sub-tidal benthic habitats in coastal and inner continental shelf waters from Rhode Island to Cape Hatteras. See adult description for depth, temperature, and salinity ranges associated with adult EFH. Female clearnose skate deposit leathery capsules, each containing a single egg, on the seabed. The oblong capsules are attached to the substrate via adhesive threads and curved horns that extend from each corner. Clearnose skate egg case deposition occurs in spring and summer, and the incubation period for clearnose skate is approximately three months, so egg cases in various stages of development may be present on the seabed for much of the year. There is no distinct larval stage as the skates emerge from their egg cases as fully formed juveniles.

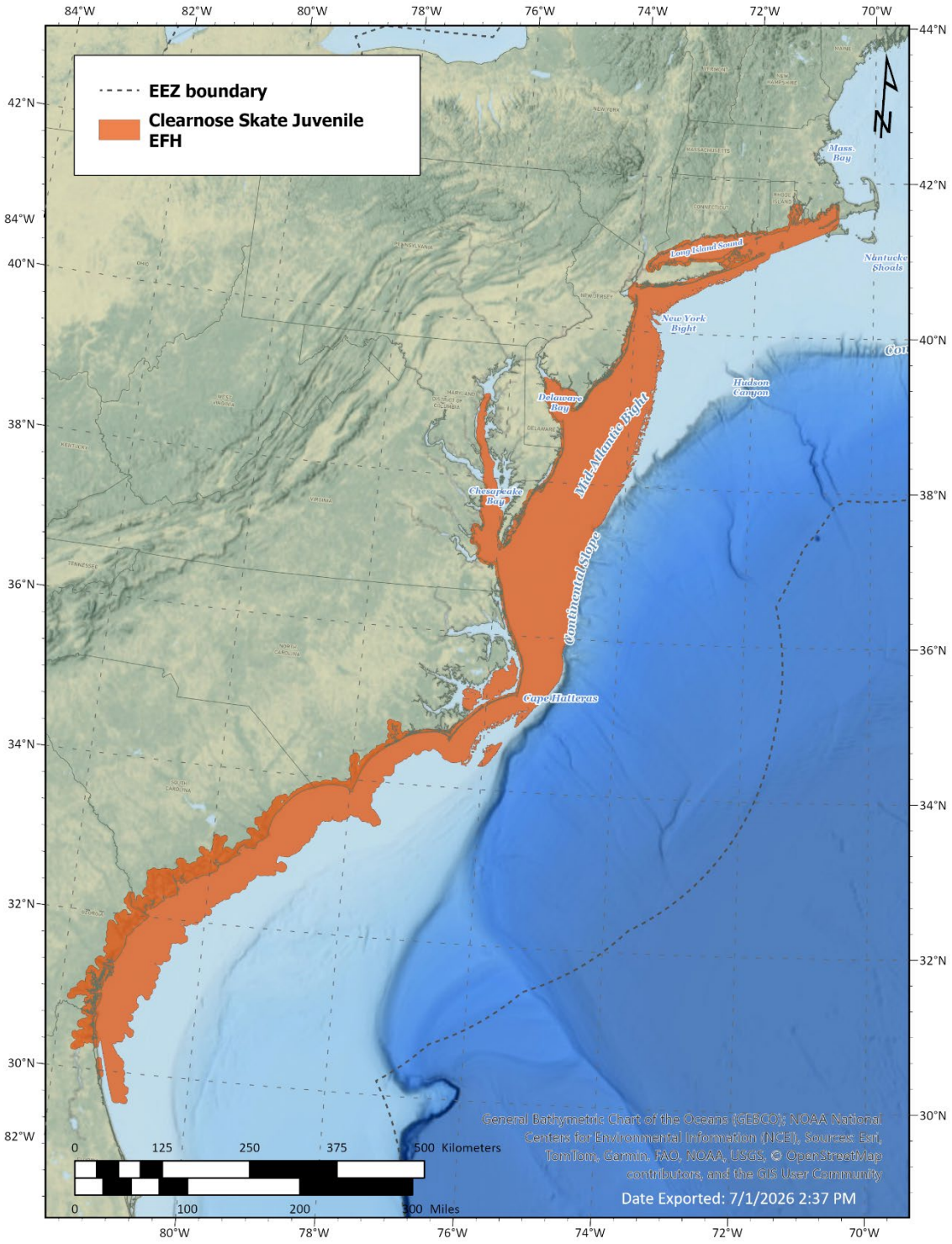
Juveniles: Essential fish habitat (EFH) for juvenile clearnose skate (TL < 59 cm) consists of the principal habitat area and includes sub-tidal benthic habitats in coastal and inner continental shelf waters from Rhode Island to Cape Hatteras, though they are more commonly found in the southern portions of their range. The inshore portions of the EFH footprint includes marine (≥ 30 ppt) and polyhaline (18-30 ppt) portions of Narragansett Bay, Long Island Sound, Delaware Bay, and Chesapeake Bay; in Chesapeake Bay, the designation also includes mixing zones (0.5-18 ppt). Within the principal habitat area, juvenile EFH ranges from 4-133 meters depth, but juveniles most commonly occur between 8-26 meters (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 8-28°C and polyhaline and marine waters between 22-36 ppt (Appendix B, Table 14). Juvenile EFH occurs primarily in areas with mud and sand, but also on gravelly and rocky bottom.

Adults: Essential fish habitat (EFH) for adult clearnose skates (TL ≥ 59 cm) consists of the principal habitat area and includes sub-tidal benthic habitats in coastal and inner continental shelf waters from Rhode Island to Cape Hatteras, though they are more commonly found in the southern portions of their range. Inshore habitat includes Narragansett Bay, Long Island Sound, Delaware Bay, polyhaline (18-30 ppt) portions of the Delaware River, and the mouth of Chesapeake Bay. Within the principal habitat area, adult EFH ranges from 5-207 meters depth, but adults most commonly occur between 9-36 meters (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 6-24°C and polyhaline and marine waters between 27-36 ppt (Appendix B, Table 14). Adult EFH occurs primarily on mud and sand, but also on gravelly and rocky bottom.

Map 12. Clearnose skate egg and adult EFH.



Map 13. Clearnose skate juvenile EFH. Note that this map shows a different section of the coast at a different spatial scale from other maps in this document.



4.2.6 Little skate

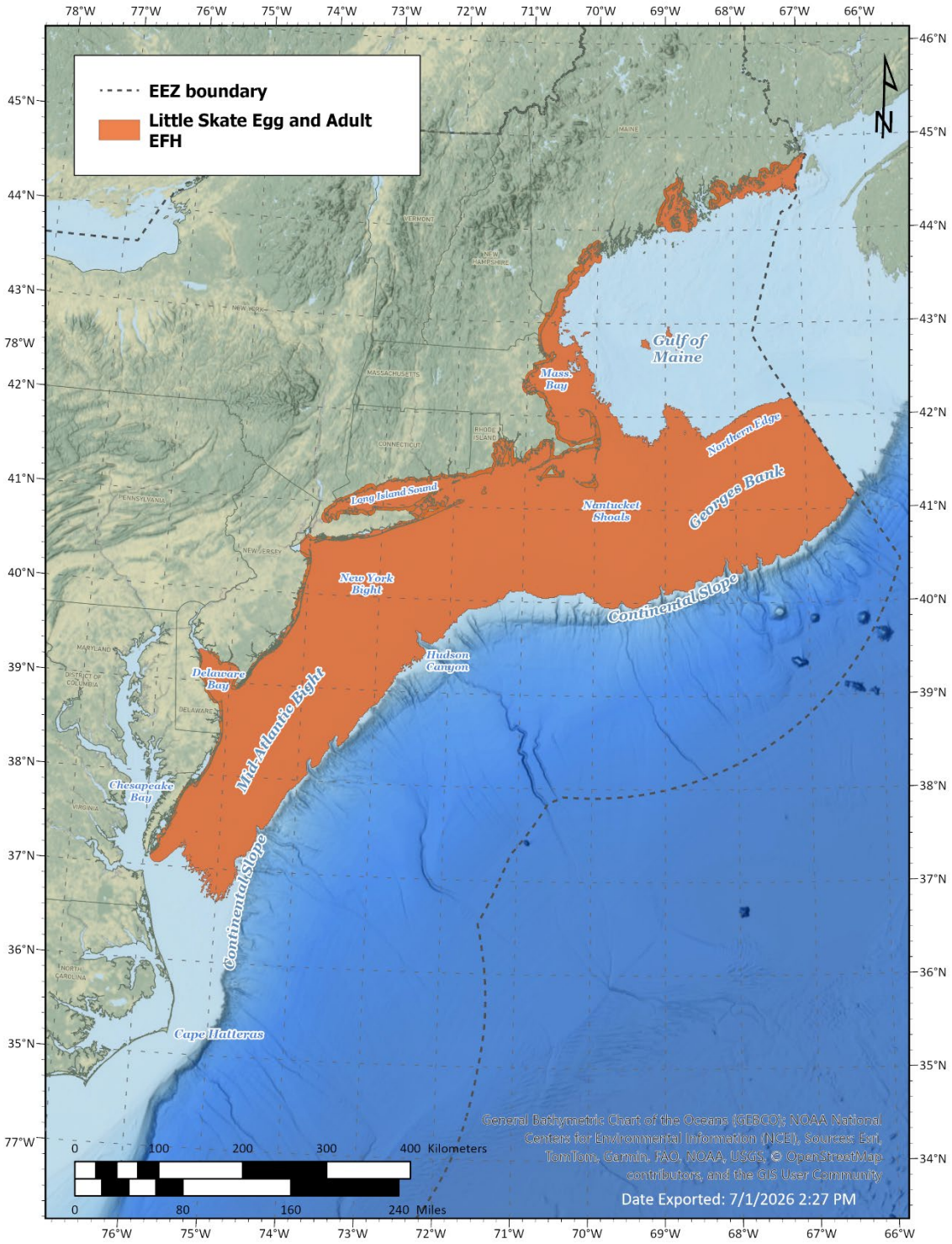
Essential fish habitat for little skate (*Leucoraja erinacea*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

Eggs: Essential fish habitat (EFH) for little skate eggs uses the adult distribution as a proxy and includes intertidal and sub-tidal benthic habitats in the Gulf of Maine (including offshore banks and ledges), on Georges Bank, and in the Mid-Atlantic region as far south as Cape Hatteras. See adult description for depth, temperature, and salinity ranges associated with adult EFH. Female little skate deposit leathery capsules, each containing a single egg, on the seabed. The oblong capsules are attached to the substrate via adhesive threads and curved horns that extend from each corner. The seasonality of egg case deposition is not well understood, and the incubation period for little skates may be around 6 months, such that egg cases in various stages of development may be present on the seabed year-round. There is no distinct larval stage as the skates emerge from their egg cases as fully formed juveniles.

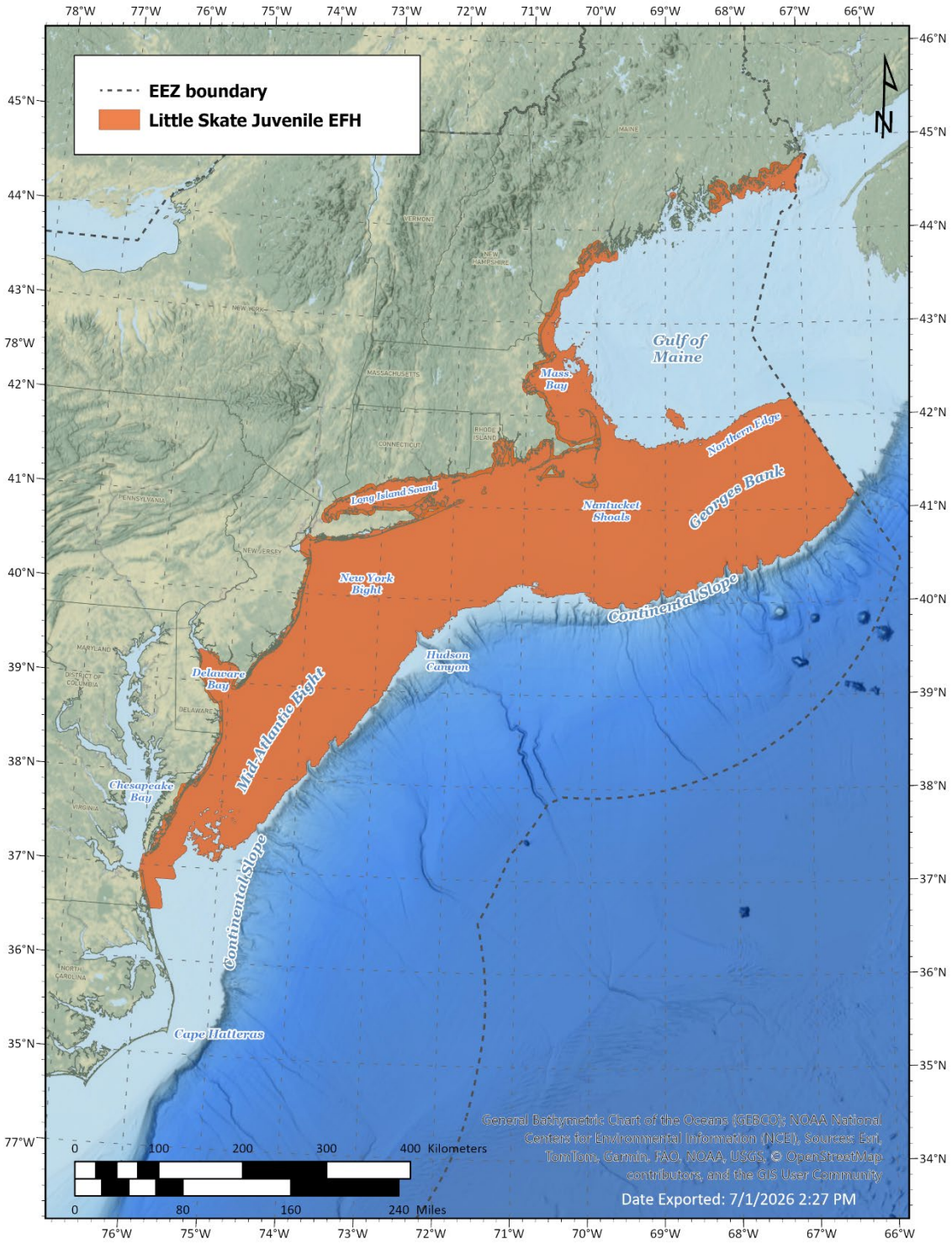
Juveniles: Little skates are approximately 9-10 cm at the time of hatching. Essential Fish Habitat (EFH) for juvenile little skates (TL < 44 cm) consists of the principal habitat area and includes intertidal and sub-tidal benthic habitats in the Gulf of Maine (including offshore ledges and banks), throughout Georges Bank, and in the Mid-Atlantic region as far south as Chesapeake Bay. Within the principal habitat area, juvenile EFH ranges from intertidal shoreline habitats to 220 meters depth, but juveniles most commonly occur between 11-74 meters (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-20°C and marine waters between 28-36 ppt (Appendix B, Table 14) and occurs primarily on sand and gravel substrates, but juveniles are also found on mud.

Adults: Essential Fish Habitat (EFH) for adult little skates (TL ≥ 44 cm) consists of the principal habitat area and includes intertidal and sub-tidal benthic habitats in the Gulf of Maine (including offshore banks and ledges), throughout Georges Bank, and in the Mid-Atlantic region as far south as Cape Hatteras. Within the principal habitat area, adult EFH ranges from intertidal shoreline habitats to 214 meters depth, but adults most commonly occur between 12-82 meters depth (Appendix B, Table 14). Adult EFH includes bottom temperatures between 3-21°C and polyhaline and marine waters between 29-36 ppt (Appendix B, Table 14). Adult EFH occurs primarily on sand and gravel substrates, but they are also found on mud.

Map 14. Little skate egg and adult EFH.



Map 15. Little skate juvenile EFH.



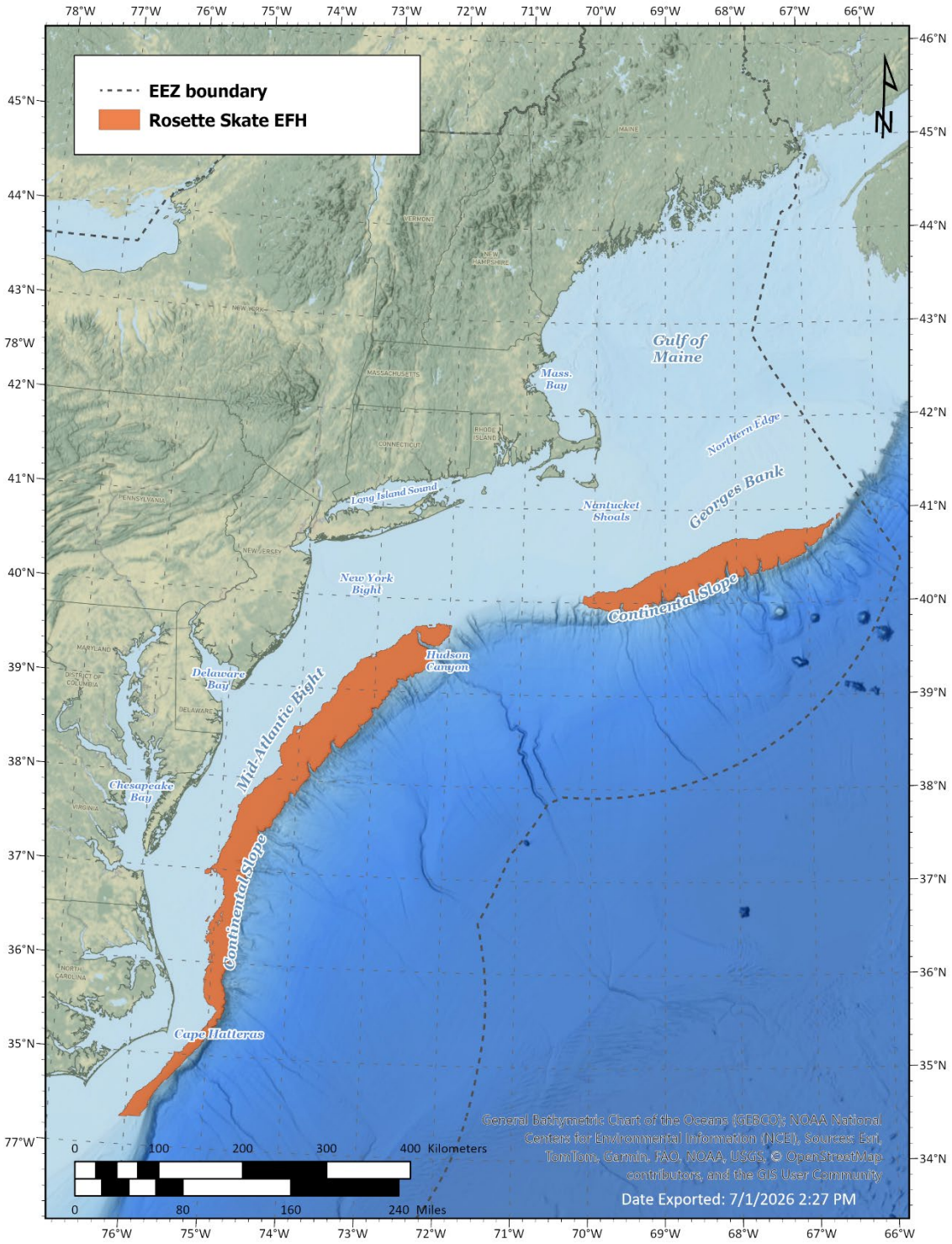
4.2.7 Rosette skate

Essential fish habitat for rosette skate (*Leucoraja garmani*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

Eggs: Essential fish habitat (EFH) for rosette skate eggs uses the combined juvenile and adult distribution as a proxy and includes benthic habitats along the outer continental shelf in Southern New England and the Mid-Atlantic region, ranging from the southern edge of Georges Bank down to Cape Hatteras. See combined juvenile and adult description for depth, temperature, and salinity ranges. Female rosette skate deposit leathery capsules, each containing a single egg, on the seabed. The oblong capsules are attached to the substrate via adhesive threads and curved horns that extend from each corner. The seasonality of egg case deposition is not well understood, and the incubation period for skates may be many months to over a year, such that egg cases in various stages of development may be present on the seabed year-round. There is no distinct larval stage as the skates emerge from their egg cases as fully formed juveniles.

Juveniles and Adults: Essential Fish Habitat (EFH) for juvenile (TL < 39 cm) and adult (TL ≥ 39 cm) rosette skate consists of the principal habitat area and includes benthic habitats along the outer continental shelf in Southern New England and the Mid-Atlantic region, ranging from the southern edge of Georges Bank down to Cape Hatteras. Within the principal habitat area, juvenile EFH includes depths between 27-338 meters and bottom temperatures between 7-18°C, but juveniles most commonly occur between 75-229 meters (Appendix B, Table 14). Within the principal habitat area, adult EFH includes depths between 54-299 meters and bottom temperatures between 7-15°C, but adults most commonly occur between 81-210 meters (Appendix B, Table 14). EFH for both juveniles and adults includes marine waters between 32-36 ppt and occurs on soft substrates such as mud and sand.

Map 16. Rosette skate egg, juvenile, and adult EFH.



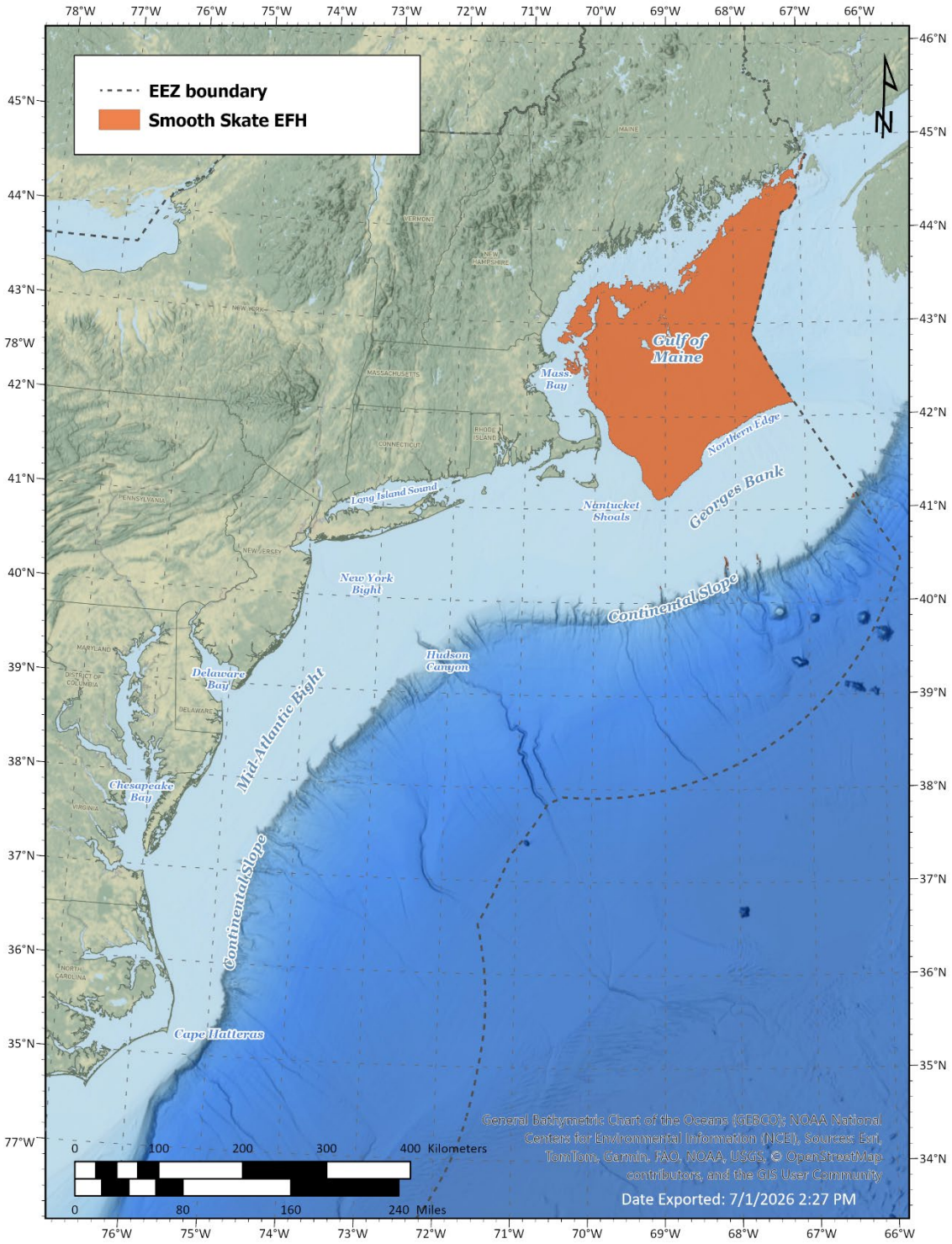
4.2.8 Smooth skate

Essential fish habitat for smooth skate (*Malacoraja senta*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

Eggs: Essential fish habitat (EFH) for smooth skate eggs uses the combined juvenile and adult distribution as a proxy and includes benthic habitats in polyhaline and marine waters in the Gulf of Maine as well as marine and polyhaline zones in bays and estuaries along the Maine coast. See combined juvenile and adult description for depth, temperature, and salinity ranges. Female smooth skate deposit leathery capsules, each containing a single egg, on the seabed. The oblong capsules are attached to the substrate via adhesive threads and curved horns that extend from each corner. The seasonality of egg case deposition is not well understood, and the incubation period for skates may be many months to over a year, such that egg cases in various stages of development may be present on the seabed year-round. There is no distinct larval stage as the skates emerge from their egg cases as fully formed juveniles.

Juveniles and adults: Essential Fish Habitat (EFH) for juvenile (TL < 55 cm) and adult (TL ≥ 55 cm) smooth skates consists of the principal habitat area and includes benthic habitats in the Gulf of Maine as well as marine and polyhaline zones in bays and estuaries along the Maine coast. Within the principal habitat area, juvenile EFH includes depths between 39-355 meters and bottom temperatures between 4-12°C, but juveniles most commonly occur between 103-237 meters (Appendix B, Table 14). Within the principal habitat area, adult EFH includes depths between 54-361 meters and bottom temperatures between 4-11°C, but adults most commonly occur between 115-266 meters (Appendix B, Table 14). EFH for both juveniles and adults includes marine waters between 32-36 ppt and occurs mostly on soft mud (e.g., silt and clay) in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine.

Map 17. Smooth skate egg, juvenile, and adult EFH.



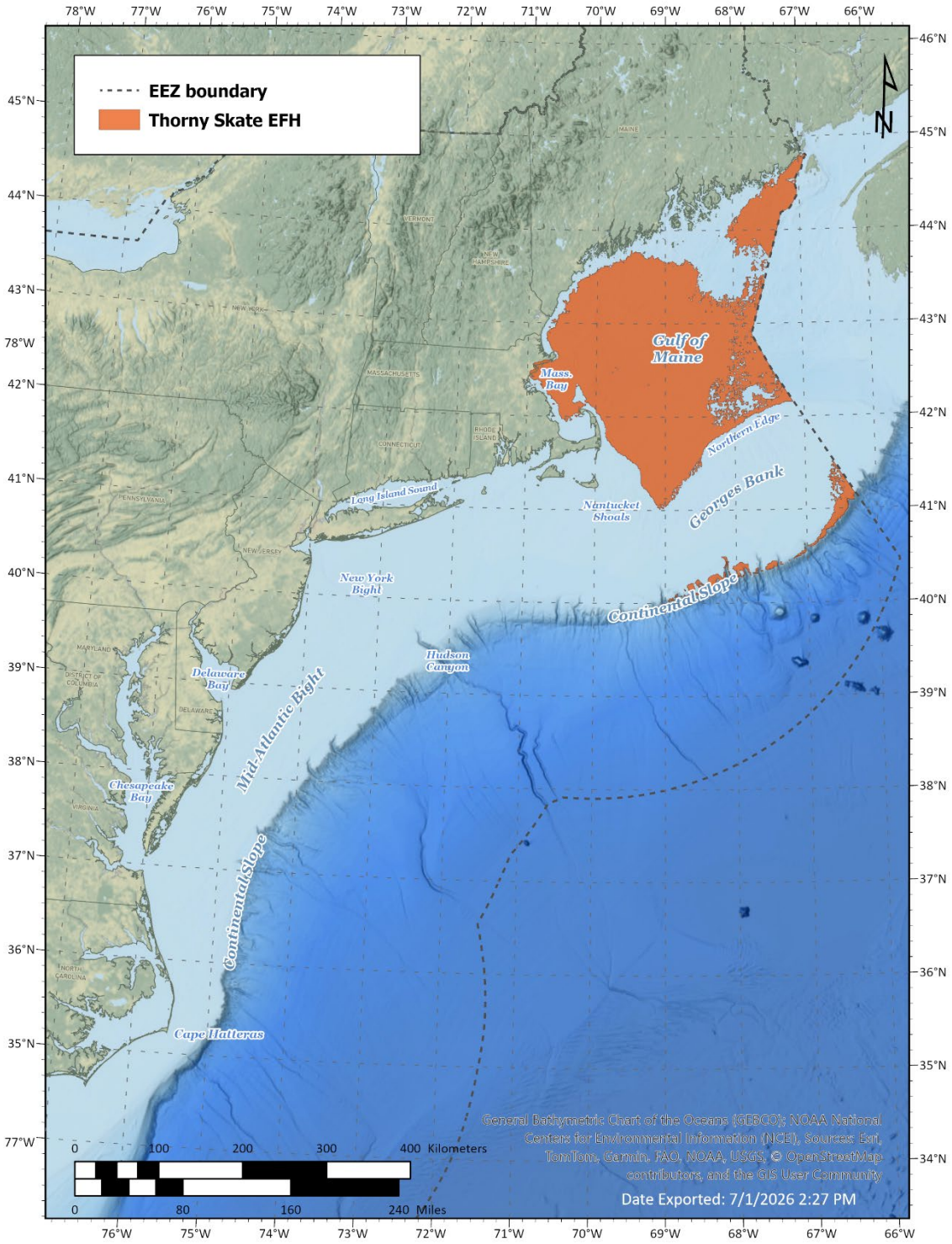
4.2.9 Thorny skate

Essential fish habitat for thorny skate (*Amblyraja radiata*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

Eggs: Essential fish habitat (EFH) for thorny skate eggs uses the adult distribution as a proxy and includes benthic habitats in polyhaline and marine waters in the Gulf of Maine. See combined juvenile and adult description for depth, temperature, and salinity ranges. Female thorny skate deposit leathery capsules, each containing a single egg, on the seabed. The oblong capsules are attached to the substrate via adhesive threads and curved horns that extend from each corner. The seasonality of egg case deposition is not well understood, and the incubation period for skates may be many months to over a year, such that egg cases in various stages of development may be present on the seabed year-round. There is no distinct larval stage as the skates emerge from their egg cases as fully formed juveniles.

Juveniles and adults: Essential Fish Habitat (EFH) for adult (TL ≥ 77 cm) and juvenile (TL < 77 cm) thorny skate consists of the principal habitat area and includes benthic habitats in polyhaline and marine waters in the Gulf of Maine. Within the principal habitat area, juvenile EFH includes depths between 30-353 meters, bottom temperatures between 3-12°C, and marine waters between 31-36 ppt, but juveniles most commonly occur between 66-214 meters depth marine waters between 31-36 ppt (Appendix B, Table 14). Within the principal habitat area, adult EFH includes depths between 37-361 meters, bottom temperatures between 3-11°C, and marine waters between 32-36 ppt, but adults most commonly occur between 83-213 meters depth (Appendix B, Table 14). Essential fish habitat for juvenile and adult thorny skates is found on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud.

Map 18. Thorny skate egg, juvenile, and adult EFH.



4.2.10 Winter skate

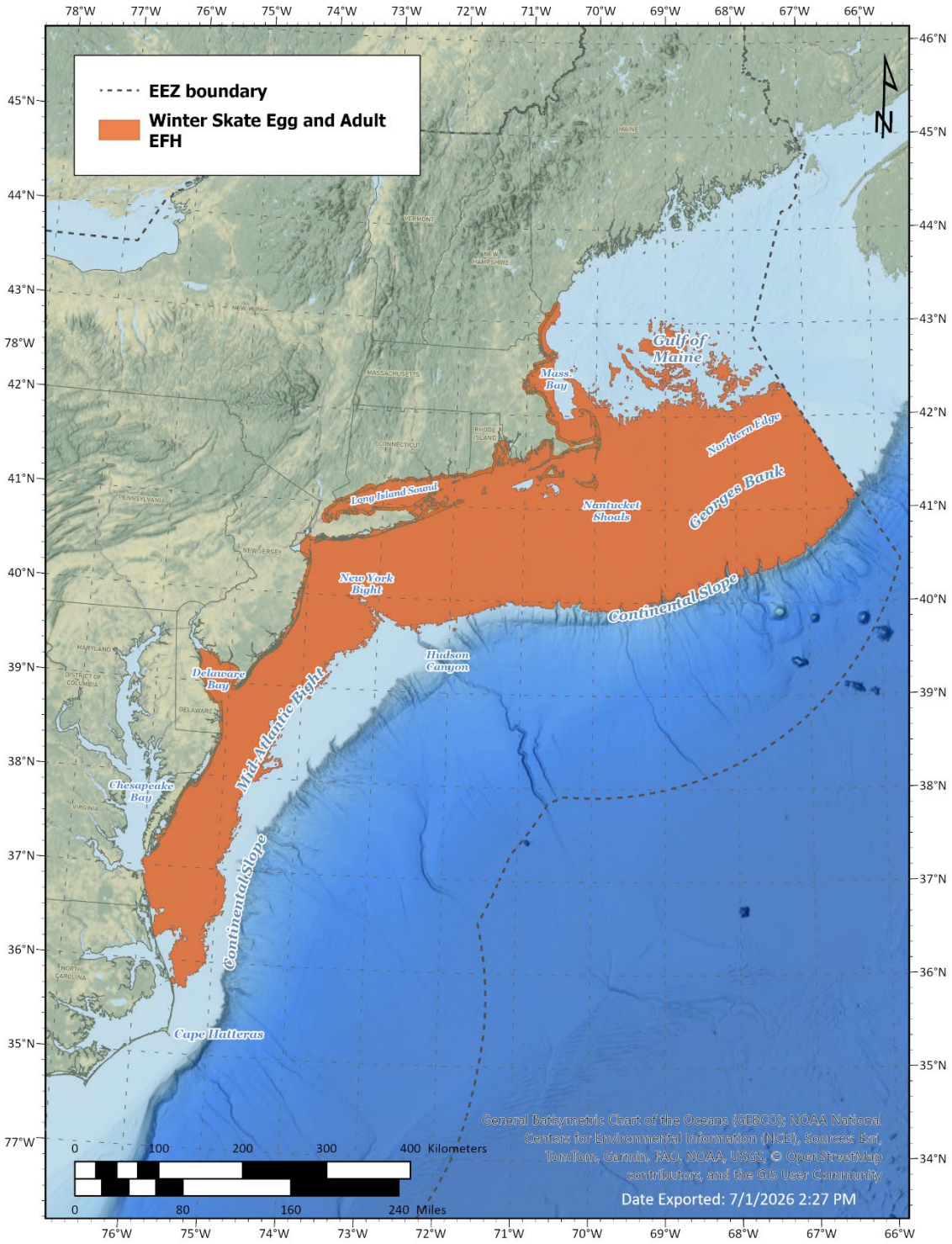
Essential fish habitat for winter skate (*Leucoraja ocellata*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

Eggs: Essential fish habitat (EFH) for winter skate eggs uses the adult distribution as a proxy and includes sub-tidal benthic habitats in marine and polyhaline waters in the southwestern Gulf of Maine, Southern New England, Mid-Atlantic, and on Georges Bank. See adult description for depth, temperature, and salinity ranges associated with adult EFH. Female winter skate deposit leathery capsules, each containing a single egg, on the seabed. The oblong capsules are attached to the substrate via adhesive threads and curved horns that extend from each corner. The seasonality of egg case deposition is not well understood, and the incubation period for skates may be many months to over a year, such that egg cases in various stages of development may be present on the seabed year-round. There is no distinct larval stage as the skates emerge from their egg cases as fully formed juveniles.

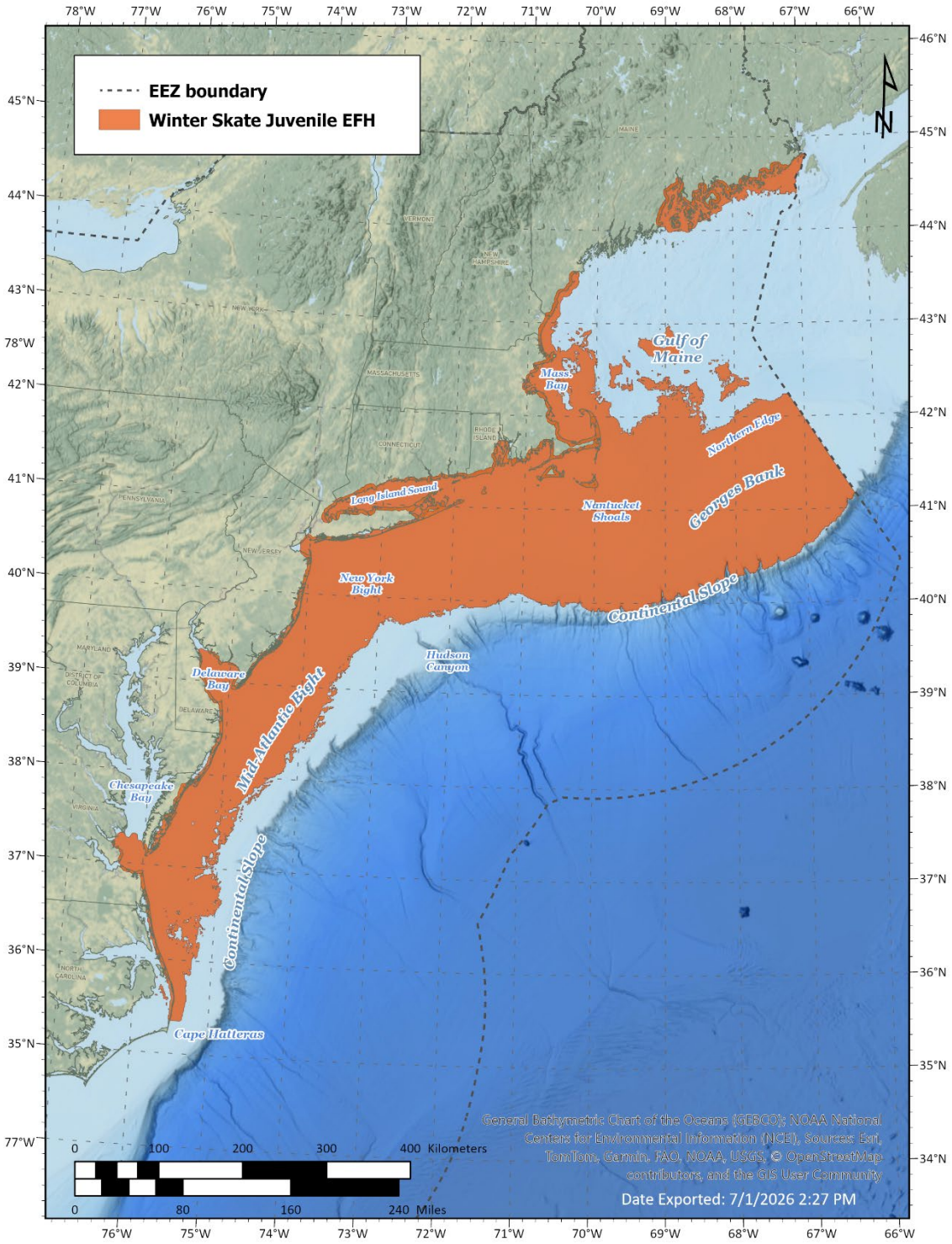
Juveniles: Essential Fish Habitat (EFH) for juvenile winter skate (TL < 75 cm) consists of the principal habitat area and includes sub-tidal benthic habitats in coastal marine and polyhaline waters in the Gulf of Maine, Southern New England, Mid-Atlantic, and on Georges Bank, ranging as far north as eastern Maine and as far south as Cape Hatteras. Within the principal habitat area, juvenile EFH ranges from 6-227 meters depth, but juveniles most commonly occur between 10-77 meters (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-20°C and polyhaline and marine waters between 28-36 ppt (Appendix B, Table 14). Essential fish habitat for juvenile winter skates occurs on sand and gravel substrates, but they are also found on mud.

Adults: Essential Fish Habitat (EFH) for adult winter skate (TL ≥ 75 cm) consists of the principal habitat area and includes sub-tidal benthic habitats in marine and polyhaline waters in the southwestern Gulf of Maine, Southern New England, Mid-Atlantic, and on Georges Bank, extending as far south as Cape Hatteras. Within the principal habitat area, adult EFH ranges from 6-242 meters depth, but adults most commonly occur between 12-87 meters (Appendix B, Table 14). Adult EFH includes bottom temperatures between 3-18°C and polyhaline and marine waters between 27-36 ppt (Appendix B, Table 14). Essential fish habitat for adult winter skates occurs on sand and gravel substrates, but they are also found on mud.

Map 19. Winter skate egg and adult EFH.



Map 20. Winter skate juvenile EFH.



5.0 FISHING EFFECTS EVALUATION

Each Council FMP must contain an evaluation of the potential adverse effects of fishing on EFH designated under the FMP, including effects of each fishing activity regulated under the FMP or other Federal FMPs (50 CFR §600.815(a)(2)). Councils must act to prevent, mitigate, or minimize any adverse effects from fishing to the extent practicable, if there is evidence that a fishing activity adversely affects EFH in a manner that is more than minimal and not temporary in nature. In determining whether it is practicable to minimize an adverse effect from fishing, the Council considers the nature and extent of the adverse effect on EFH and the long and short-term costs and benefits of potential management measures to EFH, associated fisheries, and the nation, consistent with National Standard 7. In determining whether management measures are practicable, Councils are not required to perform a formal cost/benefit analysis.

The Council made determinations related to fishing effects across all its FMPs through Omnibus EFH Amendment 2. Amendment 2 implemented a series of spatial gear restriction measures to minimize effects on fish habitats occurring in federal waters of the New England region, including designating EFH. The following provides an evaluation of the potential adverse effects of fishing on EFH designated through this framework. This evaluation includes:

- An inventory of current fishing gear prohibitions in place that prevent, mitigate, or minimize adverse effects of fishing on habitat and EFH,
- Recent changes in the New England fleet, including size, stability, and trends in landings,
- Model-based outputs of fishing effects on benthic habitat in the Northeast region, and,
- Fishing effects estimates for areas identified as EFH in the update descriptions provided in Section 4.2.

5.1 CURRENT MEASURES TO MINIMIZE ADVERSE EFFECTS

In the Northeast, effort is constrained for federally managed fisheries using restrictions on fishery outputs through annual catch limits for target fishery species. These limits are developed to prevent overfishing and influence the overall magnitude of fishing activity in the Northeastern U.S. region. The New England Council manages its fisheries to ensure catch limits are not exceeded and the fisheries can be prosecuted efficiently and sustainably.

The Councils (i.e., Mid-Atlantic and New England), and NOAA Fisheries, have created many fishery management and conservation areas in the Northeast region of the EEZ that have fishing gear prohibitions and have documented these in a database and mapping application (webmap; application). The eight regional fishery management councils developed a database that documents fishing gear prohibitions associated with conservation areas (i.e., those implemented under MSA as well as other authorities) that minimize adverse environmental effects on habitat. A detailed list of all these areas in the Northeast region is available in Bachman et al., 2025. A summary of year-round areas in the New England Council region is provided below (Table 6). As of September 2025, within the New England region, excluding any overlap among areas, 39.2% of the EEZ has prohibitions on the use of mobile bottom tending gears (e.g., trawls, dredges, etc.), which are one of the more environmentally adverse gears in the region that contact seafloor habitat (Bachman et al., 2025, Table 7). Area coverage of mobile bottom tending gear in the Mid-Atlantic region, which includes EFH areas for species evaluated in this framework is slightly higher at 58.3% (Table 7). The various habitat management, deep-sea coral protection, research areas, and year round groundfish closure areas are distributed throughout the region, from the eastern Gulf of Maine to the edge of the EEZ (Map 21).

Table 6. Conservation areas in the New England EEZ, including Ecosystem Conservation (EC) areas and Year-Round Fishery Management (YFM) areas. Adapted from Bachman et al., 2025.

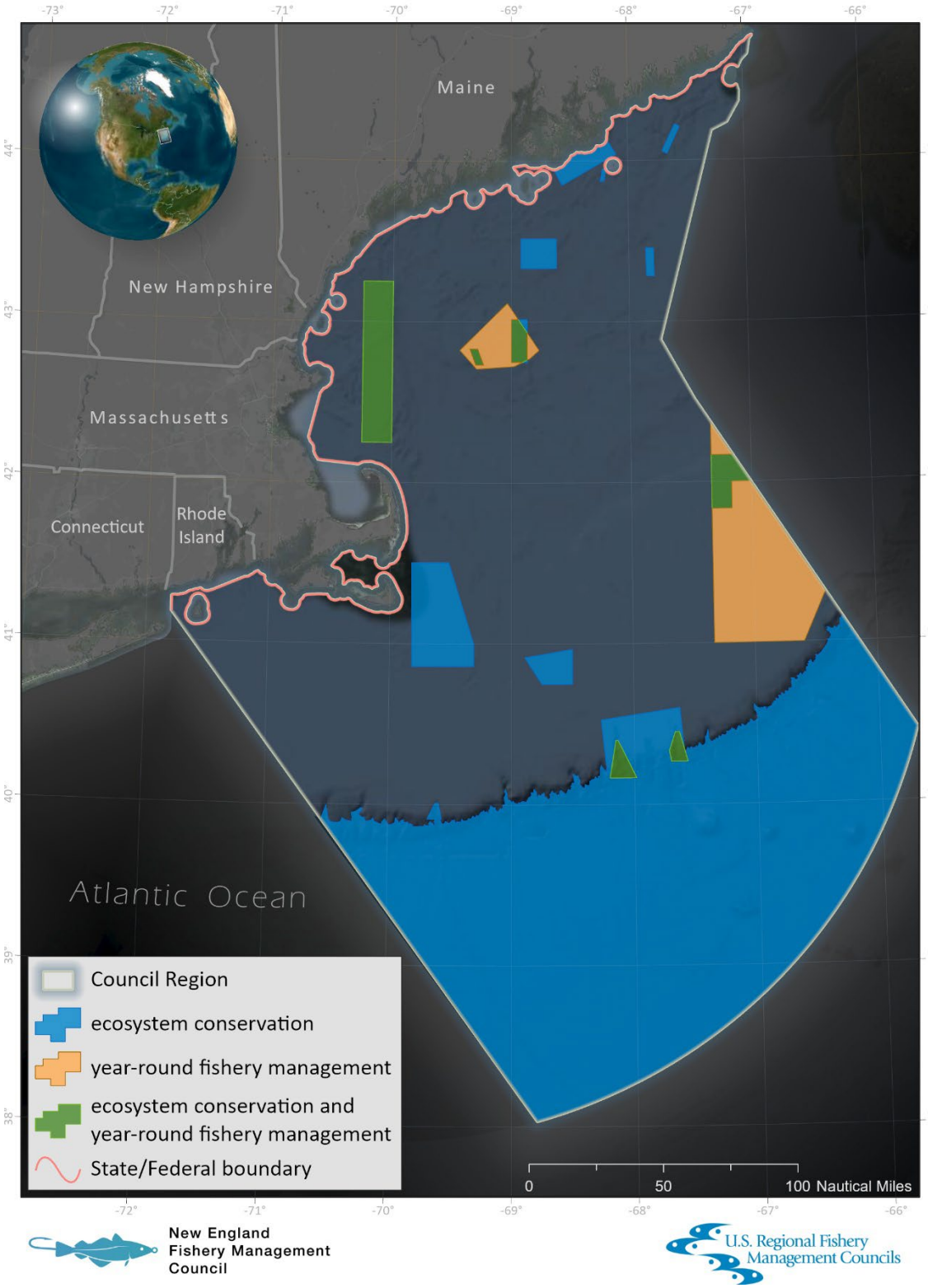
Category	Area Type (number of areas)	Area names	Gears prohibited	Regulations	Years implemented
EC	Habitat Management Areas (8)	Eastern Maine, Jeffreys Bank, Cashes Ledge, Ammen Rock, Fippennies Ledge, Western Gulf of Maine, Closed Area II, Great South Channel	Mobile bottom tending	50 CFR §648.370	2003-2018
EC	Dedicated Habitat Research Areas (3)	Stellwagen Bank, Georges Bank, Jordan Basin	Mobile bottom tending, bottom tending, or none, depending on area	50 CFR §648.371	2018, 2021
EC	Deep-Sea Coral Protection Areas (3)	Outer Schoodic Ridge, Mt. Desert Rock, Georges Bank	Mobile bottom-tending, or bottom tending, depending on area	50 CFR §648.373	2021
EC	Monkfish Closed Areas (2)	Lydonia Canyon, Oceanographer Canyon	Bottom tending	50 CFR §648.97	2005
EC	Marine National Monument (1)	Northeast Canyons and Seamounts Marine National Monument	All	None	2016
YFM	Groundfish Closure Areas (3)	Cashes Ledge, Western Gulf of Maine, Closed Area II	Bottom tending	50 CFR §648.81	1994-2002

- Fixed bottom tending gears other than lobster traps are prohibited in the Ammen Rock Habitat Management Area
- Deep-Sea Coral Protection Areas in the Gulf of Maine prohibit mobile bottom-tending gears; the Georges Bank Coral Protection Area prohibits all bottom tending gears with an exemption for red crab pots.
- Monkfish Closed Areas prohibit fishing under the Monkfish Fishery Management Plan; monkfish are captured in bottom trawls and sink (bottom) gillnets.
- Groundfish Closure Areas prohibit most bottom tending gears with authorizations for exempted fisheries.

Table 7. Area coverage (n.mi.2) and percentage of EEZ where fishing gear is prohibited year-round, in the Northeast Region. Source: Bachman et al., 2025.

Region	Total area of U.S. EEZ	All bottom tending gears	Mobile bottom tending gears	Bottom trawl	Dredge	Other gears
New England	55,947	3,703 (6.6%)	29,915 (39.2%)	24,041 (43%)	34,009 (60.8%)	22,778 (40.7%)
Mid-Atlantic	53,307	23 (0.0%)	31,100 (58.3%)	31,100 (58.3%)	31,282 (58.7%)	31,100 (58.3%)

Map 21. Locations of fishery management and conservation areas in the EEZ in the New England region that prohibit the use of certain fishing gears. Source: Bachman et al., 2025.



5.2 Fishing Effects Modeling Results

Since 2009, model-based estimates of fishing effects from bottom-tending gears have been generated at the scale of the Northeastern U.S. region, across fisheries managed by both Councils (Mid-Atlantic and New England) and the Atlantic States Marine Fisheries Commission. The initial modeling approach was developed by the New England Council's Habitat Plan Development Team (NEFMC Habitat PDT) and was called the Swept Area Seabed Impact Model (SASI). These fishing gear impact estimates were used as the foundation for development of spatial measures to minimize the adverse effects of fishing on EFH in NEFMC's 2018 Omnibus Habitat Amendment 2 (OHA2). Since OHA2, the NEFMC has been using the Fishing Effects Model, which was developed in the North Pacific region and is based on SASI and other analyses, to estimate effects. Updated Fishing Effects Model outputs using fishing effort data through December 2023 were considered. In addition, a fishing gear effects on marine habitats database was created to document the literature available that describes the effects of specific types of fishing gears used in the Northeast and across the US. Specific details on the modeling methods and approach are available in the report, "Fishing Impacts on Essential Fish Habitat in the Northeast U.S. Region and Minimization of Adverse Effects," available at: https://www.nefmc.org/library/essential-fish-habitat-efh-information.

For the recent EFH review, the realized annual time-series of fishing effects were examined across all six core gear types (bottom trawl, scallop dredge, clam dredge, demersal longline, gillnet, and trap) for the entire Northeast, irrespective of a corresponding FMP. There has been a decline in the mean annual effect of all these fishing gears on seafloor habitat over the period 1996-2023 (Figure 2). Comparing the mean annual effect for each of the six core gear types, trawl gear is responsible for most of the realized effects in the region. Since 1996, there have been overall declines in effects from bottom trawl, scallop dredge, demersal longline, and gillnet, and increases in the effects from clam dredge and trap (Figure 2, Figure 3). Although, the mean effect for these gears is very small (with a mean effect of approximately 0.2% for both hydraulic dredges and traps in the most recent years), the magnitude of effects has nearly tripled for hydraulic clam dredge and quadrupled for traps.

Mean values at the northeast regional scale do not provide a complete picture of gear effects, as the spatial and temporal distribution of fishing and associated fishing effects is not uniform throughout the Northeast region. To assess regional differences, the realized annual time-series of fishing effects were summarized by region according to commonly used Ecological Production Units (EPUs), across all gears and irrespective of a corresponding FMP. These EPUs include the Mid-Atlantic Bight, Southern New England, Georges Bank, and the Gulf of Maine. Note that Southern New England includes areas south of Long Island, New York, as well as the area west of the Great South Channel including Nantucket Shoals. Figure 4 shows percentage disturbance for four years, 2000, 2010, 2020, and the terminal year of the model runs, 2023, by four regions, Gulf of Maine, Georges Bank, Southern New England, and Mid-Atlantic Bight. Over time in all regions, there has been a general decline in the mean annual effect of these fishing gears on seafloor habitat. In recent years, average effects are lowest in the Mid-Atlantic Bight (around 0.05, or 5%) and higher in the other three regions (around 0.15-0.20, or 15-20%).

Figure 2. Realized annual time-series of fishing effects for the entire Northeast across all gear types (left) and for each of the six core gear types (right), 1986-2023 (hydraulic dredge excludes 2023). Colored lines show the annual means, and the black lines show the monthly means (the temporal resolution at which the model is run). Confidence intervals (grey bands) shown across all gear types (left). Effects are shown as proportions.

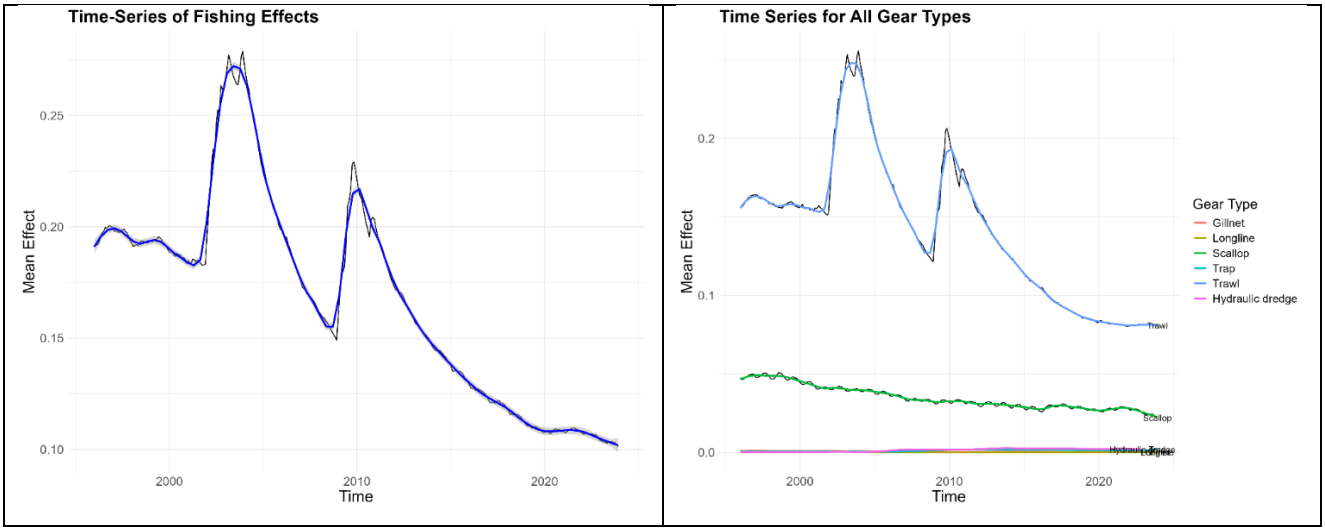


Figure 3. Realized annual time-series for each of the six core gear types with scales adjusted for each gear, 1996-2023. Blue lines show the annual means, the grey bands show the confidence intervals, and the black lines show the monthly means (the temporal resolution at which the model is run). Effects are shown as proportions.

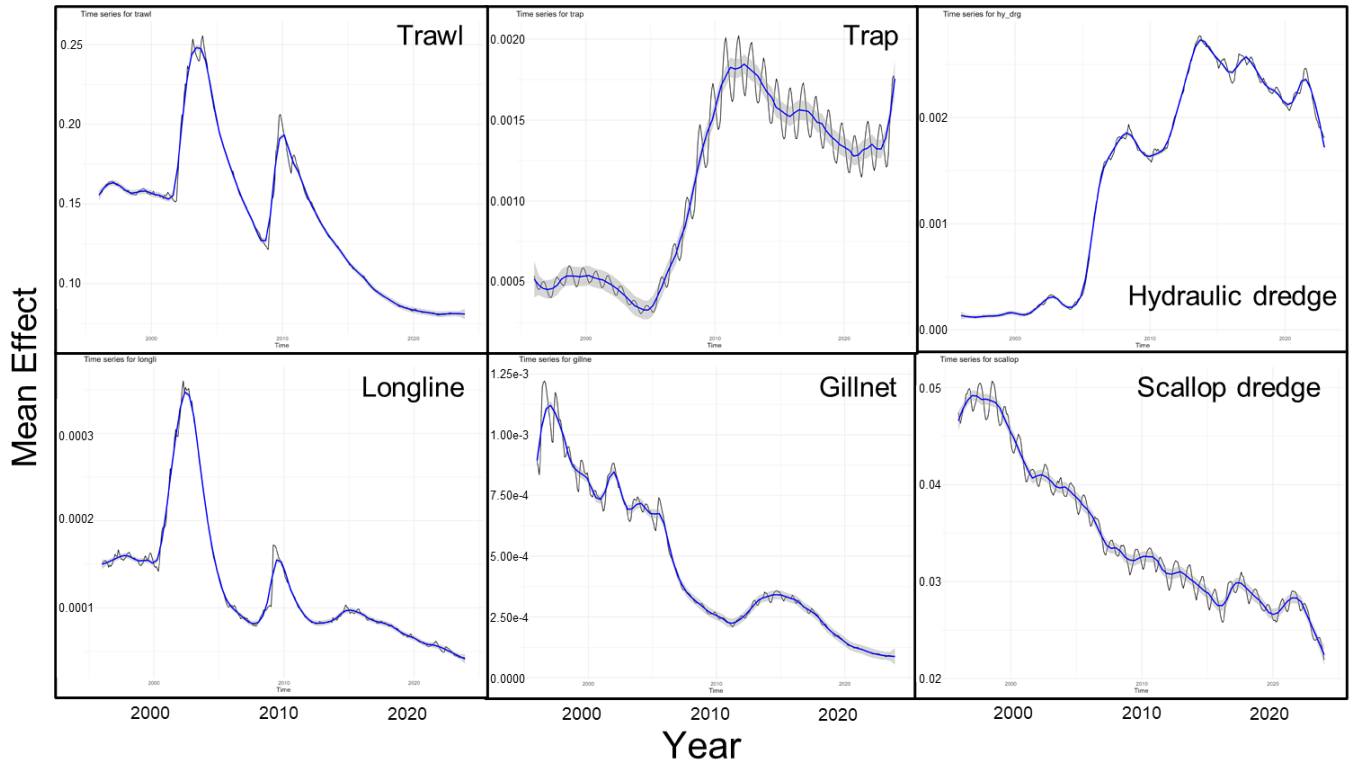
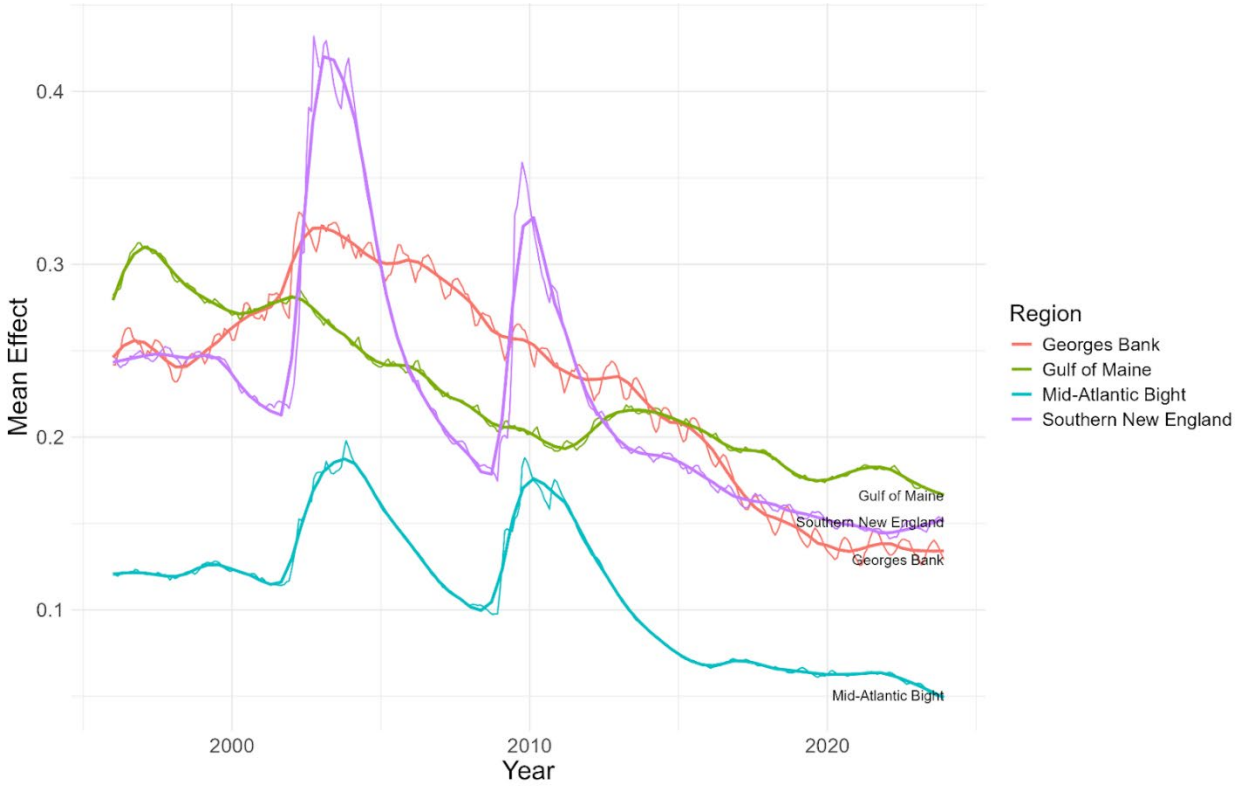


Figure 4. Realized annual time-series of fishing effects for each region across all gear types, 1986-2023 (Hydraulic dredge excludes 2023). Colored lines show the annual mean, with the thinner colored lines showing monthly mean. Effects are shown as proportions.



5.3 Fishery Trends

The Northeast Fishery Science Center's 2025 State of the Ecosystem Report provides trends and status of indicators related to broad ecosystem-level fishery management objectives. Updated indicators for total commercial landings, (includes seafood, bait, and industrial landings), U.S. seafood landings, and Council-managed U.S. seafood landings have declined in the Georges Bank and Gulf of Maine regions since the 1980s (Figure 5).

Several diversity estimates are used to evaluate stability for fleets landing federally managed species, and species landed by commercial vessels with New England permits. Commercial fishery fleet count has rebounded recently but is still below the historical average (Figure 6) while fleet revenue diversity (Figure 7) has declined to a near low since records began. Revenue diversity measures the effective number of species being managed by the commercial fleet.

Figure 5. Total commercial landings (black), total U.S. seafood landings (blue), and New England managed U.S. seafood landings (red), with significant decline (purple) in total landings. Left panel, Georges Bank, right panel, Gulf of Maine. Source: 2025 State of the Ecosystem Report New England and Northeast US Ecosystem Indicator Catalog.

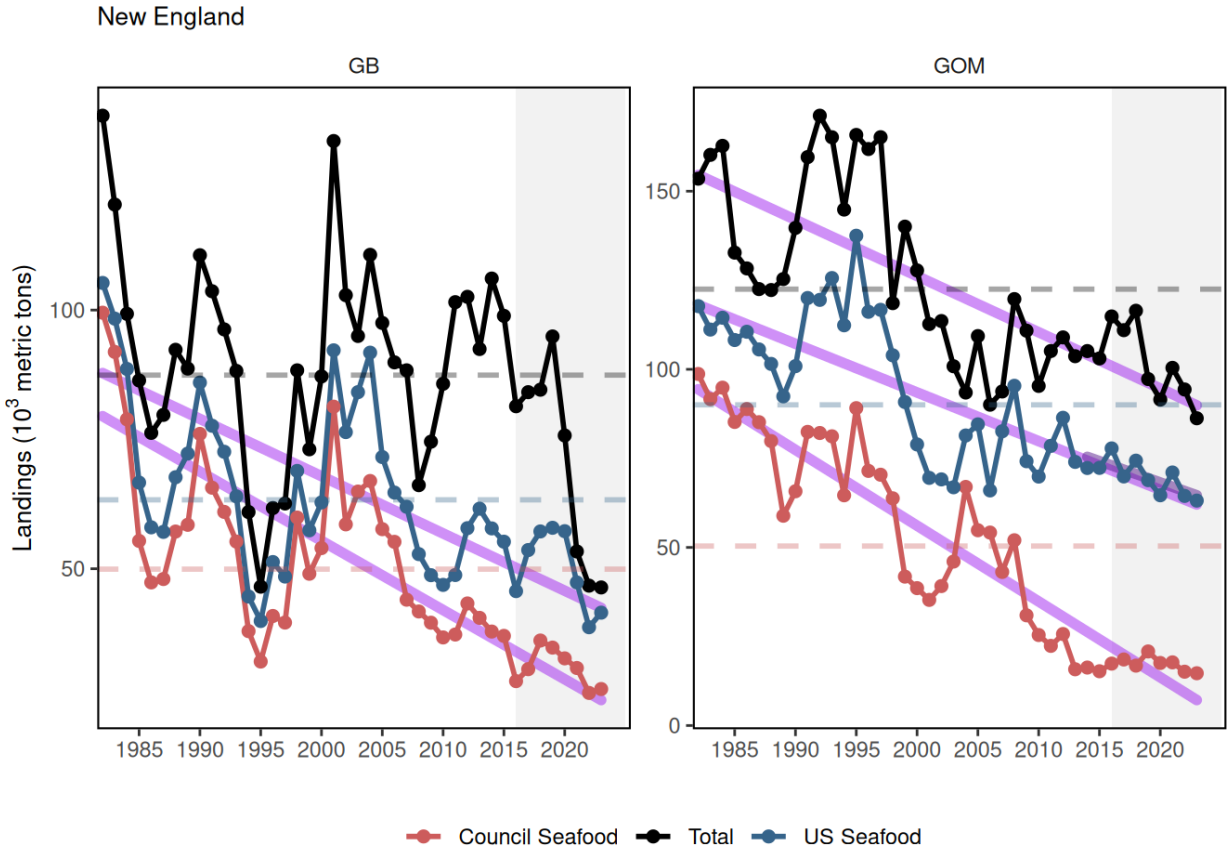


Figure 6. Commercial fleet count in New England. Source: 2025 State of the Ecosystem Report New England and Northeast US Ecosystem Indicator Catalog.

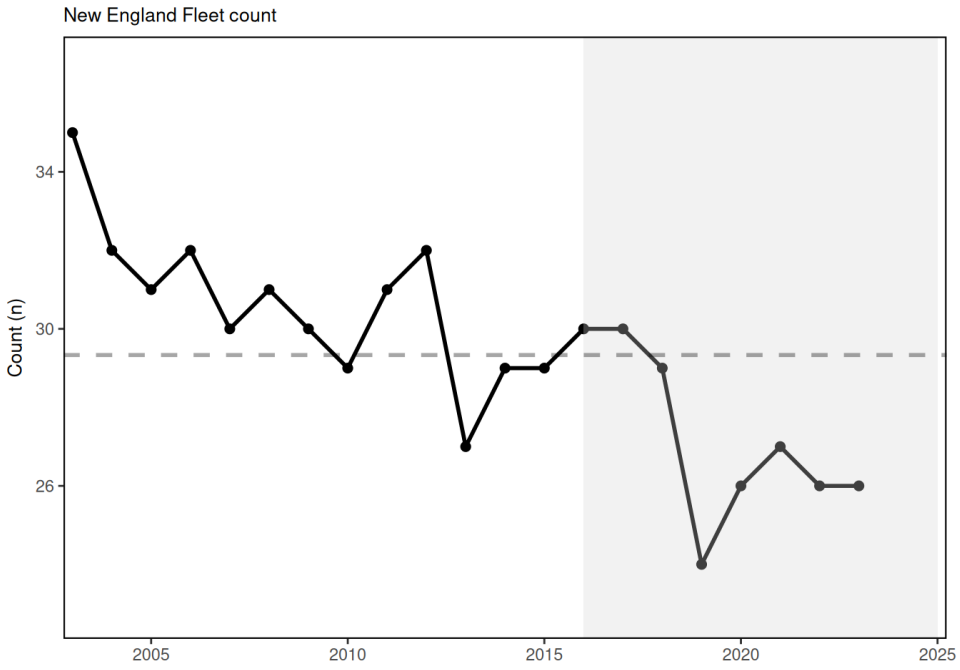
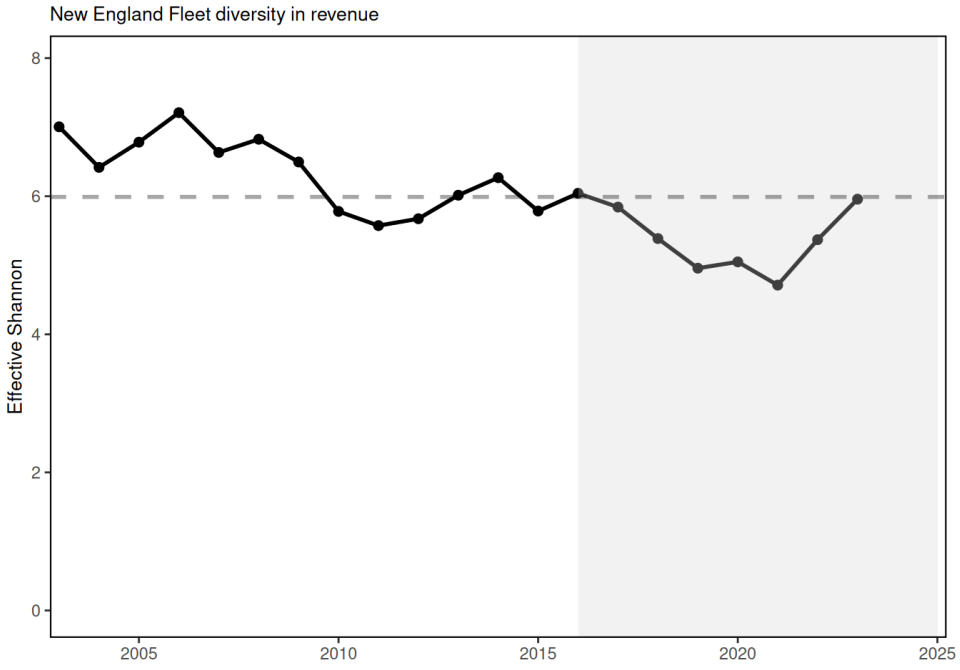


Figure 7. Fleet diversity in revenue in New England. Source: 2025 State of the Ecosystem Report New England and Northeast US Ecosystem Indicator Catalog.



5.4 Average Fishing Effects Within Updated EFH Areas

As shown in the left panel of Figure 2, the recent average fishing effect for the Northeast region overall, across all gears, is roughly 10-11%. The average fishing effect within updated EFH areas was calculated for four different months in 2022 (Table 8). If the average fishing effect with the EFH area is lower than the northeast region average, this suggests that the essential habitats for the species overlap less vulnerable habitat types and/or are less intensively fished. If the average within the EFH area is higher, this indicates that essential habitats for the species overlap areas that are on average more vulnerable to fishing and/or are more intensively fished. Higher values may indicate species to examine further when considering measures to minimize adverse effects of fishing on EFH.

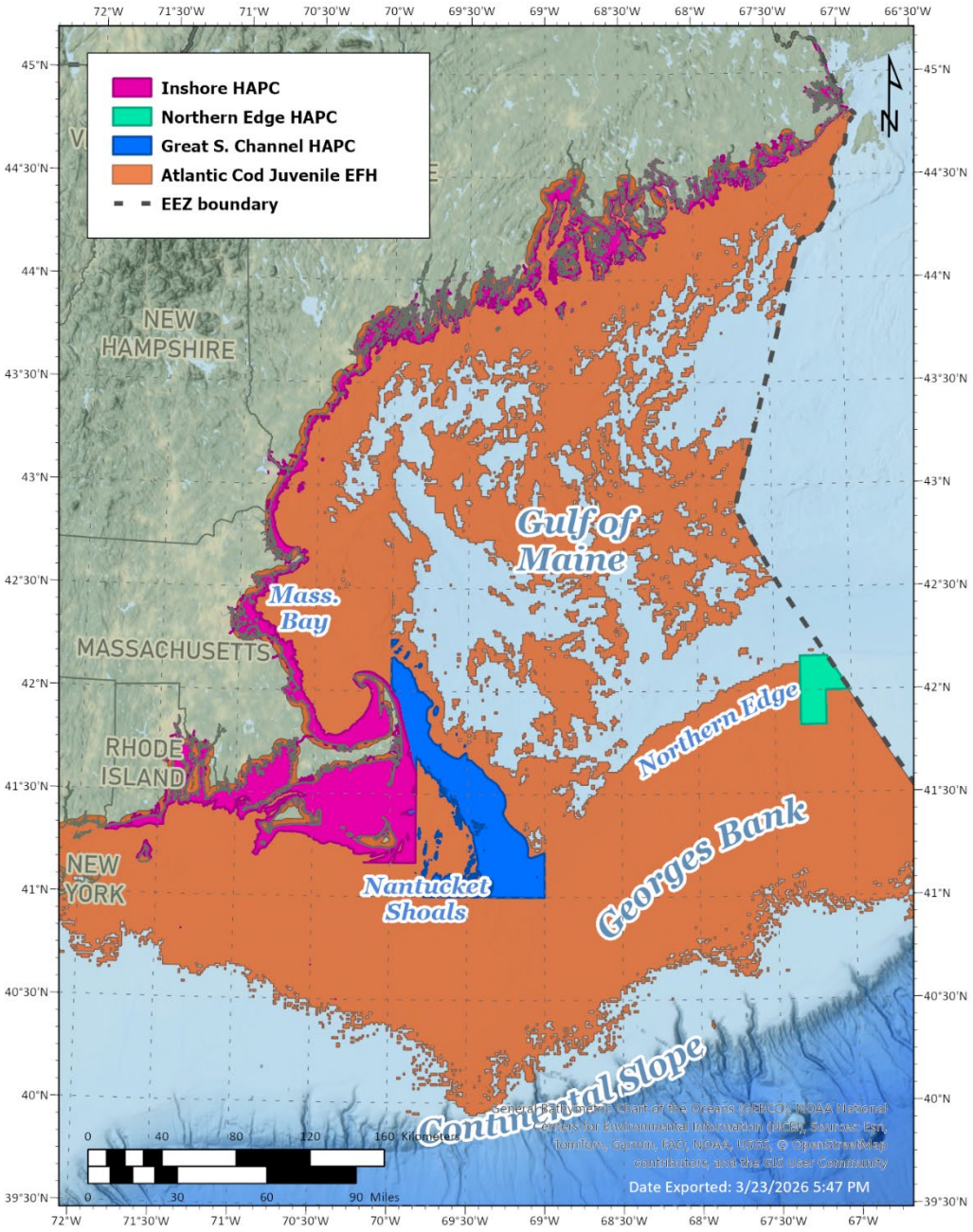
Table 8. Average percentage habitat disturbance (fishing effect) across all gears within the EFH area for the range of species considered in this action. The domain-wide average for this month is 11%. Fishing effects estimates are for January, April, July, and October 2022.

Species	Lifestage	January	April	July	October
Entire Fishing Effects Domain	*n/a*	*11%*	*11%*	*11%*	*11%*
Atlantic cod	Juvenile	12%	12%	12%	12%
Atlantic cod	Adult	17%	17%	17%	17%
Atlantic herring	Juvenile	13%	13%	13%	13%
Atlantic herring	Adult	14%	14%	14%	14%
Monkfish	Juvenile	16%	16%	15%	15%
Monkfish	Adult	16%	16%	16%	16%
Barndoor skate	All	18%	18%	18%	18%
Clearnose skate	Juvenile	4%	4%	4%	4%
Clearnose skate	Adult	6%	6%	6%	6%
Little skate	Juvenile	13%	13%	13%	13%
Little skate	Adult	13%	13%	13%	13%
Rosette skate	All	13%	14%	13%	13%
Smooth skate	All	21%	21%	20%	20%
Thorny skate	All	20%	20%	19%	19%
Winter skate	Juvenile	12%	12%	12%	13%
Winter skate	Adult	13%	13%	13%	13%

5.5 Alignment with Habitat Areas of Particular Concern

The Council has three Habitat Area of Particular Concern designations that pertain specifically to juvenile cod (NEFMC 2016, Volume 2). The first of these includes inshore waters of the Gulf of Maine and Southern New England to a depth of 20 meters. The second includes areas to the west of the Great South Channel. The third includes a portion of the northern edge of Georges Bank. Since Habitat Areas of Particular Concern are by definition a subset of EFH, it is important to check that these three HAPCs would continue to fall within the EFH definition for juvenile cod. These HAPCs would continue to be identified as juvenile cod EFH under Alternative 2, updated EFH designations. Map 22 shows the overlap between updated juvenile cod EFH and the existing HAPCs.

Map 22. Spatial overlap between proposed juvenile cod EFH and juvenile cod focused Habitat Areas of Particular Concern.



6.0 APPLICABLE LAWS / EXECUTIVE ORDERS

6.1 MAGNUSON STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

6.1.1 National Standards

Section 301 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires that regulations implementing any fishery management plan or amendment be consistent with ten national standards. This action contains no measures that affect the current operational regulations of the fisheries, rather this action modifies administrative measures of the Northeast Multispecies, Monkfish, Atlantic Herring, and Northeast Skate Complex FMPs. As a result, each of the FMPs would continue to comply with all elements of the MSA following this action, including all ten National Standards. Table 9 provides a list of the most recent actions for the affected FMPs which summarize how the actions are consistent with the National Standards of the MSA.

Table 9. Most recent actions by FMP.

Fishery Management Plan (FMP)	Action	Summary of Consistency with MSA Nationals Standards is Available at:
Northeast Multispecies	Framework Adjustment 69	https://www.nefmc.org/management-plans/northeast-multispecies
Monkfish	Framework Adjustment 13	https://www.nefmc.org/management-plans/monkfish
Atlantic Herring	2025-2027 Specifications	https://www.nefmc.org/management-plans/herring
Northeast Skate Complex	Framework Adjustment 12	https://www.nefmc.org/management-plans/skates
Small-Mesh Multispecies	2024-2026 Specifications	https://www.nefmc.org/management-plans/small-mesh-multispecies

National Standard 1. The proposed action is consistent with National Standard 1, because EFH supports development of conservation measures for the ten species considered in this action. This measure will likely contribute to the prevention of overfishing and achievement of optimum yield for managed species and the U.S. fishing industry on a continuing basis.

National Standard 2. The proposed action is consistent with National Standard 2, because it was informed by the most recently available fisheries-independent data from several surveys and other scientific data sources. The model-based EFH designation approaches used in this action have been refined over a period of years and reviewed by the Council's SSC. The supporting science and analyses, upon which the proposed action is based, are summarized in the Council's EFH 5-Year Review and in Appendix E.

National Standard 3. The proposed action is consistent with National Standard 3, because EFH is designated throughout the management units for each of the ten species.

National Standard 4. The proposed action is consistent with National Standard 4. EFH is designated throughout the management unit based on habitats used by the species. The designations do not have a direct effect on fishing and therefore do not discriminate among residents of different states.

National Standard 5. The proposed action is consistent with National Standard 5. EFH is designated throughout the management unit based on habitats used by the species. The designations do not have a direct effect on fishing, and the purpose of the designations is not related to economic allocation.

National Standard 6. The proposed action is consistent with National Standard 6, because it accounts for variations in the fishery. The EFH designations are reliant on and reflective of recent data and can be updated in the future as conditions change. EFH designations do not have a direct effect on fishing.

National Standard 7. The proposed action is consistent with National Standard 7. EFH designations do not have a direct effect on fishing and therefore no direct costs are expected to be incurred as a result of this management action. Consistent with National Standard 7, the management measures proposed in this document are not duplicative and were developed in close coordination with NMFS, the MAFMC, and other interested entities and agencies to minimize duplicity.

National Standard 8. The proposed action is consistent with National Standard 8, because EFH identification and conservation inherently recognizes and supports the importance of fishery resources to fishing communities and provides for their sustained participation. EFH designations do not have a direct effect on fishing activity and consideration of minimizing adverse economic impacts of EFH-related management measures is beyond this scope of this action.

National Standard 9. The proposed action is consistent with National Standard 9. EFH designations do not have a direct effect on fishing activity and therefore do not directly influence bycatch levels of non-target species.

National Standard 10. The proposed action is consistent with National Standard 10, because EFH designations do not have a direct effect on fishing activity and thus none of the measures are expected to create unsafe conditions and situations at sea.

6.1.2 Other MSA Requirements

Section 303 (a) of MSA contains required provisions for FMPs. The action is administrative in nature. As such, each of the Northeast Multispecies, Monkfish, Atlantic Herring, and Northeast Skate Complex FMPs would continue to be consistent with the fourteen additional required provisions of the statute (see Table 9).

6.2 National Environmental Policy Act

The National Environmental Policy Act (NEPA) provides a mechanism for identifying and evaluating the full spectrum of environmental issues associated with federal actions and for considering a reasonable range of alternatives to avoid or minimize adverse environmental impacts. It has been preliminarily determined that this action qualifies for a categorical exclusion from the need for further NEPA review, as it is primarily administrative in nature.

6.2.1 Point of Contact

Questions concerning this document may be addressed to:

Dr. Cate O'Keefe, Executive Director
New England Fishery Management Council

50 Water Street, Mill 2
Newburyport, MA 01950 (978) 465-0492

6.2.2 Agencies Consulted

The following agencies, in alphabetical order, were consulted in preparing this document:

- Atlantic States Marine Fisheries Commission and Atlantic Herring Section
- Mid-Atlantic Fishery Management Council
- New England Fishery Management Council, including representatives from:
  - Connecticut Department of Environmental Protection
  - Maine Department of Marine Resources
  - Massachusetts Division of Marine Fisheries
  - New Hampshire Fish and Game
  - Rhode Island Department of Environmental Management
- National Marine Fisheries Service, NOAA, Department of Commerce
- United States Coast Guard, Department of Homeland Security
- United States Fish and Wildlife Service, Department of Interior

6.2.3 List of Preparers

The following personnel participated in preparing this document:

- ***New England Fishery Management Council***. Michelle Bachman, Julian Garrison, Dr. Jamie Cournane, Emily Bodell, Jenny Couture, Robin Frede, Angelia Miller, Dr. Rachel Feeney.
- ***National Marine Fisheries Service.*** Sharon Benjamin, Sabrina Pereira
- ***State agencies.*** Julia Livermore (RI DEM), Anne Simpson (ME DMR)
- ***Academic/other.*** Dr. Chris Haak (Monmouth University), Dr. Peter Auster (University of Connecticut, Mystic Aquarium), Dr. Fiona Hogan (Responsible Offshore Development Alliance)
- ***Mid-Atlantic Fishery Management Council***. Jessica Coakley, Tori Kentner

6.2.4 Opportunity for Public Comment

This action was developed between April and September 2025. There were two Council meetings, one joint Habitat Committee / Habitat Advisory Panel meeting, and three Habitat Plan Development Team meetings related to this action. The action was also discussed at various Groundfish, Herring, Monkfish, and Skate PDT and Advisory Panel meetings as noted below. Opportunities for public comment occurred at Advisory Panel, Committee, and Council meetings. There were more limited opportunities to comment at PDT meetings. Meeting discussion documents and summaries are available at www.nefmc.org.

Table 10. Public meetings related to the 2025 EFH Designation Framework.

Date	Meeting Type	Location
April 15, 2025	Council	Mystic, CT and via webinar
May 22, 2025	Habitat PDT	Webinar
May 28, 2025	Herring PDT	Webinar
May 29, 2025	Joint Skate and Monkfish PDTs	Webinar
June 10, 2025	Groundfish and Recreational Advisory Panels	Webinar
June 18, 2025	Herring PDT	Webinar
July 21, 2025	Habitat PDT	Webinar

August 25, 2025	Habitat PDT	Webinar
September 11, 2025	Habitat Committee / Advisory Panel	Wakefield, MA and via webinar
September 24, 2025	Council	Gloucester, MA and via webinar

6.3 Marine Mammal Protection Act (MMPA)

The proposed action is administrative in nature and is not expected to result in any direct or indirect impacts to MMPA protected species. As a result, this action would not affect marine mammals in any manner not considered in previous consultations on the fisheries. A final determination of consistency with the MMPA will be made by the agency when this action is approved.

6.4 Endangered Species Act (ESA)

The proposed action would implement adjustments to the Northeast Multispecies, Monkfish, Northeast Skate Complex, and Atlantic Herring FMPs. The following summarizes the ESA section 7 consultations completed (or soon to be completed) on these fisheries, as well as an evaluation of the proposed action's consistency with each consultation's determination under the ESA.

6.4.1 ESA Section 7 Consultations

Northeast Multispecies, Monkfish, and Northeast Skate Complex FMPs

On May 27, 2021, the National Marine Fisheries Service's (NMFS) completed formal consultation pursuant to section 7 of the ESA of 1973, as amended, and issued a biological opinion (2021 Opinion) on the authorization of eight FMPs, two interstate fishery management plans (ISFMP), and the implementation of the New England Fishery Management Council's Omnibus Essential Fish Habitat (EFH) Amendment 2[4]. The 2021 Opinion considered the effects of the authorization of these FMPs, ISFMPs, and the implementation of the Omnibus EFH Amendment on ESA-listed species and designated critical habitat, and determined that those actions were not likely to jeopardize the continued existence of any ESA-listed species or destroy or adversely modify designated critical habitats of such species under NMFS jurisdiction. An Incidental Take Statement (ITS) was issued in the 2021 Opinion. The ITS includes reasonable and prudent measures and their implementing terms and conditions, which NMFS determined are necessary or appropriate to minimize impacts of the incidental take in the fisheries assessed in the 2021 Opinion.

On September 13, 2023, NMFS issued a 7(a)(2)/7(d) memorandum that reinitiated consultation on the 2021 Opinion. The Federal actions to be addressed in this reinitiation of consultation include the authorization of the Federal fisheries conducted under the aforementioned eight Federal FMPs. The reinitiated consultation will not include the American lobster and Jonah crab fisheries, which are authorized under ISFMPs. On December 29, 2022, President Biden signed the Consolidated Appropriations Act (CAA), 2023, which included the following provision specific to NMFS' regulation of the American lobster and Jonah crab fishery to protect right whales, "Notwithstanding any other provision of law ... for the period beginning on the date of enactment of this Act and ending on December 31, 2028, the Final Rule ... shall be deemed sufficient to ensure that the continued Federal and State

[4] The eight Federal FMPs considered in the May 27, 2021, Biological Opinion include: (1) Atlantic Bluefish; (2) Atlantic Deep-Sea Red Crab; (3) Mackerel, Squid, and Butterfish; (4) Monkfish; (5) Northeast Multispecies; (6) Northeast Skate Complex; (7) Spiny Dogfish; and (8) Summer Flounder, Scup, and Black Sea Bass. The two ISFMPs are American Lobster and Jonah Crab.

authorizations of the American lobster and Jonah crab fisheries are in full compliance with the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et seq.) and the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)." Given this, the American lobster and Jonah crab fisheries remain in compliance with the ESA through December 31, 2028.

On January 8, 2025, and amended on November 25, 2025, NMFS issued a memorandum titled, "Section 7(a)(2) and 7(d) Determinations for the Extended Reinitiation Period for Endangered Species Act Section 7 Consultation on Eight Fishery Management Plans." This reinitiation memorandum determined that the authorization of these fisheries during the extended reinitiation period would not violate section 7(d) of the ESA and would not be likely to jeopardize the continued existence of ESA-listed large whales, sea turtles, Atlantic sturgeon, Atlantic salmon, or giant manta rays, or adversely modify designated critical habitat.

Atlantic Herring FMP

NMFS considered the effects of the continued authorization of the herring fishery under the Atlantic Herring FMP on ESA-listed cetaceans, sea turtles, and fish, and designated critical habitat during an ESA section 7 consultation. An informal consultation was completed on February 9, 2010, that fully analyzed and considered the effects of the herring fishery on all ESA-listed species of sea turtles, cetaceans, and Atlantic salmon (Gulf of Maine distinct population segment) and designated critical habitat for listed species. This consultation concluded that the herring fishery is not likely to interact with any ESA-listed species, and is not likely to adversely affect ESA-listed species or designated critical habitat.

Since the completion of the 2010 informal consultation, multiple herring fishery management actions have been authorized, new ESA-listed species or critical habitat have been designated, and/or new information on ESA-listed species has been reported. As provided in 50 CFR 402.16, reinitiation of ESA section 7 consultation is required where discretionary control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in the most recent consultation (informal or formal); or (4) a new species is listed or critical habitat designated that may be affected by the action.

To date, in accordance with § 402.16, NMFS has determined that reinitiation of consultation has not been warranted. Specifically:

- NMFS review of every herring fishery management action since 2010 has determined that none of the proposed herring fishery management actions have modified the fishery in a manner that will result in effects to listed species or critical habitat in a manner or to an extent not previously considered;
- Since 1989, the date of NMFS' earliest observer records for Federally managed fisheries, there has been no observed or documented interactions between gear used in the herring fishery (i.e., primarily purse seine and mid-water trawl) and any ESA-listed species (Greater Atlantic Region Marine Animal Incident Database, unpublished data ; Northeast Fisheries Science Center (NEFSC) observer/sea sampling database, unpublished data; NMFS NEFSC marine mammal (baleen whale) serious injury and mortality reports; MMPA List of Fisheries (LOF); NMFS Marine Mammal Stock Assessment Reports for the Atlantic Region; NMFS 2021). Given this, consistent with the 2010 consultation, NMFS has determined that no take is anticipated or exempted for this fishery;
- There is new information on North Atlantic right whale distribution and abundance; however, gear used in the herring fishery is not likely to interact with this species. As a result, NMFS determined effects to North Atlantic right whales are expected to remain similar to those

previously considered for this fishery, and therefore, does not meet this trigger for reinitiation (NMFS 2021); and,

- Since 2010, NMFS has considered whether ESA section 7 consultation must be reinitiated as a result of the listing or designation of any new species or critical habitat. After review of the best available information, NMFS determined that none of the new listings or designated critical habitat would be affected by the herring fishery, and as such, reinitiation of consultation was not warranted.

6.4.2 Overall ESA Determination

The proposed action is administrative in nature and therefore, is not expected to result in any direct or indirect impacts to ESA-listed species or designated critical habitat. Based on this and the information provided above, it has been determined that the proposed action does not entail making any changes to the Northeast multispecies, monkfish, northeast skate, or Atlantic herring fisheries that would cause an increase in interactions with or effects to ESA-listed species or designated critical habitat beyond those considered in NMFS':

- May 27, 2021, Opinion and amended January 8, 2025, reinitiation memorandum on eight FMPS (including the Northeast Multispecies, Monkfish, and Northeast Skate FMPs); and
- February 9, 2010, consultation on the Atlantic Herring FMP.

Based on the above, as it pertains to the Northeast multispecies, monkfish, northeast skate, and Atlantic herring fisheries, the proposed action is consistent with the determinations made by NMFS in the respective fisheries Opinions, informal consultations, and/or reinitiation memorandums described above.

6.5 Administrative Procedure Act (APA)

Sections 551-553 of the Administrative Procedure Act established procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process, and to give public notice and opportunity for comment. The Council did not request relief from notice and comment rule making for this action and expects that NOAA Fisheries will publish proposed and final rule making for this action.

6.6 Paperwork Reduction Act (PRA)

The purpose of the Paperwork Reduction Act (PRA) is to minimize paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. It also ensures that the Government is not overly burdening the public with information requests. This action does not include any revisions to the current PRA collection requirements; therefore, no review under the PRA is necessary.

6.7 Coastal Zone Management Act (CZMA)

Section 307 of the Coastal Zone Management Act is known as the federal consistency provision. Federal Consistency review requires that "federal actions, occurring inside or outside of a state's coastal zone, that have a reasonable potential to affect the coastal resources or uses of that state's coastal zone, to be consistent with that state's enforceable coastal policies, to the maximum extent practicable." NOAA Fisheries has previously made determinations that these FMPs were consistent with each state's coastal zone management plan and policies, and each coastal state concurred in these consistency determinations.

Once the Council has adopted final measures and submitted the 2025 EFH Framework to NMFS, NMFS will request consistency reviews by CZM state agencies directly.

6.8 Information Quality Act (IQA)

This document includes a description of the management issues and the reasons for selecting the proposed action. The proposed action updates Essential Fish Habitat designations consistent with the MSA and all other existing applicable laws. Until a notice of action is prepared and published, this document is the principal means by which the information herein is publicly available. This document will be subject to public comment before final approval, as specified in Section 304 (a)(1)(B) of the MSA, and, therefore, may be improved based on comments received. This document is available in several formats, including printed publication, and online through the NEFMC's web page (www.nefmc.org). The *Federal Register* notice that announces this action will be made available in printed publication, on the website for the Greater Atlantic Regional Fisheries Office (GARFO; www.greateratlantic.fisheries.noaa.gov), and through the Regulations.gov website.

The Council review process involves public meetings at which affected stakeholders have opportunity to comment on the document. Review by staff at GARFO is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law.

Final approval of the action proposed in this document and clearance of any rules prepared to implement resulting regulations is conducted by staff at NOAA Fisheries Service Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget. In preparing this action, the Council must comply with the Magnuson-Stevens Fishery Conservation and Management Act, the Regulatory Flexibility Act, the Administrative Procedure Act, the Paperwork Reduction Act, the Coastal Zone Management Act, the Endangered Species Act, the Marine Mammal Protection Act, the Information Quality Act, and Executive Orders 12630 (Property Rights), 12866 (Regulatory Planning), 13132 (Federalism), and 13158 (Marine Protected Areas). The Council has determined that the proposed action is consistent with the National Standards of the MSA and all other applicable laws.

6.9 Executive Order 13158 (Marine Protected Areas)

EO 13158 on Marine Protected Areas (MPAs) requires each federal agency whose actions affect the natural or cultural resources that are protected by an MPA to identify such actions, and, to the extent permitted by law and to the maximum extent practicable, in taking such actions, avoid harm to the natural and cultural resources that are protected by an MPA. The EO directs federal agencies to refer to the MPAs identified in a list of MPAs that meet the definition of MPA for the purposes of the EO. The EO requires that the Departments of Commerce and the Interior jointly publish and maintain such a list of MPAs. A list of MPA sites has been developed and is available at: http://marineprotectedareas.noaa.gov/nationalsystem/nationalsystemlist/.

No further guidance related to this EO is available at this time.

In the Northeast U.S., the only MPAs are the Stellwagen Bank National Marine Sanctuary (SBNMS), the Tilefish Gear Restricted Areas in the canyons of Georges Bank, and the National Estuarine Research Reserves and other coastal sites.

This action is administrative in nature, will not directly affect resources within MPAs, and is thus exempt from review under Executive Order 13158.

6.10 Executive Order 13132 (Federalism)

EO 13132 on federalism established nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. However, no federalism issues or implications have been identified relative to the measures proposed in this action, thus preparation of an assessment under EO 13132 is unwarranted. The affected states have been closely involved in the development of the proposed action through their representation on the Councils. All affected states are represented as voting members of at least one Regional Fishery Management Council. No comments were received from any state officials relative to any federalism implications that may be associated with this action.

6.11 Regulatory Flexibility Act (RFA)

The purpose of the Regulatory Flexibility Analysis (RFA) is to reduce the impacts of burdensome regulations and record-keeping requirements on small businesses. To achieve this goal, the RFA requires government agencies to describe and analyze the effects of regulations and possible alternatives on small business entities. Analysis and review of this action under the RFA is not necessary, because this action is administrative in nature and contains no measures that affect the current operational regulations of the fisheries. The implementing regulations under this proposed action modify Essential Fish Habitat designations in the Northeast Multispecies, Monkfish, Atlantic Herring, and Northeast Skate Complex FMPs.

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8.0 APPENDIX A: NO ACTION EFH DESIGNATIONS

8.1 ATLANTIC COD

The no action EFH maps for Atlantic cod eggs and larvae are based on the relative abundance of juvenile cod during 1968-2005 in the fall and spring NMFS trawl surveys at the 90th percentile catch level, and the relative abundance of eggs and larvae during 1978-1987 in the NMFS MARMAP ichthyoplankton surveys at the 90th percentile area level. Ten-minute squares located south of 38°N latitude were not included. The no action maps also include ten minute squares in state waters that met the 10% or more frequency of occurrence criterion for juvenile cod, those bays and estuaries identified by the ELMR program where Atlantic cod eggs or larvae were "common" or "abundant," (see Table 11).

The no action EFH maps for juvenile and adult Atlantic cod within the NMFS trawl survey area were developed using a GIS depiction of preferred depth and bottom temperature ranges that were determined from graphical 1963-2003 spring and fall NMFS trawl survey data in Lough (2005). They are also based on average catch per tow data in ten minute squares of latitude and longitude in the 1968-2005 spring and fall NMFS trawl surveys mapped at the 90th percentile of catch level and include inshore areas where juveniles or adults were caught in 10% or more of tows made in individual ten minute squares during state trawl surveys, and ELMR information for coastal bays and estuaries. Both maps include ten minute squares along the Maine coast that were either inadequately surveyed (fewer than four tows) or were "filled in" based on input from industry members on the Habitat Committee. The adult map also includes historical cod spawning grounds in coastal Gulf of Maine waters.[5]

Text descriptions:

Essential fish habitat for Atlantic cod (*Gadus morhua*) is designated anywhere within the geographic areas that are shown in Table 11 and the following maps which exhibit the environmental conditions defined in the text descriptions.

Eggs: Pelagic habitats in the Gulf of Maine, on Georges Bank, and in the Mid-Atlantic region, as shown on Map 23, and in the high salinity zones of the bays and estuaries listed in Table 11.

Larvae: Pelagic habitats in the Gulf of Maine, on Georges Bank, and in the Mid-Atlantic region, as shown on Map 24, and in the high salinity zones of the bays and estuaries listed in Table 11.

Juveniles: Intertidal and sub-tidal benthic habitats in the Gulf of Maine, southern New England, and on Georges Bank, to a maximum depth of 120 meters (see Map 25), including high salinity zones in the bays and estuaries listed in Table 11. Structurally-complex habitats, including eelgrass, mixed sand and gravel, and rocky habitats (gravel pavements, cobble, and boulder) with and without attached macroalgae and emergent epifauna, are essential habitats for juvenile cod. In inshore waters, young-of-the-year juveniles prefer gravel and cobble habitats and eelgrass beds after settlement, but in the absence of predators also utilize adjacent un-vegetated sandy habitats for feeding. Survival rates for young-of-the-year cod are higher in more structured rocky habitats than in flat sand or eelgrass; growth rates are higher in eelgrass. Older juveniles move into deeper water and are associated with gravel, cobble, and boulder habitats, particularly those with attached organisms. Gravel is a preferred substrate for young-of-the-year juveniles on Georges Bank and they have also been observed along the small boulders and cobble margins of rocky reefs in the Gulf of Maine.

[5] Ten minute squares along the Maine and New Hampshire coasts that overlap with historically important spawning grounds, as reported by Ames (2002), were added to the proposed adult EFH map; they were also added to the status quo map in 1998.

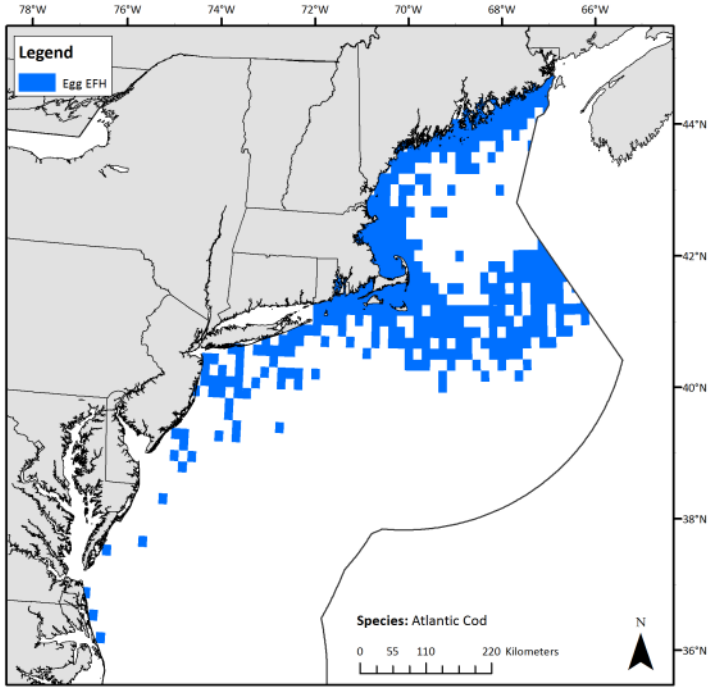
Adults: Sub-tidal benthic habitats in the Gulf of Maine, south of Cape Cod, and on Georges Bank, between 30 and 160 meters (see Map 26), including high salinity zones in the bays and estuaries listed in Table 11. Structurally complex hard bottom habitats composed of gravel, cobble, and boulder substrates with and without emergent epifauna and macroalgae are essential habitats for adult cod. Adult cod are also found on sandy substrates and frequent deeper slopes of ledges along shore. South of Cape Cod, spawning occurs in nearshore areas and on the continental shelf, usually in depths less than 70 meters.

Table 11. Atlantic cod EFH designation for estuaries and embayments.

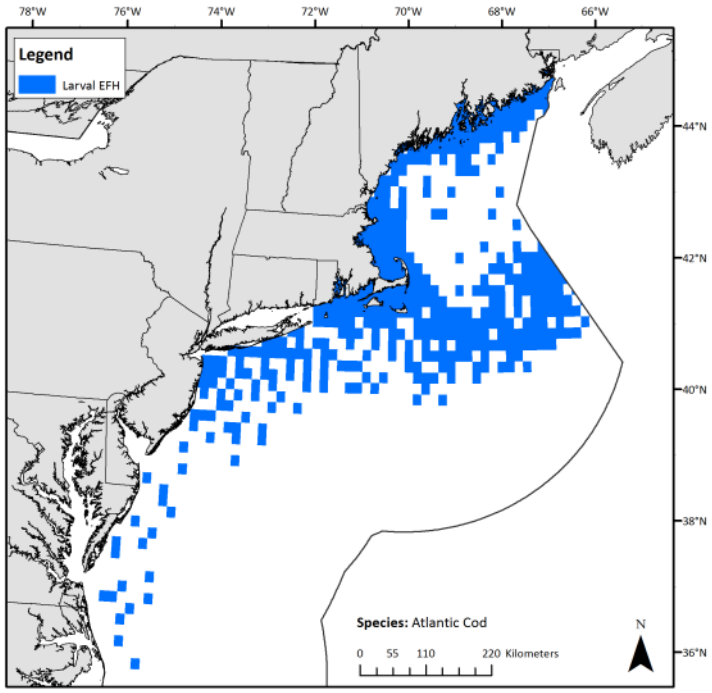
Estuaries and Embayments	Eggs	Larvae	Juveniles	Adults
Passamaquoddy Bay		S	S	S
Englishman/Machias Bay	S	S	S	S
Narraguagus Bay	S	S	S	S
Blue Hill Bay	S	S	S	S
Penobscot Bay		S	S	S
Muscongus Bay			S	S
Damariscotta River			S	S
Sheepscot River	S	S	S	S
Kennebec / Androscoggin			S	S
Casco Bay	S	S	S	S
Saco Bay	S	S	S	S
Great Bay	S	S		
Massachusetts Bay	S	S	S	S
Boston Harbor	S	S	S,M	S,M
Cape Cod Bay	S	S	S	S
Buzzards Bay	S	S	S	S

S ≡ The EFH designation for this species includes the seawater salinity zone of this bay or estuary (salinity > 25.0‰).
M ≡ The EFH designation for this species includes the mixing water / brackish salinity zone of this bay or estuary (0.5 < salinity < 25.0‰).

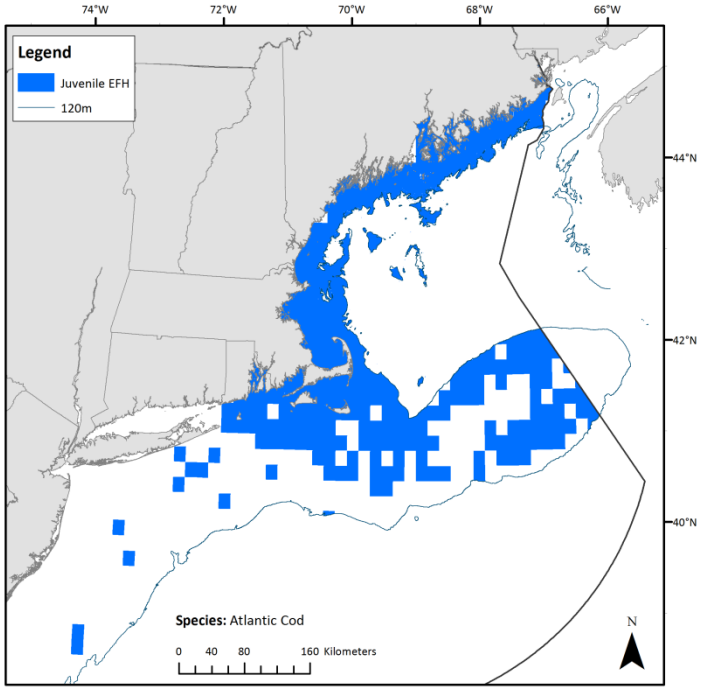
Map 23. No Action Atlantic cod egg EFH, from Omnibus Habitat Amendment 2.



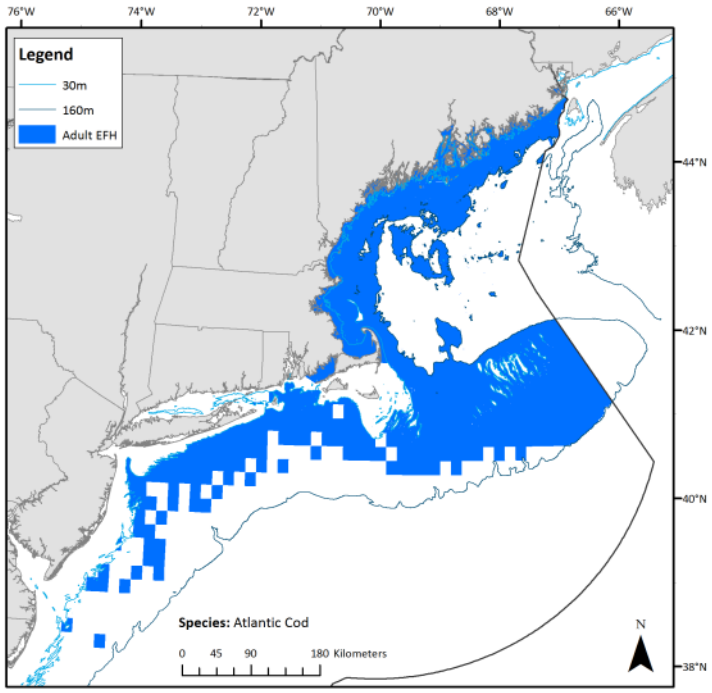
Map 24. No Action Atlantic cod larval EFH, from Omnibus Habitat Amendment 2.



Map 25. No Action Atlantic cod juvenile EFH, from Omnibus Habitat Amendment 2.



Map 26. No Action Atlantic cod adult EFH, from Omnibus Habitat Amendment 2.



8.2 ATLANTIC HERRING

Although herring are a pelagic species, their eggs are deposited in mats on the seafloor. The no action Atlantic herring egg EFH designation includes three sources of information:

(1) Ten minute squares where larvae <=10mm were found in various ichthyoplankton surveys conducted between 1971 and 2013[6]. Mapped squares encompass the top 50% of larval abundance. Herring larvae hatch at between 4 and 10 mm total length (Fahay 2007), so larvae that are 10 mm or smaller in size are expected to be close to the location where their eggs were incubated.
(2) Observations of herring eggs on seafloor, identified based on a review of all available information on current and historical observations.

The herring egg EFH domain is bounded at 40° N and 71° 30' W. Herring are not known to spawn south or west of Nantucket Shoals.

The no action EFH designations for juvenile and adult Atlantic herring are based upon average catch per tow at the 75th percentile of area level in ten minute squares of latitude and longitude in the 1968-2005 fall and spring NMFS trawl survey data, plus several squares that either were not surveyed, or that the Council's Habitat Committee determined were not well represented in the survey data.[7] The maps also include ten minute squares in inshore areas where juvenile or adult Atlantic herring were caught in state trawl surveys in more than 10% of the tows, as well as those bays and estuaries identified by the NOAA ELMR program where they were "common" or "abundant." A few more ten-minute squares on the coasts of Maine, Connecticut, and Rhode Island that were either unsurveyed (fewer than four tows) or identified by fishing industry members of the Habitat Committee are also included.

Text descriptions:

Essential fish habitat for Atlantic herring (*Clupea harengus*) is designated anywhere within the geographic areas that are listed in Table 12 and the following maps which exhibit the environmental conditions defined in the text descriptions.

Eggs: Inshore and offshore benthic habitats in the Gulf of Maine and on Georges Bank and Nantucket Shoals in depths of 5 – 90 meters on coarse sand, pebbles, cobbles, and boulders and/or macroalgae at the locations shown in Map 98. Eggs adhere to the bottom, often in areas with strong bottom currents, forming egg "beds" that may be many layers deep.

Larvae: Inshore and offshore pelagic habitats in the Gulf of Maine, on Georges Bank, and in the upper Mid-Atlantic Bight, as shown on Map 28, and in the bays and estuaries listed in Table 12. Atlantic herring have a very long larval stage, lasting 4-8 months, and are transported long distances to inshore and estuarine waters where they metamorphose into early stage juveniles ("brit") in the spring.

Juveniles: Intertidal and sub-tidal pelagic habitats to 300 meters throughout the region, as shown on Map 29, including the bays and estuaries listed in Table 12. One and two-year old juveniles form large schools and make limited seasonal inshore-offshore migrations. Older juveniles are usually found in water temperatures of 3 to 15°C in the northern part of their range and as high as 22°C in the Mid-Atlantic. Young-of-the-year juveniles can tolerate low salinities, but older juveniles avoid brackish water.

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[6] ICNAF 1971-1978, MARMAP 1977-1994, GLOBEC 1995-1999, and EcoMon 1992-present (data through May 2013)

[7] Because Atlantic herring are pelagic, like eggs and larvae of other managed species, this is the only species for which percent area instead of percent catch was used to map EFH for juveniles and adults (see explanation in OHA2 Appendix A).

Adults: Sub-tidal pelagic habitats with maximum depths of 300 meters throughout the region, as shown on Map 29, including the bays and estuaries listed in Table 12. Adults make extensive seasonal migrations between summer and fall spawning grounds on Georges Bank and the Gulf of Maine and overwintering areas in southern New England and the Mid-Atlantic region. They seldom migrate beyond a depth of about 100 meters and – unless they are preparing to spawn – usually remain near the surface. They generally avoid water temperatures above 10°C and low salinities. Spawning takes place on the bottom, generally in depths of 5 – 90 meters on a variety of substrates (see eggs).

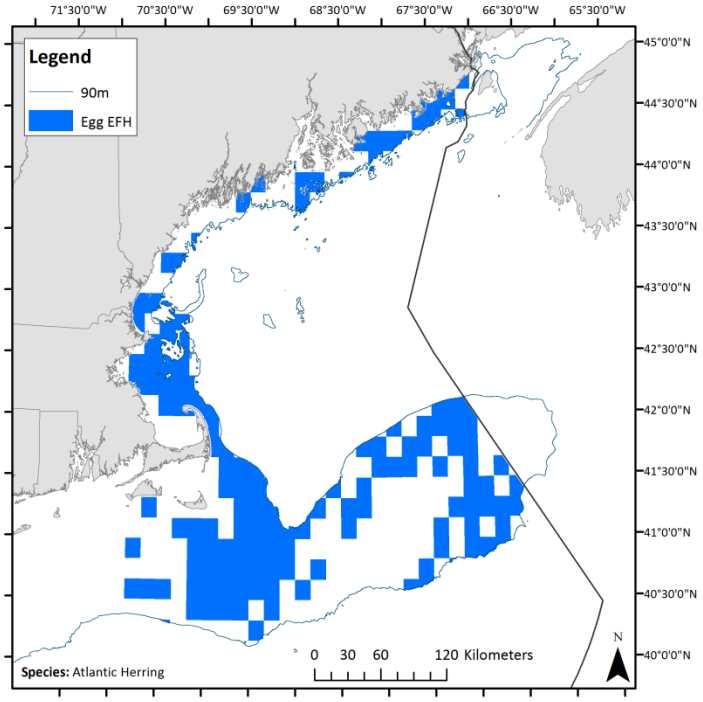
Table 12. Atlantic herring EFH designation for estuaries and embayments.

Estuaries and Embayments	Larvae	Juveniles	Adults
Passamaquoddy Bay	S,M	S,M	S,M
Englishman/Machias Bay	S,M	S,M	S,M
Narraguagus Bay	S,M	S,M	S,M
Blue Hill Bay	S,M	S,M	S,M
Penobscot Bay	S,M	S,M	S,M
Muscongus Bay	S,M	S,M	S,M
Damariscotta River	S,M	S,M	S,M
Sheepscot River	S,M	S,M	S,M
Kennebec / Androscoggin	S,M	S,M	S,M
Casco Bay	S,M	S,M	S
Saco Bay	S,M	S,M	S
Wells Harbor	S,M	S,M	S
Great Bay	S,M	S,M	S
Hampton Harbor*	S,M	S,M	S
Merrimack River	M	M	
Plum Island Sound*	S,M	S,M	S
Massachusetts Bay	S	S	S
Boston Harbor	S	S,M	S,M
Cape Cod Bay	S	S	S
Buzzards Bay		S,M	S,M
Narragansett Bay	S	S,M	S,M
Long Island Sound		S,M	S,M

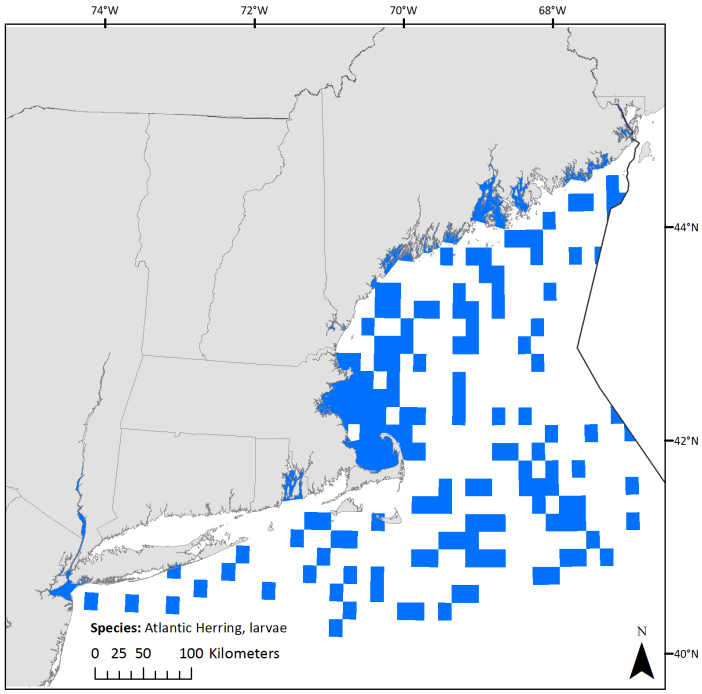
Estuaries and Embayments	Larvae	Juveniles	Adults
Gardiners Bay		S	S
Great South Bay		S	S
Hudson River / Raritan Bay	S,M	S,M	S,M
Barnegat Bay		S,M	S,M
New Jersey Inland Bays		S,M	S,M
Delaware Bay		S,M	S
Chesapeake Bay			S

S ≡ The EFH designation for this species includes the seawater salinity zone of this bay or estuary (salinity > 25.0‰).
M ≡ The EFH designation for this species includes the mixing water / brackish salinity zone of this bay or estuary (0.5 < salinity < 25.0‰).
** = This water body was not included in the original ELMR reports, but it was included in the salinity zone maps that were appended to all the relevant fishery management plans and amendments which implemented the no action EFH designations; EFH designations were inferred in these locations if there were ELMR-based designations in the adjacent north and south locations.*

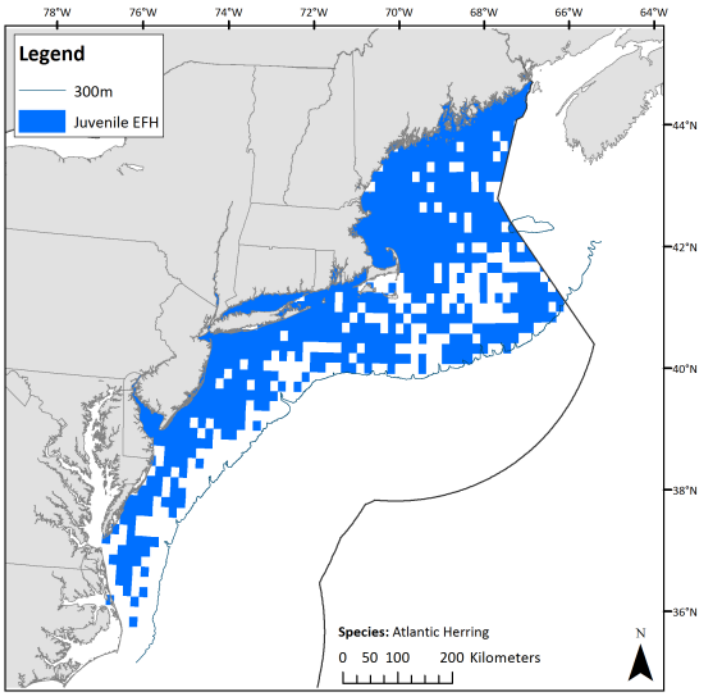
Map 27. No Action Atlantic herring egg EFH, from Omnibus Habitat Amendment 2.



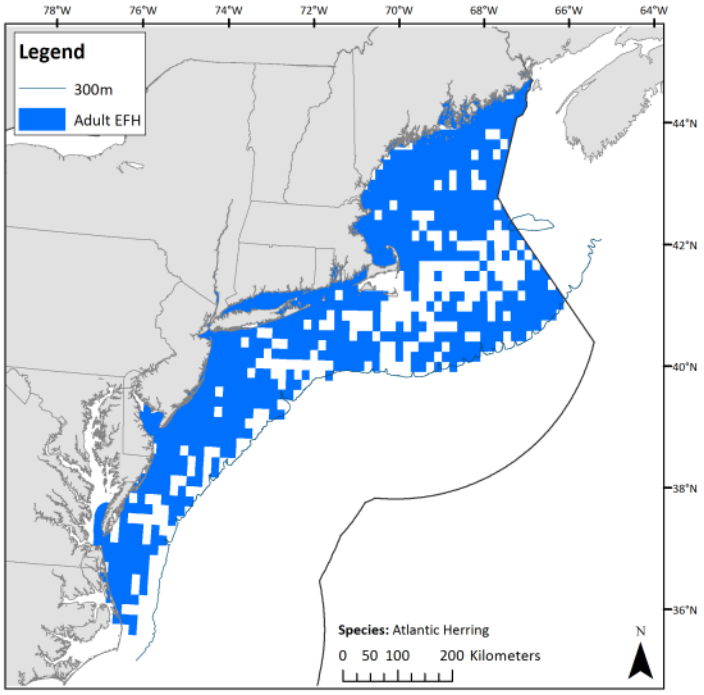
Map 28. No Action Atlantic herring larval EFH, from Omnibus Habitat Amendment 2.



Map 29. No Action Atlantic herring juvenile EFH, from Omnibus Habitat Amendment 2.



Map 30. No Action Atlantic herring adult EFH, from Omnibus Habitat Amendment 2.



8.3 MONKFISH

The no action EFH map for monkfish eggs and larvae is based on the distribution of adult and larval monkfish. Monkfish eggs occur in large, mucoidal "veils" which are not sampled adequately in traditional ichthyoplankton surveys. The no action EFH map includes all the ten-minute squares where adult monkfish were caught during 1968-2005 in the fall and spring NMFS trawl survey, plus all the ten minute squares where monkfish larvae were collected during 1978-1987 in the NMFS MARMAP ichthyoplankton survey. Inshore, the no action designation includes ten-minute squares where adult monkfish were caught in state trawl surveys in more than 10% of the tows. The no action designation also includes the continental slope where monkfish larvae have been collected in the 1000-1500 meter depth range (see Appendix B of OHA2).

The no action EFH maps for juvenile and adult monkfish are based on the distributions of depths and bottom temperatures that are associated with high catch rates of juveniles and adults, respectively, in the 1963-2003 spring and fall NMFS trawl surveys. The maps are also based on average catch per tow data in ten-minute squares of latitude and longitude in the 1968-2005 spring and fall NMFS trawl surveys at the 75th percentile of catch level. Both maps include the same area of the continental slope where monkfish were determined to be present based on maximum depth information and the geographic range of the species.

Text descriptions:

Essential fish habitat for monkfish (*Lophius americanus*) is designated anywhere within the geographic areas that are shown on the following maps and meets the conditions described below.

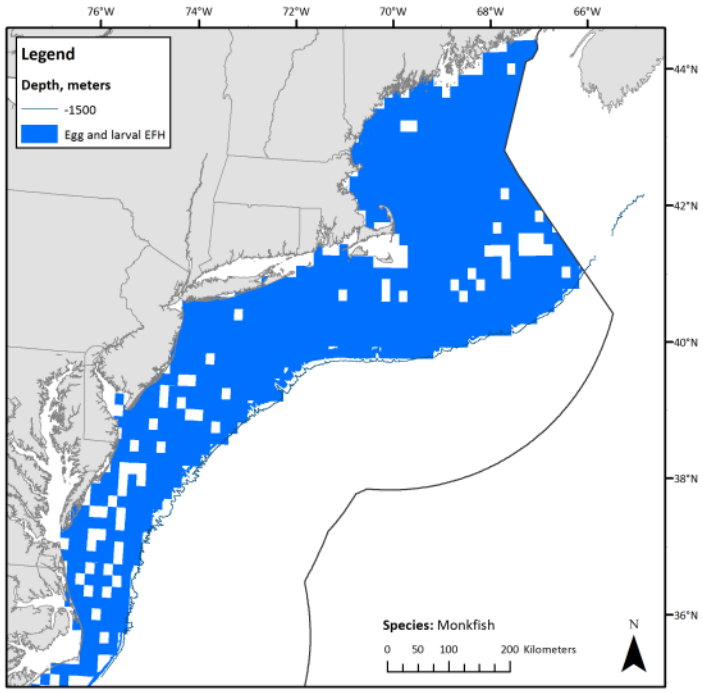
Eggs and Larvae: Pelagic habitats in inshore areas, and on the continental shelf and slope throughout the Northeast region, as shown on Map 31. Monkfish eggs are shed in very large buoyant mucoidal egg

"veils." Monkfish larvae are more abundant in the Mid-Atlantic region and occur over a wide depth range, from the surf zone to depths of 1000 to 1500 meters on the continental slope.

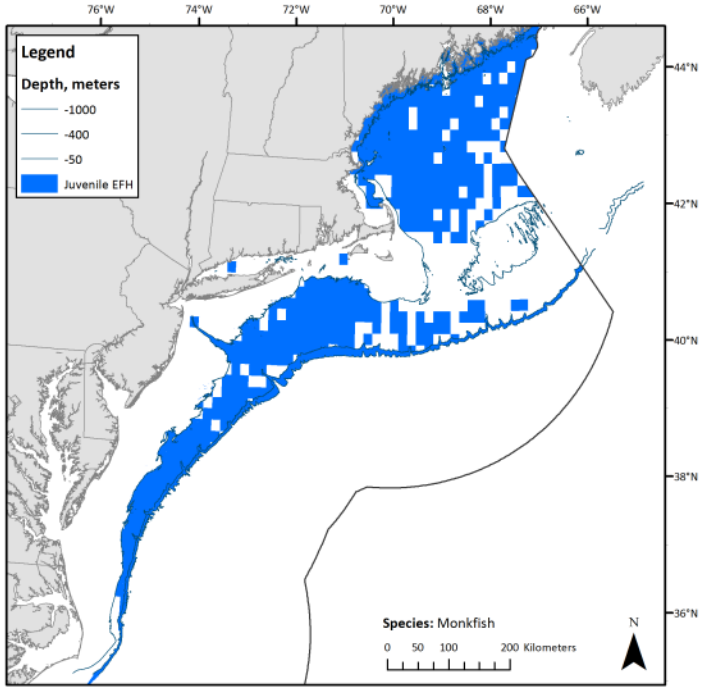
Juveniles: Sub-tidal benthic habitats in depths of 50 to 400 meters in the Mid-Atlantic, between 20 and 400 meters in the Gulf of Maine, and to a maximum depth of 1000 meters on the continental slope, as shown on Map 32. A variety of habitats are essential for juvenile monkfish, including hard sand, pebbles, gravel, broken shells, and soft mud; they also seek shelter among rocks with attached algae. Juveniles collected on mud bottom next to rock-ledge and boulder fields in the western Gulf of Maine were in better condition than juveniles collected on isolated mud bottom, indicating that feeding conditions in these edge habitats are better. Young-of-the-year juveniles have been collected primarily on the central portion of the shelf in the Mid-Atlantic, but also in shallow nearshore waters off eastern Long Island, up the Hudson Canyon shelf valley, and around the perimeter of Georges Bank. They have also been collected as deep as 900 meters on the continental slope.

Adults: Sub-tidal benthic habitats in depths of 50 to 400 meters in southern New England and Georges Bank, between 20 and 400 meters in the Gulf of Maine, and to a maximum depth of 1000 meters on the continental slope, as shown on Map 33. Essential fish habitat for adult monkfish is composed of hard sand, pebbles, gravel, broken shells, and soft mud. They seem to prefer soft sediments (fine sand and mud) over sand and gravel, and, like juveniles, utilize the edges of rocky areas for feeding.

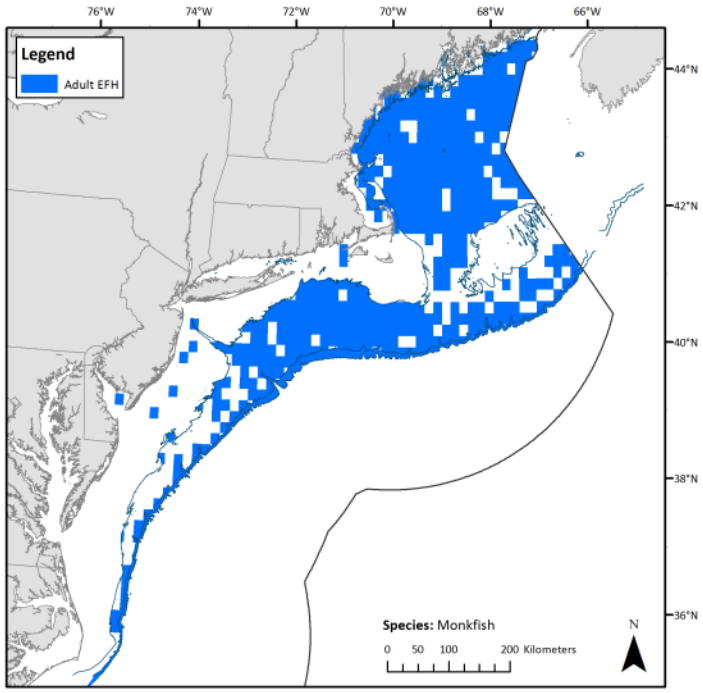
Map 31. No Action Monkfish egg and larval EFH, from Omnibus Habitat Amendment 2.



Map 32. No Action Monkfish juvenile EFH, from Omnibus Habitat Amendment 2.



Map 33. No Action Monkfish adult EFH, from Omnibus Habitat Amendment 2.



8.4 BARNDOOR SKATE

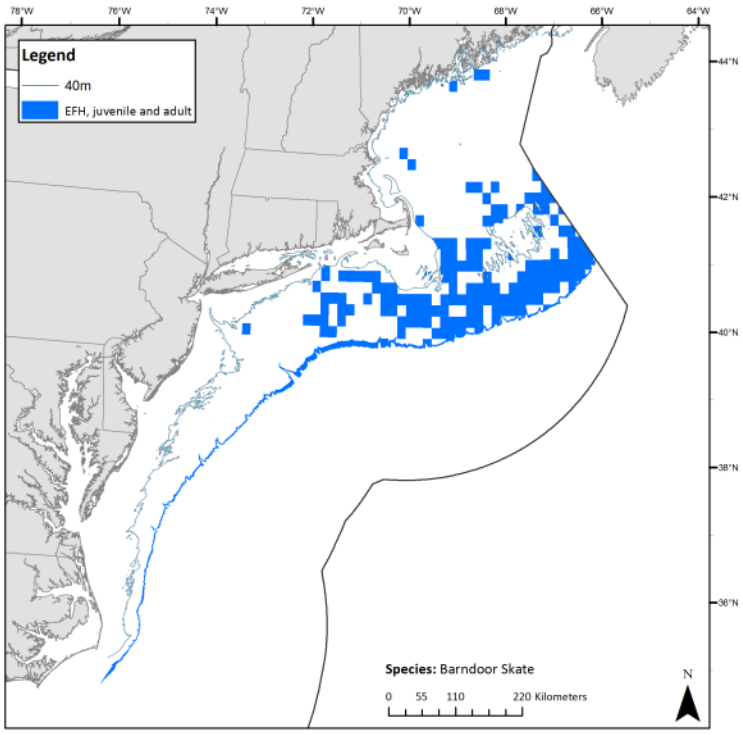
The no action EFH map for juvenile and adult barndoor skate on the continental shelf is based on the distribution of depths and bottom temperatures that were either associated with high catch rates of juveniles and adults in the 1963-2003 spring and fall NMFS trawl surveys or were identified in the EFH Source Document for this species. It is also based on average catch per tow data for juveniles in ten-minute squares of latitude and longitude in the 1968-2005 spring and fall NMFS trawl surveys at the 90th percentile of catch level, and includes areas on the continental slope where barndoor skate were determined to be present, based on the reported maximum depth and geographic range of the species. Very few adults are caught in the NMFS trawl survey, so survey data for juveniles were used to correlate catch with habitat features and to map the distribution of both life stages on the shelf. The no action EFH map for barndoor skate juveniles and adults extends primarily over the southern portion of Georges Bank, into southern New England, and along the continental slope.

Text descriptions:

For barndoor skate (*Dipturus laevis*), essential fish habitat is designated anywhere within the geographic areas that are shown on Map 34 and meets the conditions described below. Additional habitat-related information for this species can be found in Appendix B of OHA2.

Juveniles and Adults: Benthic habitats on the continental shelf, primarily on Georges Bank and in southern New England, in depths of 40 – 400 meters, and on the continental slope to a maximum depth of 750 meters, as shown on Map 34. Essential fish habitat for juvenile and adult barndoor skates occurs on mud, sand, and gravel substrates. Both life stages are usually found on the continental shelf in depths less than 160 meters, but the adults also occupy benthic habitats between 300 and 400 meters on the outer shelf.

Map 34. No Action Barndoor skate juvenile and adult EFH, from Omnibus Habitat Amendment 2.



8.5 CLEARNOSE SKATE

The no action EFH maps for juvenile and adult clearnose skate within the NMFS trawl survey area were developed using a GIS depiction of preferred depth and bottom temperature ranges for each life stage that were determined from graphical 1963-2003 spring and fall NMFS trawl survey data in Packer et al. (2003b). The maps are also based on average catch per tow data for juveniles and adults in ten minute squares of latitude and longitude in the 1968-2005 spring and fall NMFS trawl surveys at the 75th percentile of catch level, and include inshore areas between New Jersey and Florida where juveniles or adults were caught in 10% or more of tows made in individual ten minute squares during state trawl surveys, four embayments between Raritan Bay and Chesapeake Bay, including Delaware Bay.

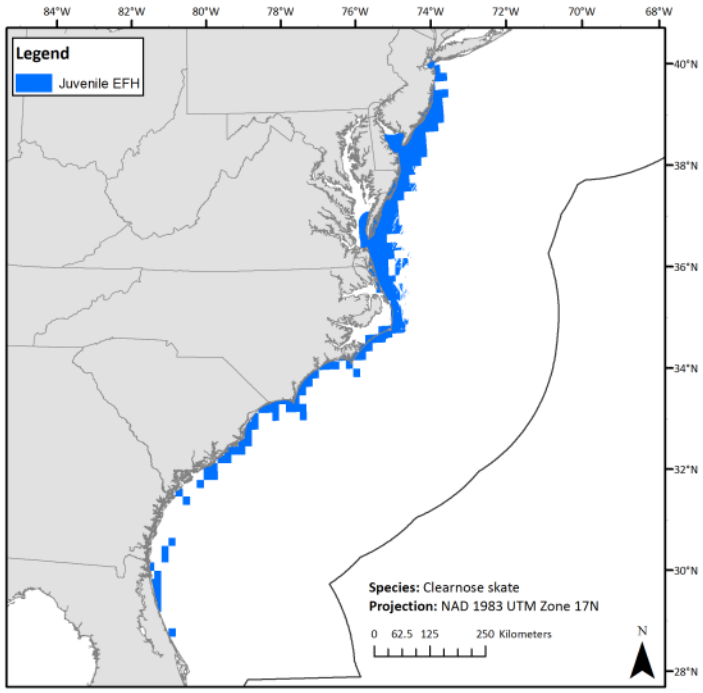
Text descriptions:

For clearnose skate (*Raja eglanteria*), essential fish habitat is designated anywhere within the geographic areas that are shown on the following maps and listed in Table 13 and meets the conditions described below. Additional habitat-related information for this species can be found in Appendix B to OHA2.

Juveniles: Sub-tidal benthic habitats in coastal and inner continental shelf waters from New Jersey to the St. Johns River in Florida as shown on Table 13, including the high salinity zones of Chesapeake Bay, Delaware Bay, and the other bays and estuaries listed in Table 13. Essential fish habitat for juvenile clearnose skates occurs from the shoreline to 30 meters, primarily on mud and sand, but also on gravelly and rocky bottom.

Adults: Sub-tidal benthic habitats in coastal and inner continental shelf waters from New Jersey to Cape Hatteras as shown on Map 36, including the high salinity zones of Chesapeake Bay, Delaware Bay, and the other bays and estuaries listed in Table 13. Essential fish habitat for adult clearnose skates occurs from the shoreline to 40 meters, primarily on mud and sand, but also on gravelly and rocky bottom.

Map 35. No Action Clearnose skate juvenile EFH, from Omnibus Habitat Amendment 2.



Map 36. No Action Clearnose skate adult EFH, from Omnibus Habitat Amendment 2.

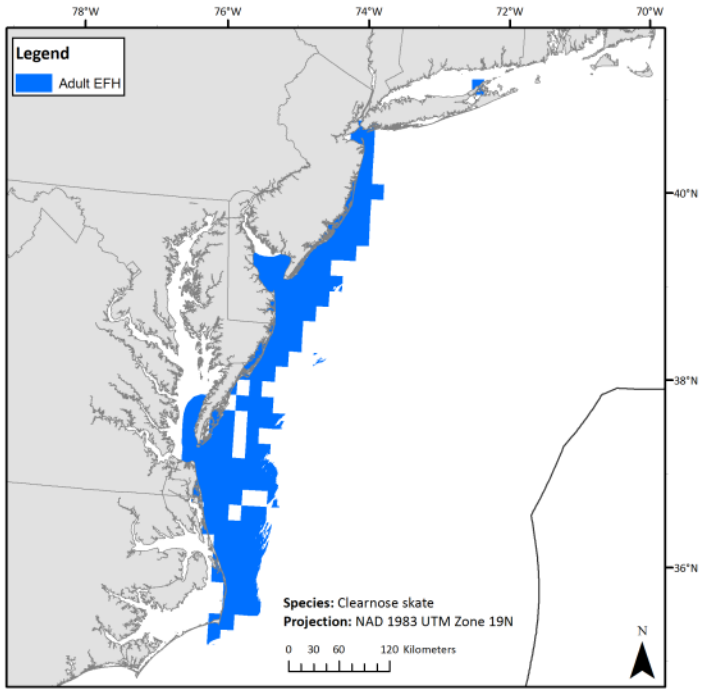


Table 13. Skate EFH designation for estuaries and embayments. All designations are for the full salinity zone only (> 25.0‰), unless otherwise noted.

Estuaries and Embayments	Juveniles	Adults
Passamaquoddy Bay	Smooth, thorny, little, winter	
Englishman/Machias Bay	Smooth, thorny, little, winter	
Narraguagus Bay	Smooth, thorny, little, winter	
Blue Hill Bay	Smooth, thorny, little, winter	
Penobscot Bay	Smooth, thorny, little, winter	Little
Muscongus Bay	Smooth, thorny, little, winter	Little
Damariscotta River	Smooth, thorny, little, winter	Little
Sheepscot River	Smooth, thorny, little, winter	Little
Kennebec / Androscoggin	Smooth, thorny, little, winter	Little
Casco Bay	Smooth, thorny, little, winter	Little
Saco Bay	Smooth, thorny, little, winter	Little
Great Bay	Smooth, thorny little, winter	

Estuaries and Embayments	Juveniles	Adults
Hampton Harbor*	Thorny	
Plum Island Sound*	Thorny, winter	
Massachusetts Bay	Thorny, winter	Little, winter
Boston Harbor	Thorny, winter	Little, winter
Cape Cod Bay	Thorny, winter	Little, winter
Waquoit Bay		
Buzzards Bay	Little, winter	Little, winter
Narragansett Bay	Little, winter	Little, winter
Long Island Sound	Little, winter	Little, winter
Connecticut River	Little (M) , winter (M)	Little (M) , winter (M)
Gardiners Bay	Little, winter	Little, winter
Great South Bay	Little, winter	Little, winter
Hudson River / Raritan Bay	Little, winter, clearnose	Clearnose
Barnegat Bay	Little, winter, clearnose	Little, winter, clearnose
New Jersey Inland Bays	Little, winter, clearnose	Little, winter, clearnose
Delaware Bay	Little, winter, clearnose	Little, winter, clearnose
Delaware Inland Bays	Little, winter, clearnose	Little, winter, clearnose
Maryland Inland Bays*	Little, winter, clearnose	Little, winter, clearnose
Chincoteague Bay	Winter, clearnose	Winter, clearnose
Chesapeake Bay	Little (S,M) , clearnose	Little (S,M) , clearnose

S ≡ The EFH designation for this species includes the seawater salinity zone of this bay or estuary (salinity > 25.0‰).
M ≡ The EFH designation for this species includes the mixing water / brackish salinity zone of this bay or estuary (0.5 < salinity < 25.0‰).
** = This water body was not included in the original ELMR reports, but it was included in the salinity zone maps that were appended to all the relevant fishery management plans and amendments which implemented the no action EFH designations; EFH designations were inferred in these locations if there were ELMR-based designations in the adjacent north and south locations.*

8.6 LITTLE SKATE

The no action EFH maps for juvenile and adult little skate are based on the distribution of depths and bottom temperatures that are associated with high catch rates of juveniles or adults in the 1963-2003 spring and fall NMFS trawl surveys. Depth and bottom temperature information from the EFH Source

Document was used to supplement survey information as needed. The maps are also based on average catch per tow data for juveniles and adults, respectively, in ten minute squares of latitude and longitude in the 1968-2005 spring and fall NMFS trawl surveys at the 75th percentile of catch level, and they include inshore areas where juvenile or adult little skate were caught in 10% or more of tows made in individual ten minute squares during state trawl surveys and ELMR information. The ELMR information for the Mid-Atlantic area was re-interpreted to add EFH for juvenile little skate to five inshore areas south of Raritan Bay, including Delaware Bay.

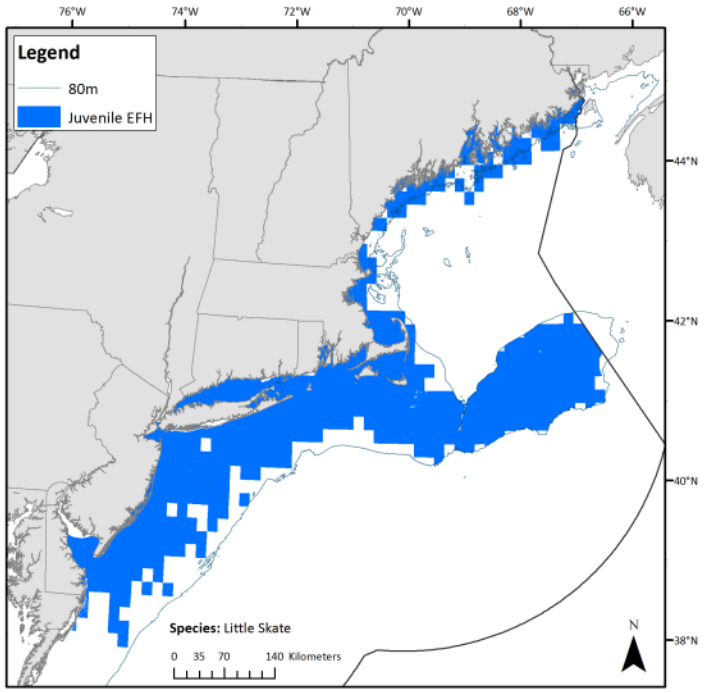
Text descriptions:

For little skate (*Leucoraja erinacea*), essential fish habitat is designated anywhere within the geographic areas that are shown on the following maps and listed in Table 13 and meets the conditions described below. Additional habitat-related information for this species can be found in Appendix B to OHA2.

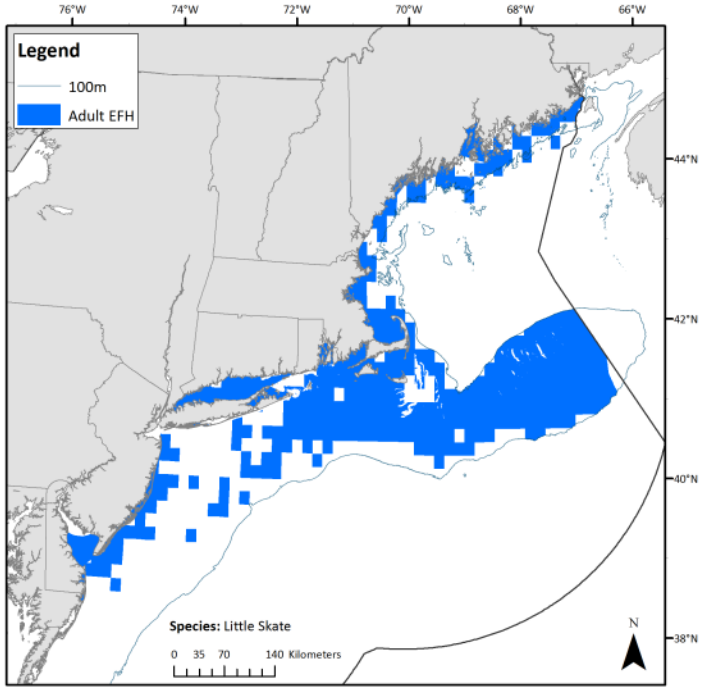
Juveniles: Intertidal and sub-tidal benthic habitats in coastal waters of the Gulf of Maine and in the Mid-Atlantic region as far south as Delaware Bay, and on Georges Bank, extending to a maximum depth of 80 meters, as shown on Map 37, and including high salinity zones in the bays and estuaries listed in Table 13. Essential fish habitat for juvenile little skates occurs on sand and gravel substrates, but they are also found on mud.

Adults: Intertidal and sub-tidal benthic habitats in coastal waters of the Gulf of Maine and in the Mid-Atlantic region as far south as Delaware Bay, and on Georges Bank, extending to a maximum depth of 100 meters, as shown on Map 38, and including high salinity zones in the bays and estuaries listed in Table 13. Essential fish habitat for adult little skates occurs on sand and gravel substrates, but they are also found on mud.

Map 37. No Action Little skate juvenile EFH, from Omnibus Habitat Amendment 2.



Map 38. No Action Little skate adult EFH, from Omnibus Habitat Amendment 2.



8.7 ROSETTE SKATE

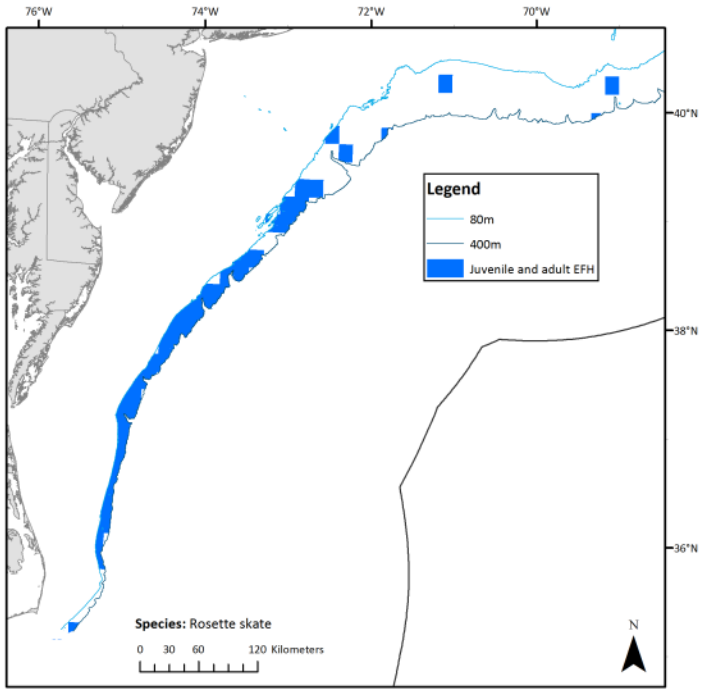
Because very few adults are caught in the NMFS bottom trawl survey, the no action EFH map for juvenile and adult rosette skate is based on the distribution of depths and bottom temperatures that were associated with high catch rates of juveniles in the 1963-2003 spring and fall NMFS trawl surveys. The map is also based on average catch per tow data for juveniles in ten-minute squares of latitude and longitude in the 1968-2005 spring and fall NMFS trawl surveys at the 75th percentile of catch level.

Text descriptions:

For rosette skate (*Leucoraja garmani*), essential fish habitat is designated anywhere within the geographic areas that are shown on Map 39 and meets the conditions described below. Additional habitat-related information for this species can be found in Appendix B to OHA2.

Juveniles and Adults: Benthic habitats with mud and sand substrates on the outer continental shelf in depths of 80 – 400 meters from approximately 40˚N latitude to Cape Hatteras, North Carolina, as shown on Map 39.

Map 39. No Action Rosette skate juvenile and adult EFH, from Omnibus Habitat Amendment 2.



8.8 SMOOTH SKATE

The no action EFH maps for juvenile and adult smooth skate are based on the distributions of depths and bottom temperatures that are associated with high catch rates of juveniles and adults, respectively, in the 1963-2003 spring and fall NMFS trawl surveys. The maps are also based on average catch per tow data for juveniles and adults in ten minute squares of latitude and longitude in the 1968-2005 spring and fall NMFS trawl surveys at the 90th percentile of catch level, and include inshore areas where juvenile or adult smooth skate were caught in 10% or more of the tows made in individual ten minute squares during state trawl surveys. Based on the ELMR information for skates (not identified to species) and the known geographic range of this species (see Appendix A to OHA2), EFH for juvenile smooth skates was added to the map for the high salinity portions of bays and estuaries along the Maine and New Hampshire coasts. The no action EFH designations also include maximum depth and geographic range information for the continental slope.

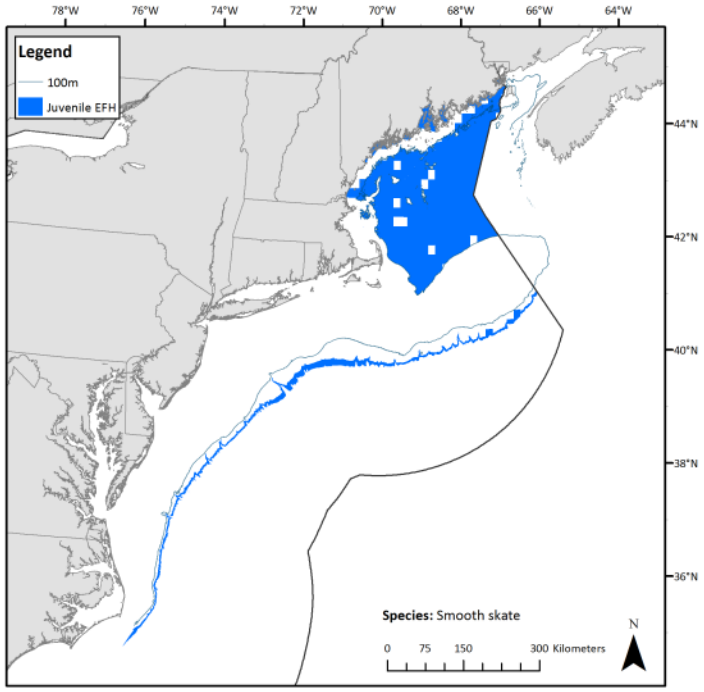
Text descriptions:

For smooth skate (*Malacoraja senta*), essential fish habitat is designated anywhere within the geographic areas that are shown on the following maps and listed in Table 13 and meets the conditions described below. Additional habitat-related information for this species can be found in Appendix B to OHA2.

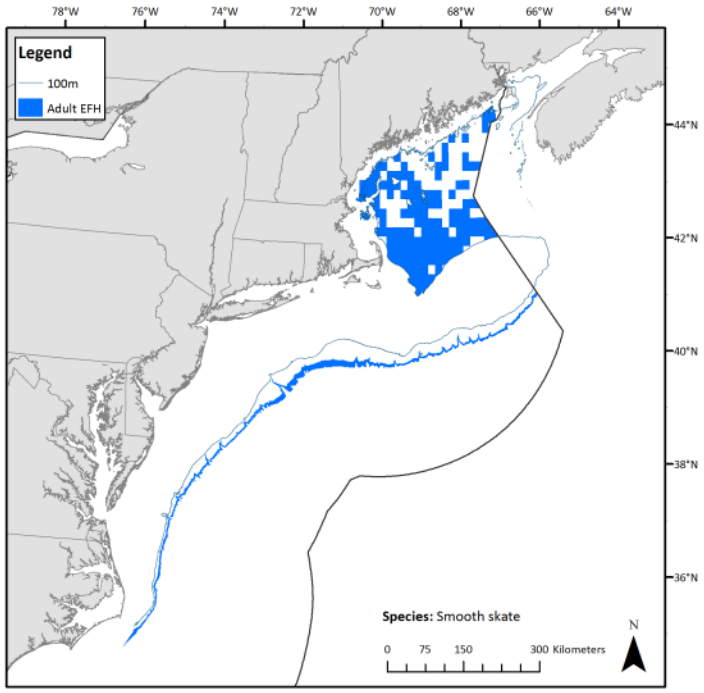
Juveniles: Benthic habitats between 100 and 400 meters in the Gulf of Maine, on the continental slope to a depth of 900 meters, and in depths less than 100 meters in the high salinity zones of a number of bays and estuaries along the Maine coast, as shown on Map 40 and listed in Table 13. Essential fish habitat for juvenile smooth skates occurs mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine.

Adults: Benthic habitats between 100 and 400 meters in the Gulf of Maine and on the continental slope to a depth of 900 meters, as shown on Map 41. Essential fish habitat for juvenile smooth skates occurs mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine.

Map 40. No Action Smooth skate juvenile EFH, from Omnibus Habitat Amendment 2.



Map 41. No Action Smooth skate adult EFH, from Omnibus Habitat Amendment 2.



8.9 THORNY SKATE

The no action EFH maps for juvenile and adult thorny skate are based on the distributions of depths and bottom temperatures that were associated with high catch rates of juveniles or adults in the 1963-2003 spring and fall NMFS trawl surveys. They are also based on average catch per tow data for juveniles and adults in ten minute squares of latitude and longitude in the 1968-2005 spring and fall NMFS trawl surveys at the 75th (juveniles) and 90th (adult) percentiles of catch, and include inshore areas where juvenile and adult thorny skate were caught in 10% or more of the tows made in individual ten minute squares during state trawl surveys. Based on the ELMR information for skates (not identified to species) and the known geographic range of this species (see Appendix A to OHA2), EFH for juvenile thorny skates was added to the no action map for the high salinity portions of bays and estuaries in the Gulf of Maine. The no action EFH designations also include maximum depth and geographic range information for the continental slope.

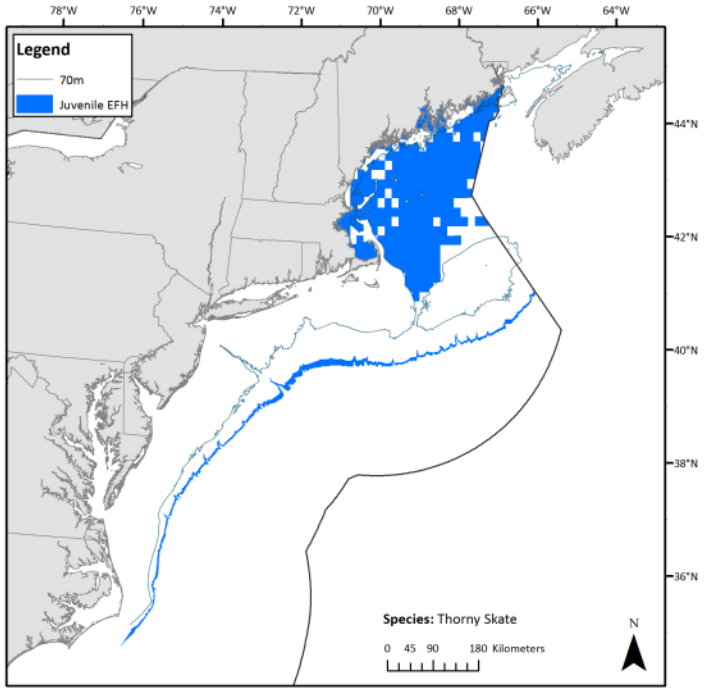
Text description:

For thorny skate (*Amblyraja radiata*), essential fish habitat is designated anywhere within the geographic areas that are shown on the following maps and listed in Table 13and meets the conditions described below. Additional habitat-related information for this species can be found in Appendix B to OHA2.

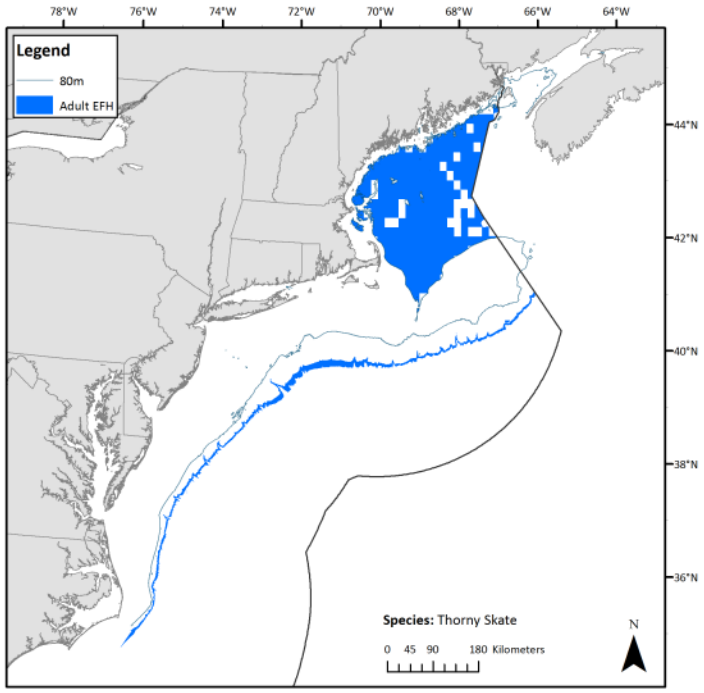
Juveniles: Benthic habitats between 35 and 400 meters in the Gulf of Maine, on the continental slope to a depth of 900 meters, and in shallower water in the high salinity zones of a number of bays and estuaries north of Cape Cod, as shown on Map 42 and listed in Table 13. Essential fish habitat for juvenile thorny skates is found on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud.

Adults: Benthic habitats between 80 and 300 meters in the Gulf of Maine and on the continental slope to a depth of 900 meters, as shown on Map 43 and listed in Table 13. Essential fish habitat for adult thorny skates is found on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud.

Map 42. No Action Thorny skate juvenile EFH, from Omnibus Habitat Amendment 2.



Map 43. No Action Thorny skate adult EFH, from Omnibus Habitat Amendment 2.



8.10 WINTER SKATE

The no action EFH maps for juvenile and adult winter skate are based on the distributions of depths and bottom temperatures that were either associated with high catch rates of juveniles and adults, respectively, in the 1963-2003 spring and fall NMFS trawl surveys. The no action maps are also based on average catch per tow data in ten minute squares of latitude and longitude for juveniles and adults, respectively, in the 1968-2005 spring and fall NMFS trawl surveys at the 90th percentile of catch, and they include inshore areas where juvenile or adult winter skate were caught in 10% or more of the tows made in individual ten minute squares during state trawl surveys as well as coastal bays and estuaries identified in the ELMR reports. The ELMR information for the Mid-Atlantic area was re-interpreted to add EFH for juvenile winter skate to five inshore areas south of Raritan Bay, including Delaware Bay, and to eliminate designations for juveniles and adults in Chesapeake Bay (see Appendix A to OHA2). Some of the ELMR estuaries and embayments north of Cape Cod that were not originally designated as EFH were also added to the new maps (see footnote for little skates). A few unsurveyed ten-minute squares were filled in along the Rhode Island and Connecticut coasts and southeast of Nantucket Island.

Text descriptions:

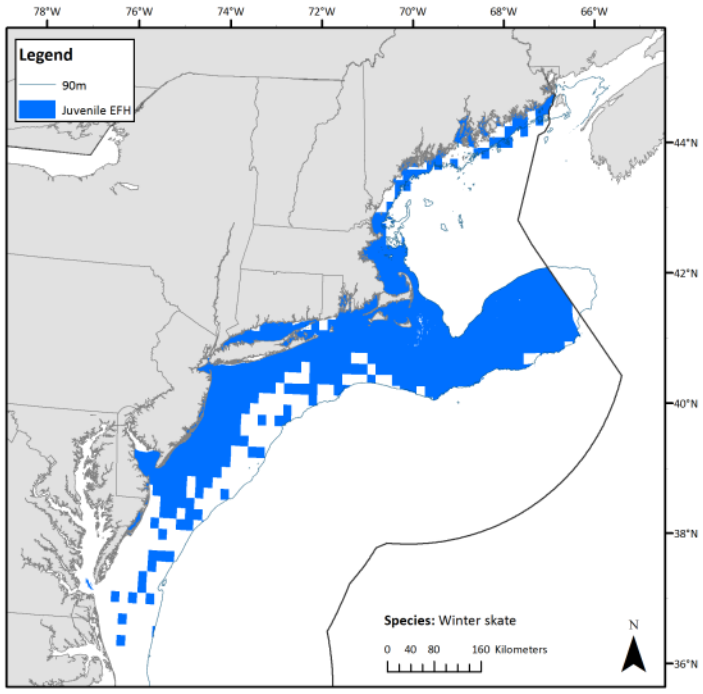
For winter skate (*Leucoraja ocellata*), essential fish habitat is designated anywhere within the geographic areas that are shown on the following maps and listed in Table 13 and meets the conditions described below.

Juveniles: Sub-tidal benthic habitats in coastal waters from eastern Maine to Delaware Bay and on the continental shelf in southern New England and the Mid-Atlantic region, and on Georges Bank, from the shoreline to a maximum depth of 90 meters, as shown on Map 44, including the high salinity zones of the

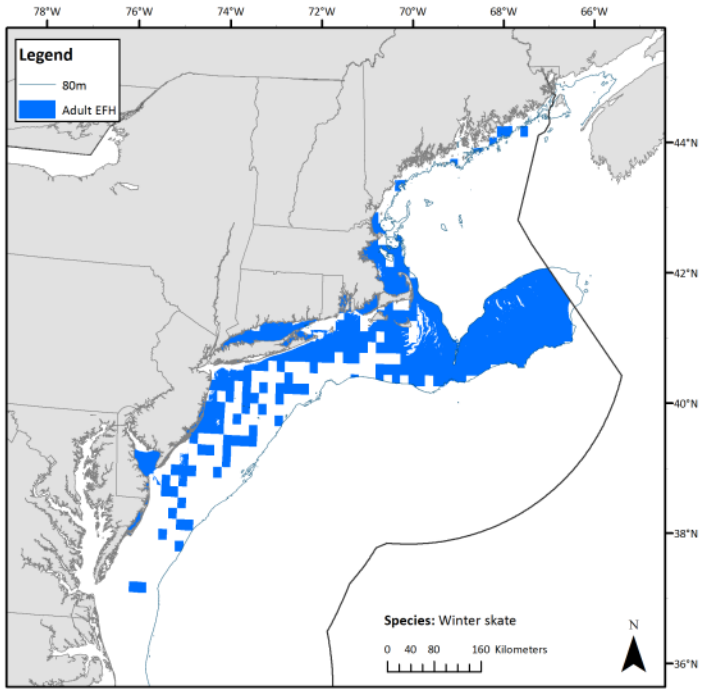
bays and estuaries listed in Table 13. Essential fish habitat for juvenile winter skates occurs on sand and gravel substrates, but they are also found on mud.

Adults: Sub-tidal benthic habitats in coastal waters in the southwestern Gulf of Maine, in coastal and continental shelf waters in southern New England and the Mid-Atlantic region, and on Georges Bank, from the shoreline to a maximum depth of 80 meters, as shown on Map 45, including the high salinity zones of the bays and estuaries listed in Table 13. Essential fish habitat for adult winter skates occurs on sand and gravel substrates, but they are also found on mud.

Map 44. No Action Winter skate juvenile EFH, from Omnibus Habitat Amendment 2.



Map 45. No Action Winter skate adult EFH, from Omnibus Habitat Amendment 2.



9.0 APPENDIX B: ENVIRONMENTAL RANGES

Table 14. Depth, temperature, and salinity ranges associated with unique species occurrences in offshore and inshore trawl survey data. The "Full" column depicts environmental ranges estimated from the full range of survey data with outliers removed (i.e., the interior 99% quantile); the 95% and 75% columns represent the respective quantile of survey data. Values in bold are referenced in the text descriptions (full and 75% range for depth; 95% range for temperature and salinity). No Action depths are shown for comparison.

Species	Life stage	Depth (m)				Temperature (°C)			Salinity (ppt)		
		No Action	Full[1]	95%	75%	Full[1]	95%	75%	Full[1]	95%	75%
Atlantic cod	Juvenile	*0-120*	**7-201**	8-153	**14-100**	2-17	**3-14**	4-12	25-35	**26-35**	31-34
	Adult	*30-160*	**9-291**	20-229	**37-177**	2-16	**3-13**	4-10	30-36	**31-36**	32-35
Atlantic herring[2]	Juvenile	*0-300*	**4-265**	7-217	**13-149**	1-24	**2-21**	4-15	9-35	**14-34**	26-33
	Adult	*Subtidal-300*	**6-295**	8-228	**14-175**	1-18	**2-16**	4-13	10-35	**17-34**	26-33
Monkfish	Juvenile	*20-400 GOM; 50-400 GB-MAB; to 1000 on slope*	**10-340**	21-282	**44-203**	3-18	**3-15**	5-13	27-36	**31-36**	32-35
	Adult		**9-360**	16-317	**42-223**	3-17	**4-15**	5-13	28-36	**31-36**	32-36
Barndoor skate	Juvenile	*40-400 but usually to 160; to 750 on slope*	**27-358**	38-302	**58-208**	3-18	**4-17**	6-14	31-36	**32-36**	32-36
	Adult		**32-361**	41-344	**61-248**	4-17	**5-16**	7-14	31-36	**32-36**	32-36
Clearnose skate	Juvenile	*0-30*	**4-133**	6-68	**8-26**	6-32	**8-28**	11-23	19-37	**22-36**	26-34
	Adult	*0-40*	**5-207**	7-113	**9-36**	5-25	**6-24**	9-22	26-36	**27-36**	30-34
Little skate	Juvenile	*0-80*	**6-220**	7-128	**11-74**	2-22	**3-20**	5-18	25-36	**28-36**	30-34
	Adult	*0-100*	**6-214**	8-133	**12-82**	2-22	**3-21**	5-17	26-36	**29-36**	31-34

Species	Life stage	Depth (m)				Temperature (°C)			Salinity (ppt)		
		No Action	Full[1]	95%	75%	Full[1]	95%	75%	Full[1]	95%	75%
Rosette skate	Juvenile	*80-400*	**27-338**	46-304	**75-229**	6-24	**7-18**	9-15	32-37	**32-36**	33-36
	Adult	*80-400*	**54-299**	63-262	**81-210**	6-16	**7-15**	9-14	32-37	**32-36**	33-36
Smooth skate	Juvenile	*100-400; to 900 m on slope; shallower in GOM estuaries*	**39-355**	67-327	**103-237**	3-13	**4-12**	5-10	31-36	**32-36**	32-35
	Adult		**54-361**	84-339	**115-266**	3-12	**4-11**	5-10	31-36	**32-36**	32-36
Thorny skate	Juvenile	*35-400, to 900 on slope*	**30-353**	43-303	**66-214**	2-14	**3-12**	4-10	30-36	**31-36**	32-35
	Adult	*80-300, to 900 on slope*	**37-361**	52-328	**83-213**	2-12	**3-11**	4-9	31-36	**32-36**	32-35
Winter skate	Juvenile	*0-80*	**6-227**	7-146	**10-77**	2-21	**3-20**	5-17	25-36	**28-36**	30-34
	Adult	*0-90*	**6-242**	7-171	**12-87**	2-20	**3-18**	5-16	25-36	**27-36**	31-34

Notes:

[1] "Full" range refers to the interior 99% quantile and is intended to trim extreme outliers.

[2] Atlantic herring are modeled as a pelagic species in the species distribution models for purposes of bottom vs surface environmental data. Accordingly, temperature and salinity ranges use surface values here. All other species use bottom temperature and salinity

Table 15. Maximum extent of depth (m) usage on continental slope by New England Fishery Management Council-managed species in this action. Depth ranges from the No Action designations in Omnibus Habitat Amendment 2 are included for reference, which mainly draw on Moore et al. (2003) and references therein, as denoted by italicized text. See main text for updated depth ranges designated as EFH.

Species	Life stage	No Action Designation	Maximum depth in literature
Atlantic cod	Juvenile	*0-120 m*	600 m (Moore et al., 2003), but common at shallower depths
	Adult	*30-160 m*	
Atlantic herring	Juvenile	*0-300 m*	*Does not occur on continental slope*
	Adult	*Subtidal-300 m*	
Monkfish	Juvenile	*20-400 GOM; 50-400 GB-MAB; to 1000 on slope*	900 m (Collette and Klein-MacPhee, 2002) *948 m (Moore et al., 2003)*
	Adult		
Barndoor skate	Juvenile	*40-400 but usually to 160; to 750 on slope*	730 m (Cavanagh and Damon-Randall, 2009) *750 m (Moore et al., 2003)* Potentially upwards of 850 m (Frank and Simon, 2002)
	Adult		
Clearnose skate	Juvenile	*0-30*	*Does not occur on continental slope*
	Adult	*0-40*	
Little skate	Juvenile	*0-80*	*Does not occur on continental slope*
	Adult	*0-100*	
Rosette skate	Juvenile	*80-400*	*366 m (Moore et al., 2003)* 530 m (Packer et al., 2003, and references therein)
	Adult	*80-400*	
Smooth skate	Juvenile	*100-400; to 900 m on slope; shallower in GOM estuaries*	550 m, potentially upwards of 800 m at lower densities (Kulka et al., 2006) Isolated specimens at 874 m off South Carolina (Packer et al. 2003) and *956 m off North Carolina (Moore et al., 2003)*
	Adult		
Thorny skate	Juvenile	*35-400, to 900 on slope*	*996 m (Moore et al., 2003)* 1200 m (McEachran, 2002 *in* Packer et al., 2003)
	Adult	*80-300, to 900 on slope*	
Winter skate	Juvenile	*0-80*	*Does not occur on continental slope*
	Adult	*0-90*	

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10.0 APPENDIX C: EFH CONSULTATION PROCESS

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult with NOAA Fisheries on all actions or proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH. Adverse effect is defined in 50 CFR 600.910 as any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Activities that may adversely effect EFH include fishing operations and also non-fishing activities such as construction and operation of power plants, dredging and dredged material placement, coastal development, port expansion, pollutant discharge, and offshore energy development. Through the consultation process, NOAA Fisheries identifies measures to avoid, minimize, mitigate, or otherwise offset any adverse impacts to EFH. EFH consultation is not required for state actions that would adversely affect EFH, however, NOAA Fisheries is still required to provide conservation recommendations to mitigate any adverse effects. Private landowners and federal actions that will not adversely affect EFH are not required to consult with NOAA Fisheries.

More specifically, actions that require consultations with NOAA Fisheries include:

- Proposed activities that are either fully or partially authorized, funded, or undertaken by a federal agency, including the military. If a project requires a federal permit or receives federal funds, the federal agency issuing the permit or providing the funding must consult with NOAA Fisheries if the activity adversely effects EFH.
- Proposed actions that will directly or indirectly adversely affect EFH either physically, chemically, or biologically. This includes adverse changes to waters or substrate, species and their habitat, other ecosystem components including prey species, and/or quality / quantity of EFH.

The consultation process entails the following steps for actions that will adversely affect EFH:

1. The action / implementing agency provides notification to NOAA Fisheries in writing (as early as possible); pre-consultation discussions occur.
2. The action agency submits an EFH assessment to NOAA Fisheries.
3. NOAA Fisheries reviews the EFH assessment for completeness
4. If incomplete, NOAA Fisheries requests additional information
5. Once deemed complete, NOAA provides the EFH conservation recommendations, if necessary, to the action agency within 30-60 days (60 days if the action is undergoing an expanded EFH consultation*).
6. The action agency responds to NOAA Fisheries in writing within 30 days for how the agency will proceed with the action (i.e., which, if any, conservation recommendations will be adopted, and a rationale for why certain recommendations are not being adopted)

EFH consultations can be combined where appropriate with interagency consultation, coordination, and environmental review procedures required by other statutes, such as NEPA, the Fish and Wildlife Coordination Act, Clean Water Act, Endangered Species Act, and Federal Power Act.

*Actions undergo an expanded EFH consultation process when NMFS determines that the action may result in substantial adverse effects on EFH. Expanded consultation allows maximum opportunity for NOAA Fisheries and the federal agency to work together to review the action's impacts on EFH and develop Conservation Recommendations. NOAA Fisheries must respond within 60 days of submittal of

an complete EFH Assessment unless consultation is extended by agreement between NOAA Fisheries and the federal agency (67 FR 2376).

For more information: https://www.fisheries.noaa.gov/new-england-mid-atlantic/habitat-conservation/essential-fish-habitat-consultations-greater-atlantic-region

11.0 APPENDIX D: SPECIES DISTRIBUTION MODEL OUTPUTS

Provided as a separate document.

12.0 APPENDIX E: DETAILED EFH DESIGNATION METHODS

Provided as a separate document.