Habitat Committee Report 2025 EFH Designation Framework Other Updates (In Brief)

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NEFMC Staff

NEFMC September 24, 2025 Gloucester, MA



2025 EFH updates: How did we get here?

- NEFMC Omnibus Habitat Amendment 2 (2004-2018)
 - Revised EFH designations with data through ~2005, revisions effective 2018
 - Federal & state trawl survey data by ten-minute squares, plus depth and temperature
 - Multiple adjustments to spatial and temporal restrictions on methods of fishing
- Northeast Regional Habitat Assessment (2017-2022; updates ongoing)
 - Compiled survey & environmental datasets through 2019, created data viewer, developed species distribution models, crosswalked habitat & species climate vulnerability assessments
 - Joint SSC subpanel review in 2022, presented to Council <u>June 2022</u>
- Essential Fish Habitat Five-Year Review (2024-2025)
 - Technical evaluation of nine EFH-related components of fishery management plans
 - Further development of model-based EFH designation methods built off NRHA work
 - Presented to Council <u>January 2025</u>

Resources:

Council Habitat Documents

- Omnibus Habitat Amendment 2
 - FEIS Volume 2: EFH and HAPC, Appendix A EFH Methods, Appendix B Supplementary Tables
- EFH Five-Year Review Technical and Summary Reports

https://www.nefmc.org/library/essential-fish-habitat-efh-information

- Review Components: (1) EFH designation, (2) impacts of fishing on EFH, (3) impacts of non-MSA fishing on EFH, (4) non-fishing impacts to EFH, (5) cumulative effects of activities on EFH, (6) minimizing the adverse effects of fishing on EFH, (7) prey species, (8) designation of Habitat Areas of Particular Concern, and (9) EFH-related research needs
- Habitat policies: Offshore wind, oil and gas, aquaculture, submarine cables

FINAL

Omnibus Essential Fish Habitat Amendment 2

Volume 2: EFH and HAPC Designation Alternatives and Environmenta Impacts

Amendment 14 to the Northeast Multispecies A Amendment 14 to the Atlantic Sea Scallop FMP Amendment 4 to the Monkfish FMP Amendment 3 to the Atlantic Herring FMP Amendment 2 to the Red Crab FMP Amendment 2 to the Skate FMP Amendment 3 to the Atlantic Salmon FMP

Final Environmental Impact Stateme

Prepared by the New England Fishery Management Council In cooperation with the National Marine Fisheries Service

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OMNIBUS ESSENTIAL FISH HABITAT AMENDMENT 2 FINAL ENVIRONMENTAL IMPACT STATEMENT

Appendix A: EFH designation methodologies

FINAL

New England Fishery Management Council

Essential Fish Habitat (EFH)

5-Year Review Summary Report

Authors
NEFMC Habitat Plan Development Team (PDT), MAFMC EFH Fishery Management Action Team (FMAT)

Date March 18, 2025 Essential Fish Habitat Designation Methods for New England and Mid-Atlantic Council-Managed Species

EFH Review Component 1

Authors

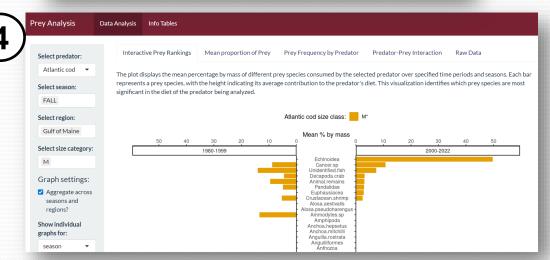
Julian Garrison, Tori Kentner, Chris Haak, Michelle Bachman, Jessica Coakley, Jennifer Coutun

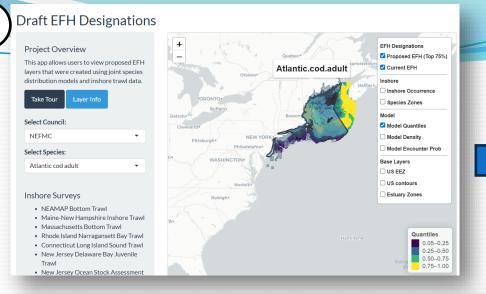
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Resources:

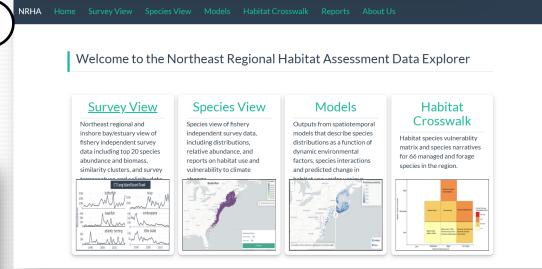
Habitat Applications

e Fishing Gear Effects on Marine Habitats Database Home About Fishing Gear Map Submit 72 results found Search full database: 3 Impact of experimental trawling on the 88 benthic assemblage along the Tuscany 2004 DeBiasi, A.M. coast (north Tyrrhenian Sea, Italy) Search Study ID Eno, N. C., D. S. MacDonald, J. A. M. Kinnear, S. C. Effects of crustacean traps on benthic 2001 Amos C I Chanman R A Clark ES P Bunker and Filters: ? Trawl-induced damage to sponges observed From a research submersible Gilkinson, K. D., G. B. J. Fader, D. C. Gordon Jr. R. Immediate and longer-term impacts of Charron, D. McKeown, D. Roddick, E.L.R. hydraulic clam dredging on an offshore ✓ Journal article (72) sandy seabed: effects on physical habitat Kenchington, K. MacIsaac, C. Bourbonnais, P. ☐ Book section (0) and processes of recovery Vass, and O. Liu ☐ Conference presentation (0) ☐ Grant report (0) Gilkinson, K. D., D. C. Gordon, K. G. MacIsaac, D.L. trajectories of macrofaunal communities ☐ Technical report (0) McKeown, E.L.R. Kenchington, C. Bourbonnais, following hydraulic clam dredging on ☐ Conference proceedings (0





Used during
EFH Framework
development to
share draft
maps, model
outputs, and
inshore data



- (1) https://nrha.shinyapps.io/EFH_demo/
- (2) https://nrha.shinyapps.io/dataexplorer/#!/
- (3) https://fishmaps.shinyapps.io/FishingEffectsDatabase#!/
- (4) https://fishmaps.shinyapps.io/prey/

EFH Framework (Initiated April 2025)

- Problem statement: During the EFH Five-Year 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 2005 and may not reflect current habitat use by Council-managed species.
 - Builds on species distribution modeling approaches and inshore workflows developed during NRHA and the EFH Five-Year Review
- Objective: 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.
 - > Designations for other species will be updated in future Council actions

April Council meeting materials at this link

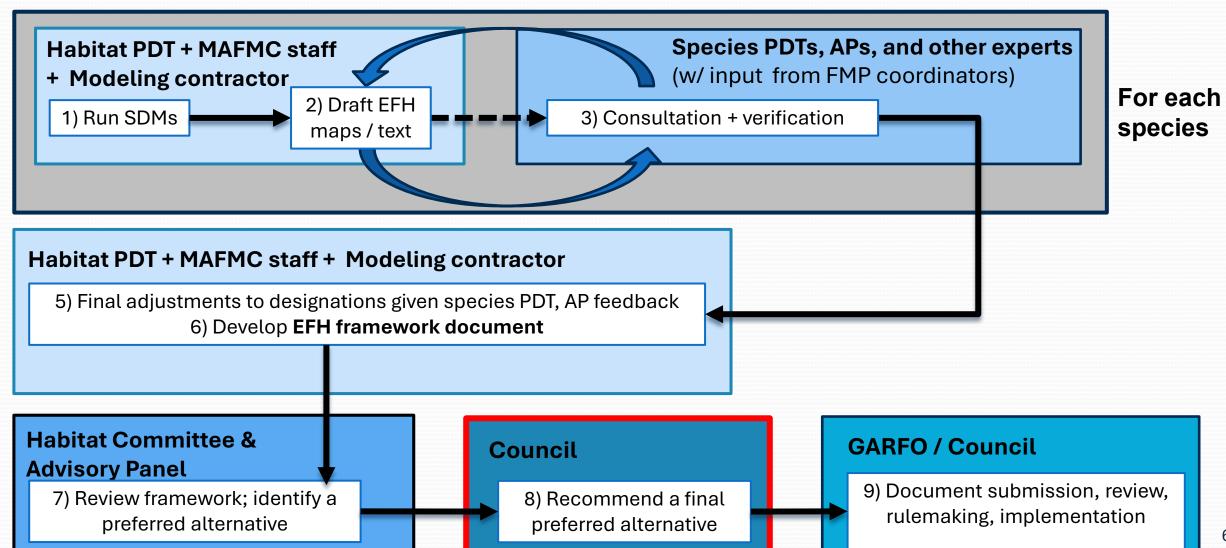




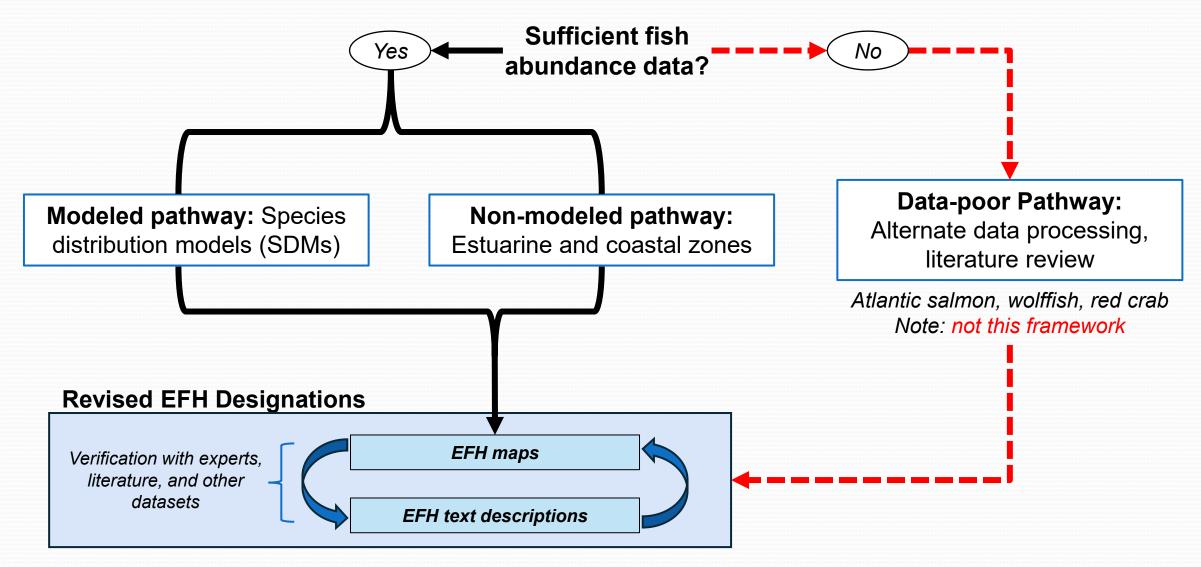




Workflow for EFH Framework



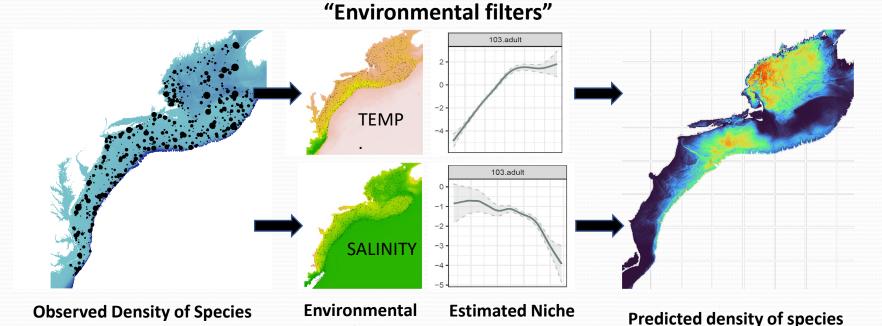
Updated EFH designation methods flowchart



Modeling pathway (inshore to offshore areas)

Species Distribution Models (SDMs) estimate the habitat "niche" of organisms by relating **observed densities** to **environmental variables**

> Separate juvenile and adult models with sufficient data; otherwise, combined models (i.e., barndoor, rosette, smooth, thorny skate)



Predictors

- SDMs were developed for most species managed by NEFMC and MAFMC including all 10 species in this action
- Rely on abundance data from NEFSC, NEAMAP, ME-NH, MA trawl surveys (2000-2019)
- Possible to predict species
 density beyond sampled area
 → being careful about these
 inferences, e.g., in low salinity
 habitats
- Joint SDMs allow us to understand relationships between species

Modeling pathway (SDM Density Quantiles)

- Quantiles group the mean density predictions into bins:
 - Top 95% = general distribution area



Top 75% = principal habitat area (EFH)



Top 50% = core habitat*

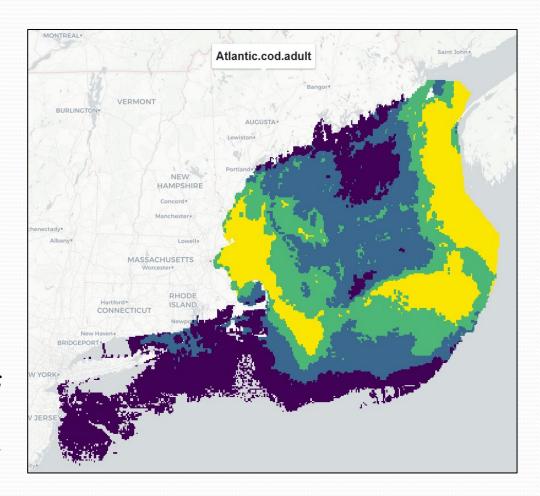


Top 25% = hotspots*

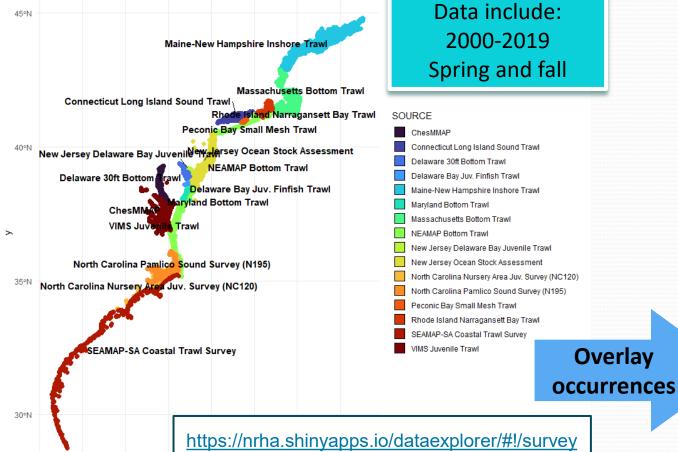


^{*} Terminology is from North Pacific (model-based EFH since 2017); not wedded to this language if it isn't useful

Started our EFH work assuming 95% / general distribution area as EFH; after consultation recommend 75% / principal area as EFH







	(0)	<u> </u>			
			Depth (m)		
n.a.			Tidal fresh	< 0.5	
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	BALTIMORE	Atlantic City	Marine	> 30	
	Wilmington		Salinity (ppt)		
York* PHILADELPHIA* NEW JERSEY					
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	TidalFresh_Shallow	NEW YORK	Service Control of the Control of th		
1	Mixing_Channel			3	
1	Mixing_Mid	BRIDGEPORT			
1	Mixing_Shallow	New Ha			
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1	Polyhaline_Shallow Polyhaline_Mid		lartford* ISLAND		
	Polyhaline Shallow	Note: No. 2 to 10 Miles I have been a second of the later	RHODE		

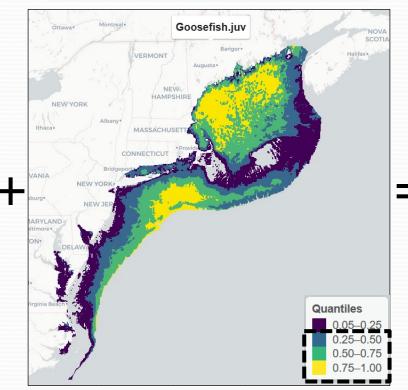
Dept	Depth (m)		
Shallow	< 2		
Mid	2 m – 75 th percentile		
Channel / Deep	> 75 th percentile		

Combine model-based and estuarine/inshore areas to create EFH map

Inshore zones with occurrence or appropriate habitat conditions

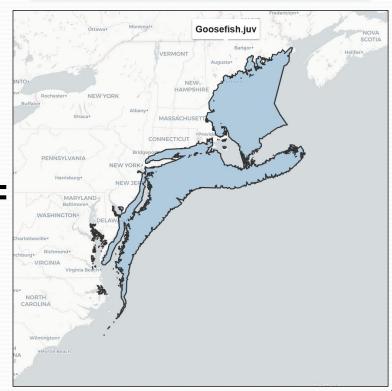
Goosefish.juv VANIA

Model-based area (top 75% predicted density)



habitat area = EFH

Combined to form principal



Derived from predicted density

Summary of map updates by species

Species	Model-based maps for juveniles and adults	Egg and larval maps (based on juvenile and adult model outputs)
Atlantic herring	Separate juvenile & adult	Eggs, adult fall distribution Larvae, union of adult and juvenile map
Atlantic cod	Separate juvenile & adult	Eggs and larvae, union of adult and juvenile map
Monkfish	Separate juvenile & adult	Eggs and larvae, union of adult and juvenile map
Clearnose, little, and	Separate juvenile & adult	Eggs, use adult map
winter skate		No larval maps for skates
Barndoor*, smooth*,	Combined juvenile & adult	Eggs, use combined map
rosette and thorny skate		No larval maps for skates

^{*} In process of running combined juvenile/adult barndoor skate and smooth skate models; for now, maps are shown as the union of juvenile and adult model outputs

Text description updates

- Builds on OHA2 descriptions
- Provides additional information that complements EFH maps:
 - Spatial distribution, referencing EFH maps
 - **Habitat characteristics:** specific associations (e.g., substrates), environmental ranges (depth, temperature, salinity; *see example below*)
 - Variations in habitat-use: seasonal, geographic, oceanographic, life history, etc.
- Environmental ranges derived from quantiles of survey occurrence data:

Species	Life	Depth (m)		Temperature (°C)	Salinity (ppt)
	stage	Full	75%	95%	95%
Atlantic cod	Juvenile	7-201	14-100	3-14	26-35

Information sources:

- EFH maps and model outputs
- Inshore + offshore survey data
- Literature review
- Consultation w/ experts (species PDTs, APs, industry, etc.)

Outreach process - designations

Resources:

- Guiding questions
- Detailed EFH primers*
- Simplified EFH primers*

Date	Group / Species		
May 28	Groundfish PDT – cod		
May 29	Skates and Monkfish PDTs		
June 10	Groundfish AP / RAP – cod		
June 18	Herring PDT		
July 7	Skate expert		
July 10	Cod expert		
July 10	Herring experts		
Other feedback via correspondence			

*Note: primers do not have the most updated maps/text but are provided as snapshots in the outreach process

- Consult and verify draft EFH maps and text with species experts
- Ongoing, evolving process feedback on ways to improve upon it for next year

> Key themes:

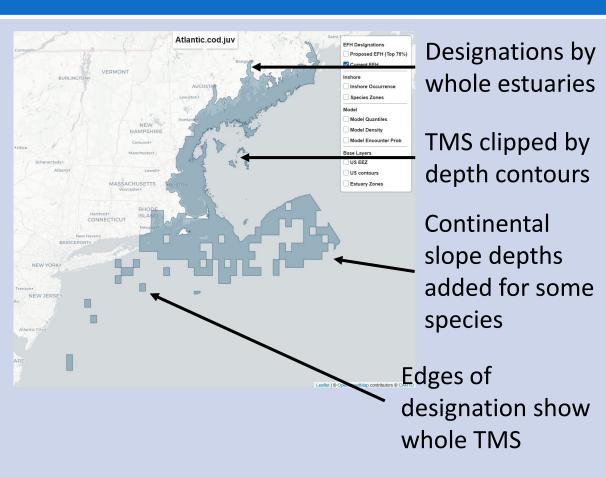
- Identify gaps in maps / text (seasonal, key habitat conditions, etc.)
- > Balance between broad vs focused EFH
- Interest in binning outputs into smaller time blocks, especially most recent years
- Consider additional datasets (verify, integrate?)

No Action vs. Updated Designation Methods

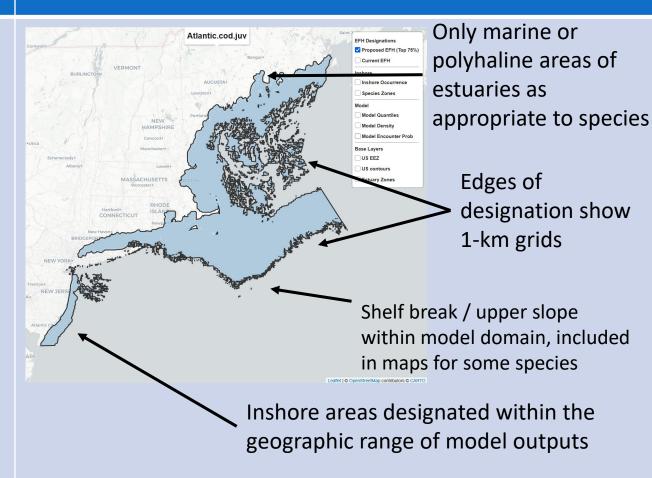
	No Action (OHA2)	Updated (2025-2027 actions)
Fish abundance data	Federal, state, regional survey data (1968 or earliest available - 2005)	Federal, state, regional survey data (2000-2019)
Environmental variables	Depth, temperature; ranges estimated by examining histograms	Depth, temperature, salinity, currents, sediments, rugosity; ranges estimated by summarizing all survey observations (depth / temp / salinity)
Data processing	 Cumulative abundance (75th or 90th percentile) by ten-minute squares (TMS), clipped by depth + inshore TMS with positive tows + whole estuaries. Multi-step workflow, various layers joined together 	 Joint species distribution models (SDMs) + inshore suitable habitat zones; 1-kmgrid.Top 75% predicted density, all speciesProgramming-based, reproducible workflow
Un-surveyed areas	"Fill" areas added based on professional judgment, procedure for designating unsurveyed TMS if adjacent TMS EFH	SDMs predict (interpolate) density based on environmental covariates, except in low salinity areas; inshore extrapolation uses depth/salinity zones

No Action vs. Updated Designation Maps

No Action (OHA2)



Updated (2025-2027 actions)



Framework document and appendices

- 1. Executive Summary
- 2. Contents
- 3. Introduction
- 4. Alternatives
 - 1. No Action EFH
 - 2. Updated EFH
- 5. Fishing Effects Evaluation
- 6. Impacts of Alternatives
- 7. Areas for Future Work
- 8. Consistency with Applicable Laws
- 9. List of Preparers
- 10.References

Appendix A

No Action EFH maps and text

Appendix B

- Species distribution model outputs
 - Quantiles, smooth terms, trends, seasonal density estimates
- Table of environmental ranges

Appendix C

• EFH Consultation Process

Questions about process or methods?

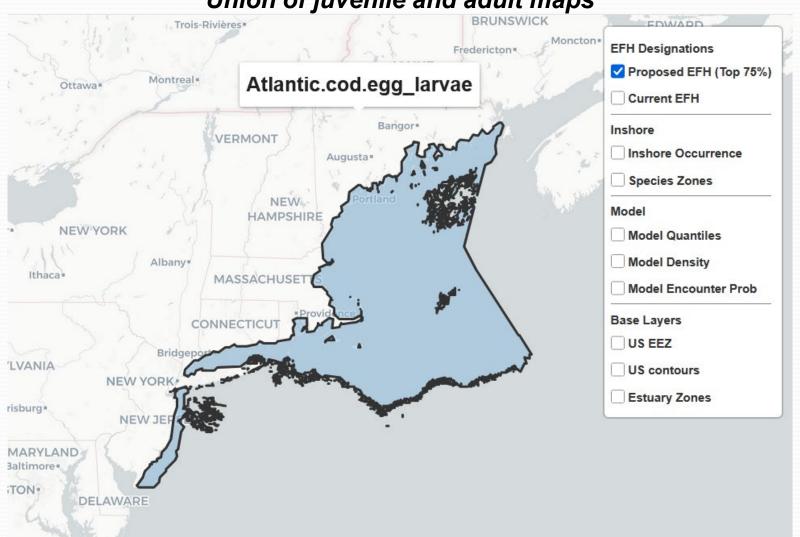
EFH Designation Alternatives (Section 4.0)

- Alternative 1 / No Action: Current EFH designations as updated in Omnibus EFH Amendment 2
 - Rely on inshore and offshore survey data through ~ 2005
 - Data summarized by estuary / embayment and ten-minute square
 - Includes adjacent areas with suitable depths, temperatures
 - Includes continental slope depth ranges
- Alternative 2: Updated EFH designations
 - Relies on inshore and offshore survey data from 2000-2019
 - Combines model-based and non-modeled workflows
 - Updated text that relies on model outputs and survey data for environmental ranges

Updated EFH Map and Text – Atlantic cod

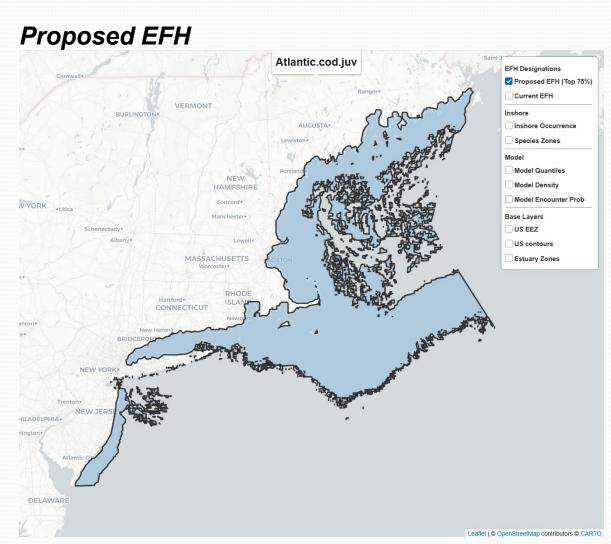
Egg and larval EFH map

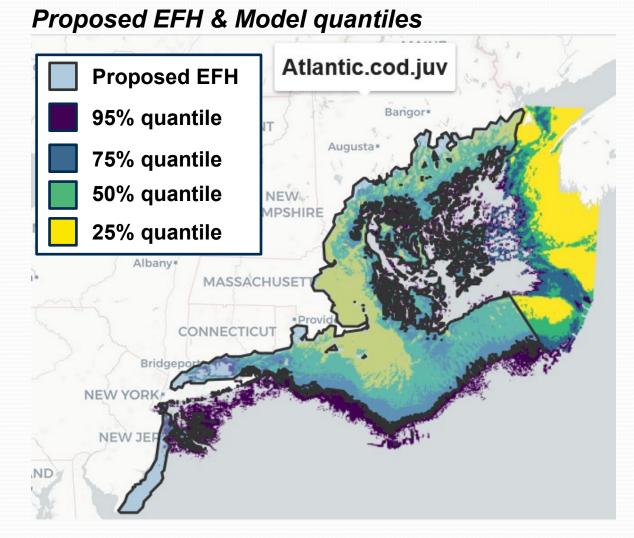
Union of juvenile and adult maps



Updated EFH Map and Text – Atlantic cod

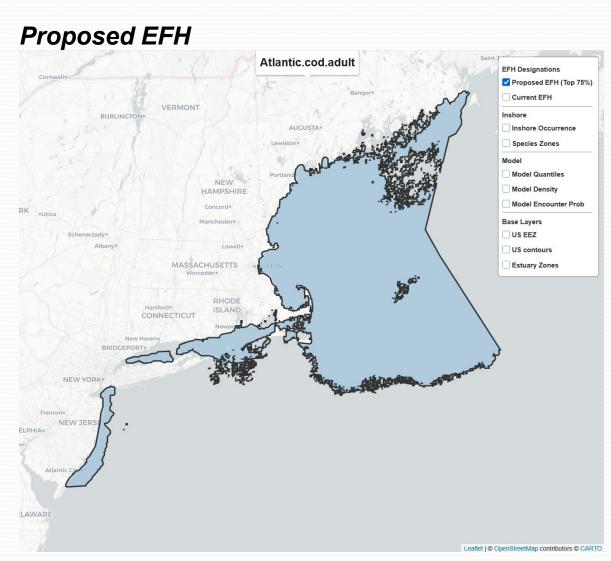
Juvenile EFH map

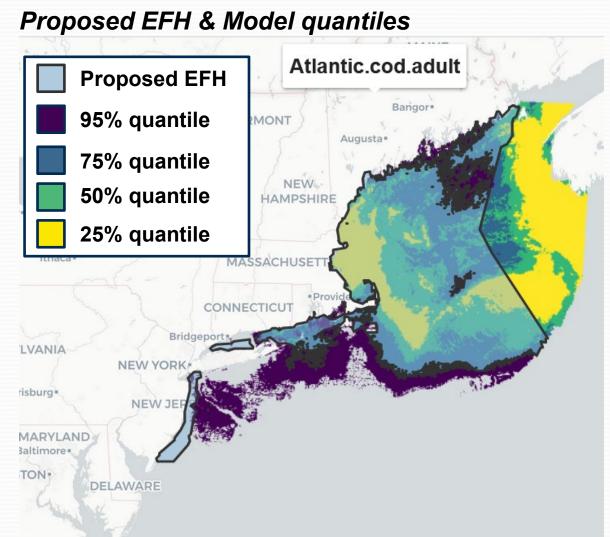




Updated EFH Map and Text – Atlantic cod

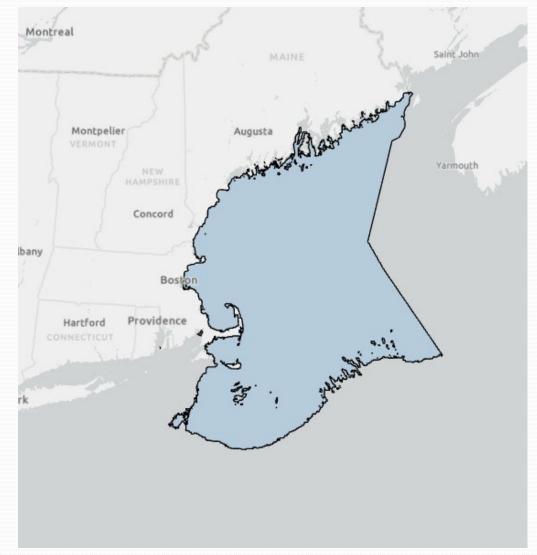
Adult EFH map





Egg EFH map

Adult 75th quantile in fall



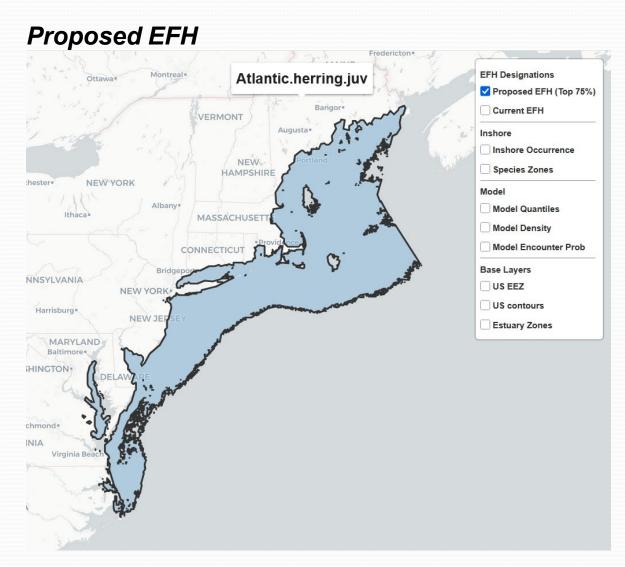
Larval EFH map

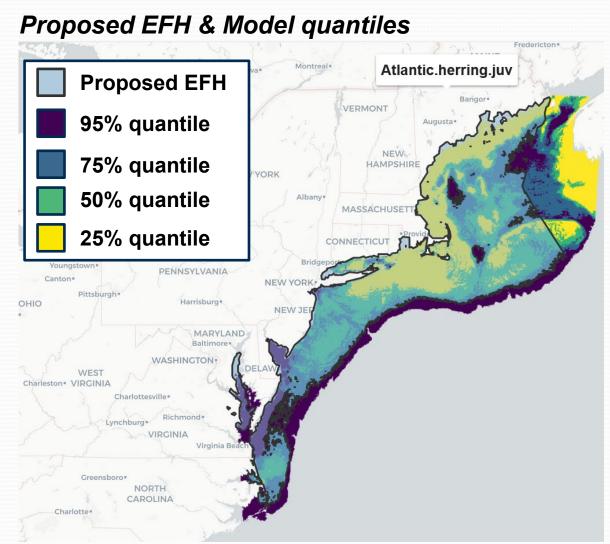
Union of juvenile and adult maps



Updated EFH Map and Text – Atlantic herring

Juvenile EFH map

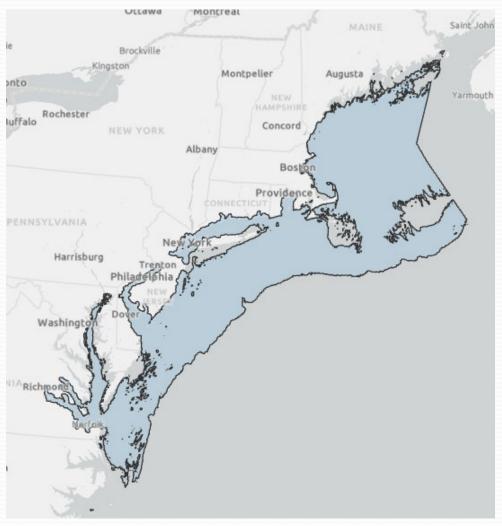




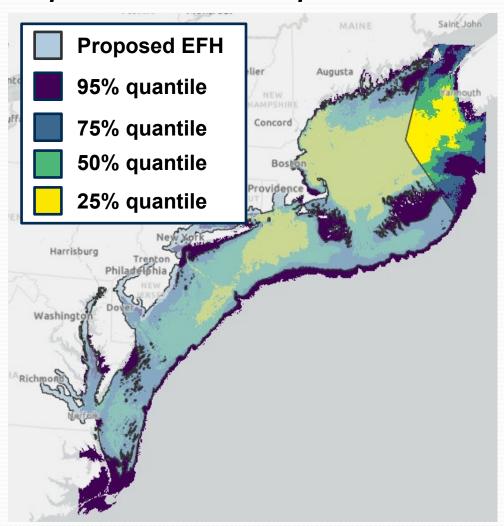
Updated EFH Map and Text – Atlantic herring

Adult EFH map

Proposed EFH



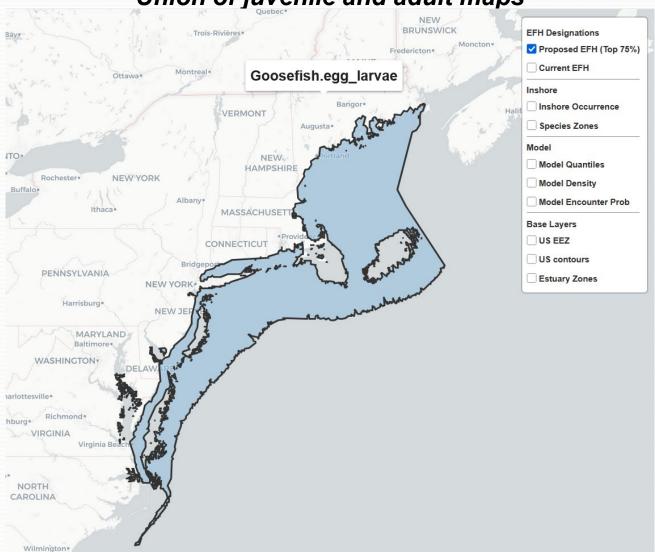
Proposed EFH & Model quantiles



Updated EFH Map and Text – Monkfish

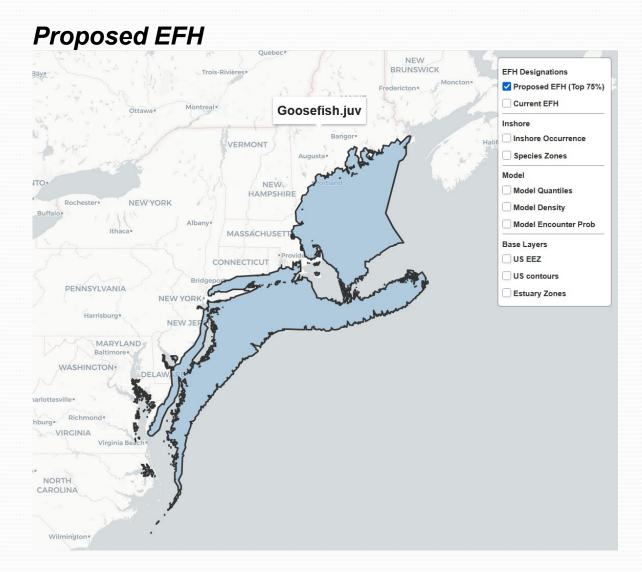
Egg and larval EFH map

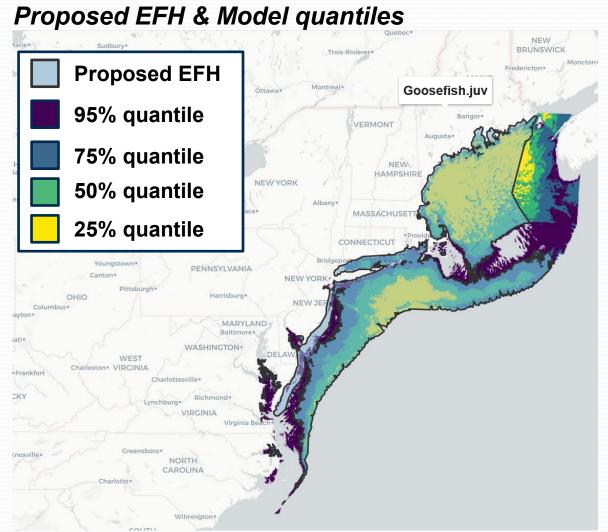




Updated EFH Map and Text – Monkfish

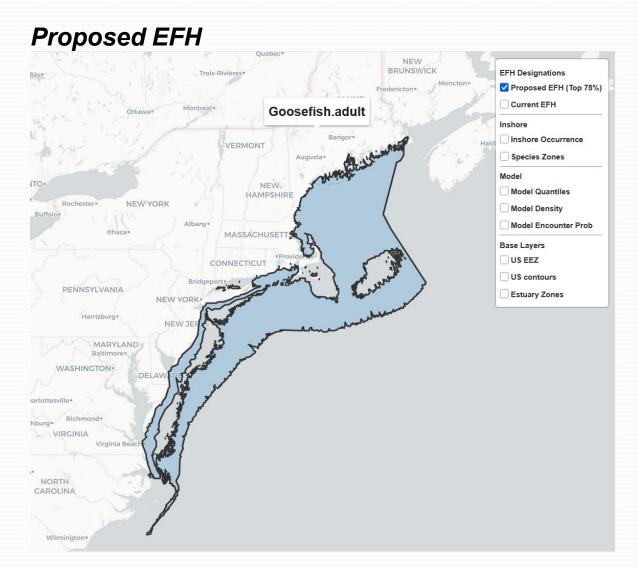
Juvenile EFH map





Updated EFH Map and Text – Monkfish

Adult EFH map

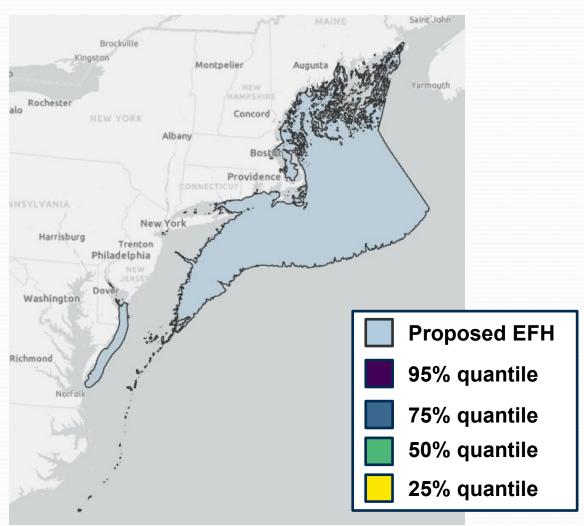


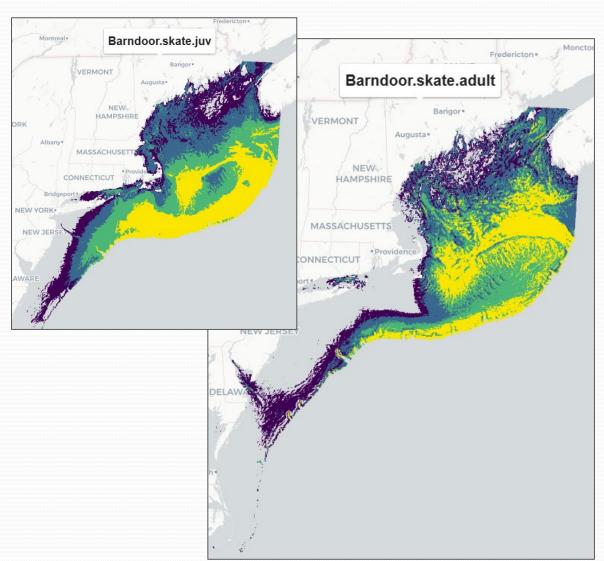
Proposed EFH & Model quantiles BRUNSWICK **Proposed EFH** Goosefish.adult 95% quantile VERMONT 75% quantile HAMPSHIRE **NEW YORK** 50% quantile 25% quantile PENNSYLVANIA MARYLAND WASHINGTON: Frankfort NORTH CAROLINA

Updated EFH Map and Text – Barndoor skate

Egg, Juvenile, Adult EFH map

Proposed EFH

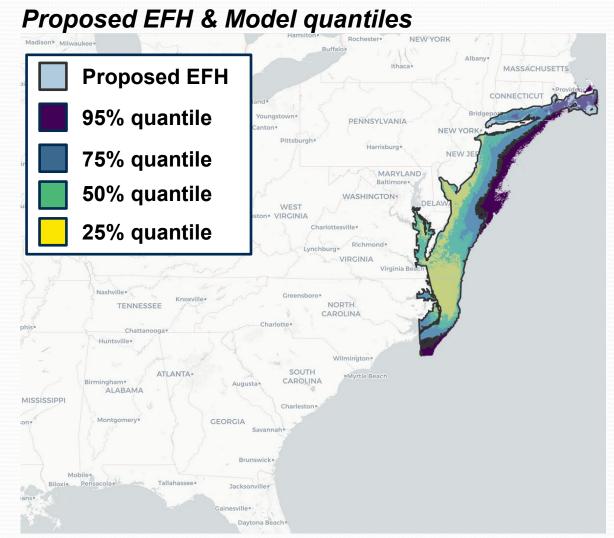




Updated EFH Map and Text – Clearnose skate

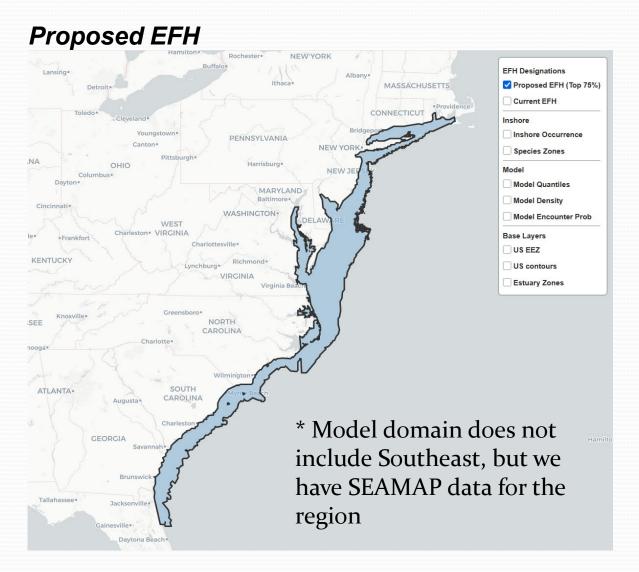
Egg and Adult EFH map

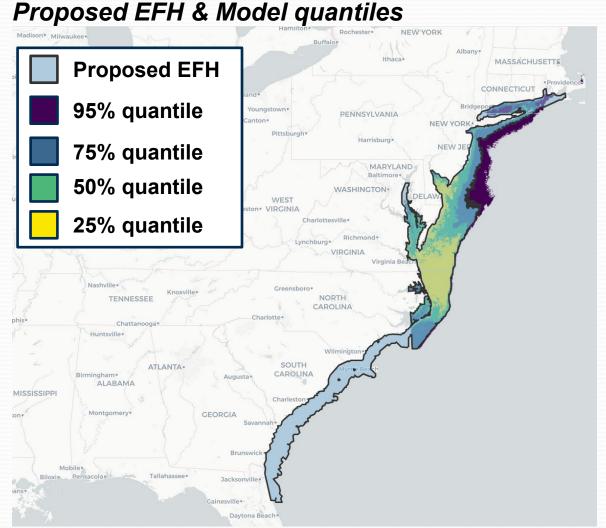




Updated EFH Map and Text – Clearnose skate

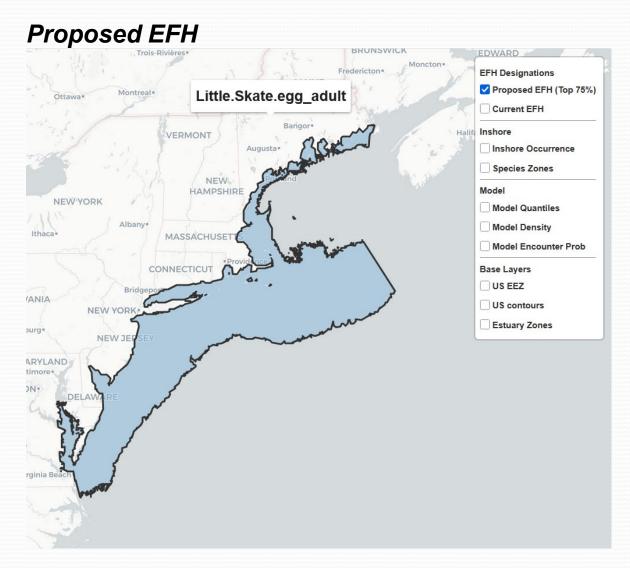
Juvenile EFH map

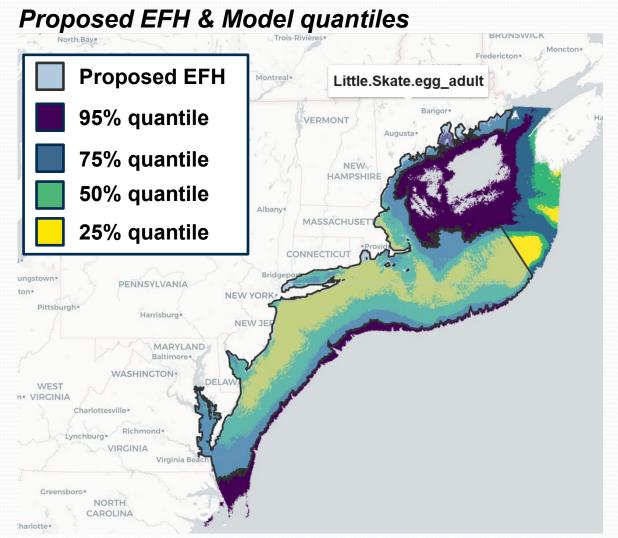




Updated EFH Map and Text – Little skate

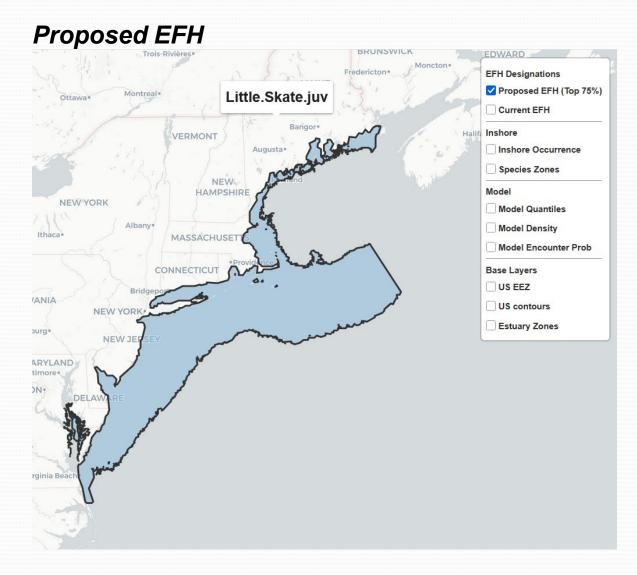
Egg & Adult EFH map

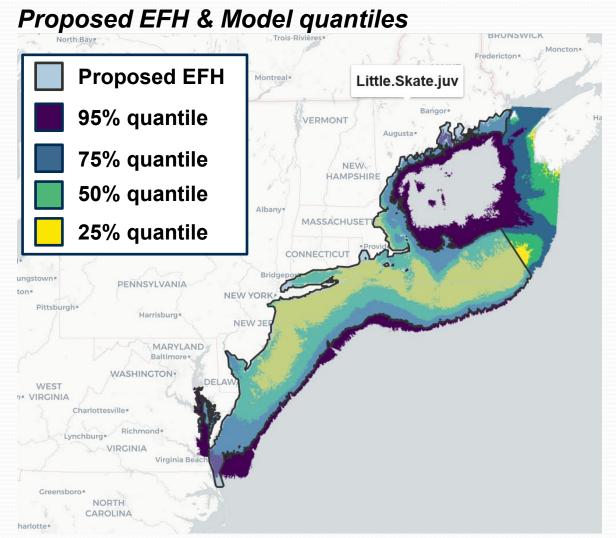




Updated EFH Map and Text – Little skate

Juvenile EFH map

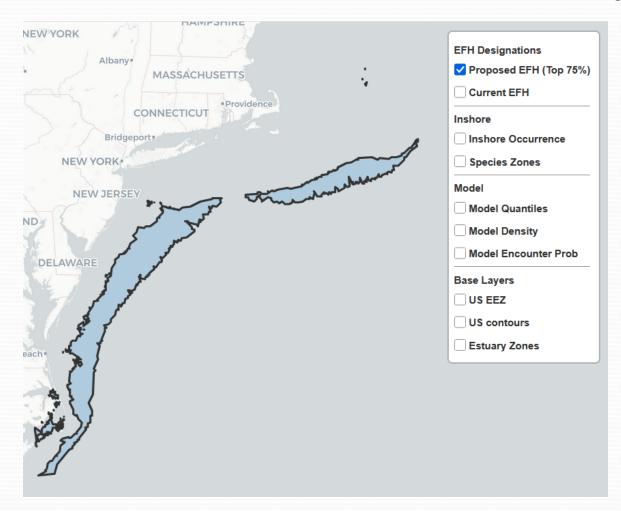


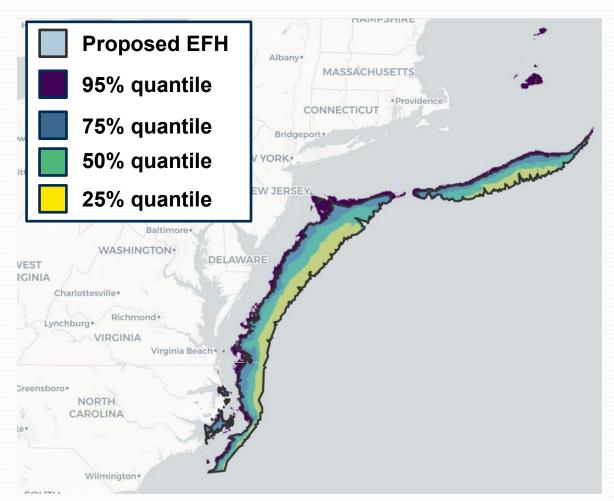


Updated EFH Map and Text – Rosette skate

Egg, juvenile, and adult EFH map

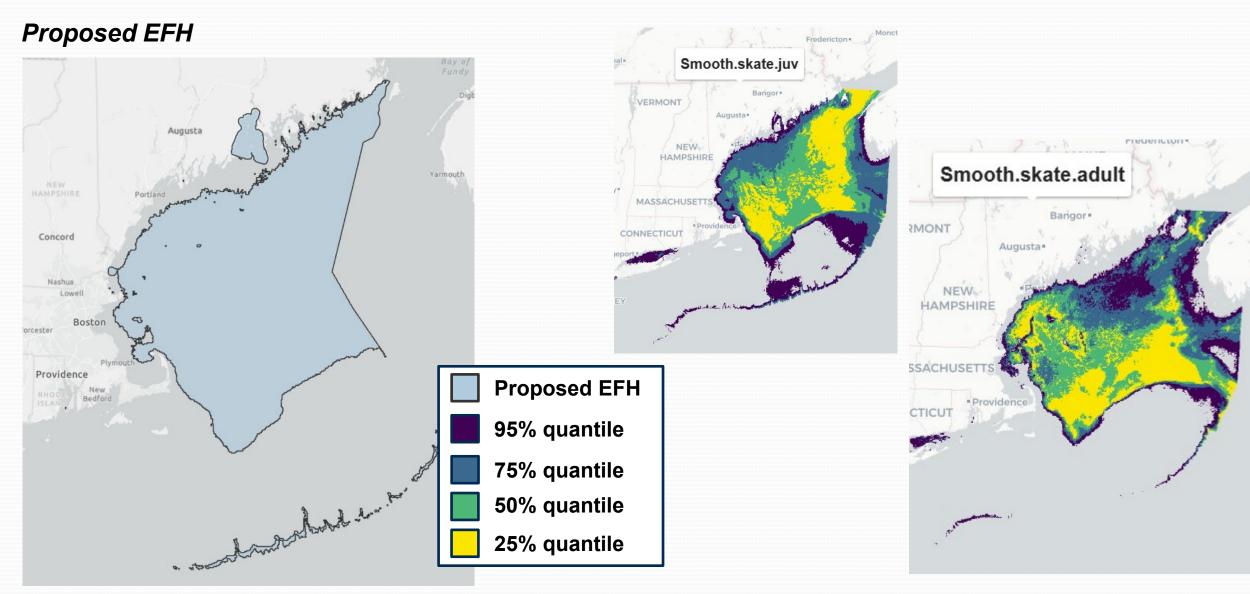
Based on combined juvenile / adult model





Updated EFH Map and Text – Smooth skate

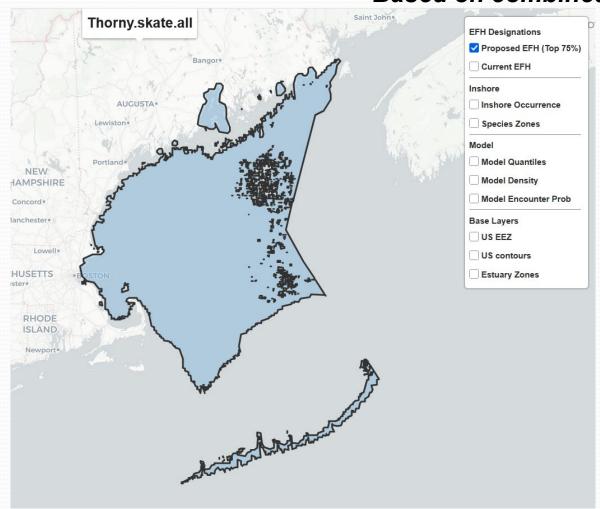
Egg, Juvenile, Adult EFH map

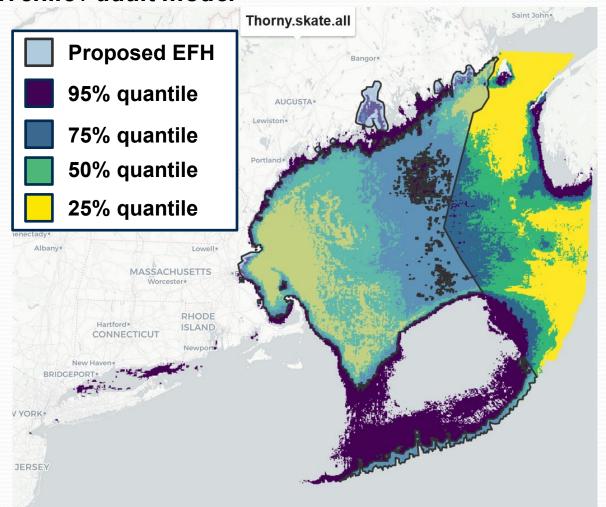


Updated EFH Map and Text – Thorny skate

Egg, juvenile, and adult EFH map

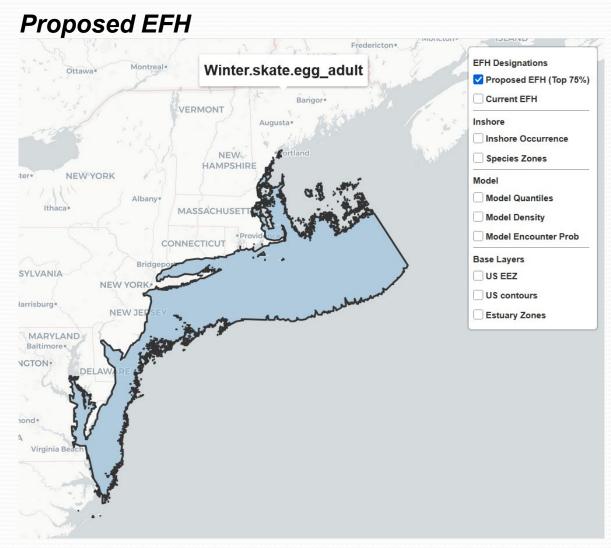
Based on combined juvenile / adult model

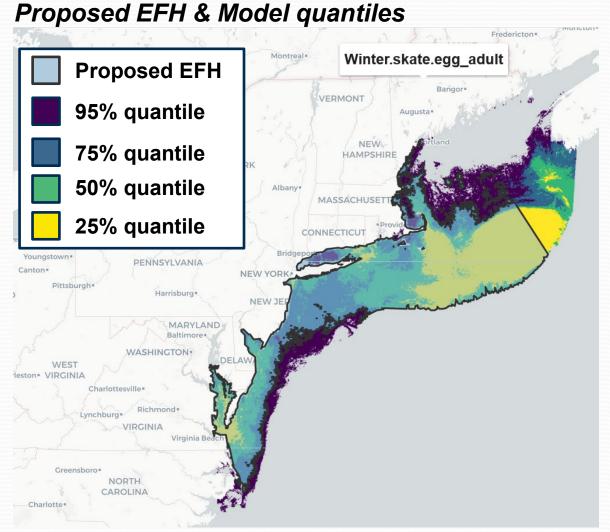




Updated EFH Map and Text – Winter skate

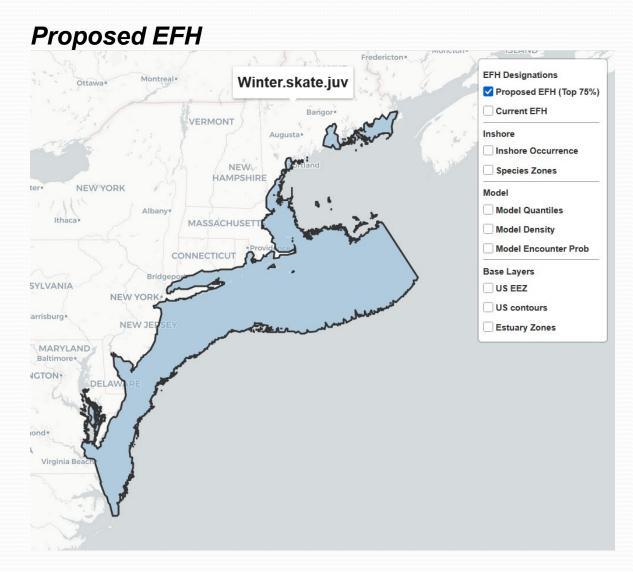
Egg and Adult EFH map

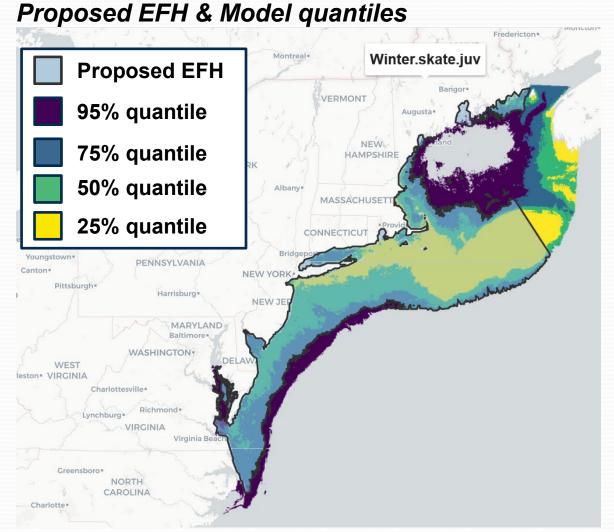




Updated EFH Map and Text – Winter skate

Juvenile EFH map





Impacts summary

- Action is solely administrative EFH designations do not directly affect distribution of fishing / use of fishing gears
- Updated designations ensure use of best, current scientific information
- Qualitatively considered effects on managed species, physical habitat, protected species, human communities
- Indirect positive effects on species, habitat conservation through consultation mechanism and Council actions resulting from updated designations
- HAPC are a subset of EFH; juvenile Atlantic cod EFH continues to align with three cod-specific Habitat Areas of Particular Concern

Fishing Effects Evaluation

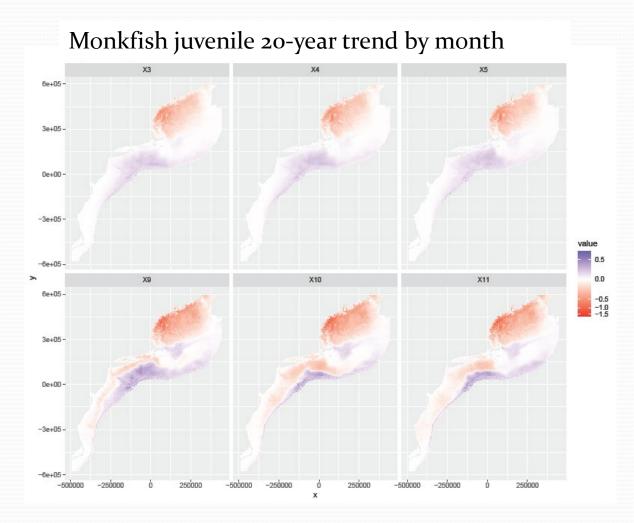
- Considered fishing gear effects on habitat at regional, sub-regional scales during EFH Five-Year Review
- Evaluation uses Fishing Effects Model, which estimates combined impacts across major types of bottom tending gears, and by individual gears (trawl, scallop dredge, clam dredge, longline, gillnet, trap)
- Model estimates monthly effects; summarized as annual averages
- Recent, regionwide estimate combining all gears = 11% habitat disturbance
- Mean estimated fishing effects (% disturbance) within individual EFH areas ranges from 4%-19% during 2022, depending on species
- Higher values may indicate species to examine further when considering measures to minimize adverse effects of fishing on EFH

Committee / Advisory Panel Recommendation

- Both the Committee and the Advisory Panel recommend that the Council select Alternative 2, Updated EFH Designations, as preferred
- Committee rationale: The updated modeling approach is an advance on the methods used for previous designations and uses best available, up-to-date data. The Committee recognizes that there have been changes in the environment since the previous updates and that this is our best opportunity to address those changes in the EFH designations.

EFH – What's next?

- Use SDMs to develop indicators of species distribution shifts through time
 → through IRA project
- Develop updated EFH designations for remaining 18 species, using the same methods and years of data (modified for data poor, i.e., red crab, salmon, and wolffish) → 2026, 2027
- Continue to share EFH-related information for use in EFH consultations and fishery management → via NRHA Data Explorer or other channels
- Consider other opportunities identified in EFH Five-Year Review Summary Report

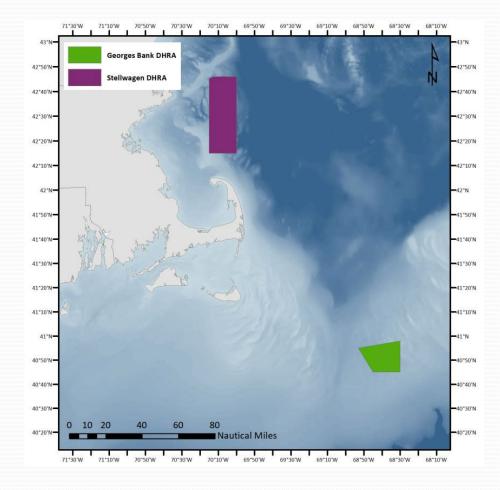


Questions?

Council discussion / motions

Three-Year DHRA Evaluation

- The Stellwagen and Georges Bank Dedicated Habitat Research Areas (DHRA) established via OHA2 have a 3-year sunset provision that allows for administrative removal by GARFO Regional Administrator
- In 2022, Council recommended retaining both DHRAs
- Three years later, it is again time to review use of these areas and consider continued retention
- Can also take opportunity to discuss use of other habitat research areas that do not fall under this provision (Jordan Basin, Davis Bank, Rose and Crown)



DHRA Review Process

GARFO's notice will include a request for information about other research areas without the sunset provision, to keep GARFO/Council informed:

- Rose & Crown and Davis Bank, Nantucket Shoals
- Jordan Basin, Gulf of Maine

Activity	Timing
GARFO requests information from the public on research occurring in the Stellwagen and Georges Bank DHRAs	TBD, in progress
GARFO prepares a report summarizing findings and provides report to the Council	TBD, after comment period
Committee reviews report and makes recommendation to Council about whether to retain or sunset Georges Bank and/or Stellwagen DHRAs	TBD, if warranted based on report
Council recommends whether to retain or sunset Georges Bank and/or Stellwagen DHRAs, transmits recommendation to GARFO	TBD, following Committee discussion if needed
GARFO publishes notice with decision, based on Council recommendation	TBD, after Council recommendation is provided

2025 Priorities and Activities

Item	Status
Complete EFH Five-Year Review	Completed Spring 2025
Revise EFH designations	Final Action today
Habitat impacts of management actions	Ongoing
Develop habitat and fishery comments on non-fishing activities	Ongoing
Contribute to habitat science and management partnerships	Ongoing
Collaborate on offshore wind science issues	Ongoing

2026 Work Planning – Staff Recommendations

- Continue to revise EFH designations (details next slide)
- Continue to advance Fishing Effects Model analyses
- Integrate habitat information into Council initiatives
- Communication, information sharing of habitat products
- Collaborate with habitat, ocean planning partners on science and management issues
- Maintain expertise on habitat and ocean planning science and research

→ See <u>staff memo</u> for details; **Committee agreement** with the suggested work areas for 2026, including the 2026 EFH Framework

2026 EFH Framework Recommendation

Fishery Management Plan	Species
Small Mesh FMP (3 species)	Red hake, silver hake, and offshore hake*;
Groundfish FMP (12 species)	Acadian redfish, American plaice, Atlantic halibut*,
	Atlantic wolffish**, haddock, ocean pout, pollock,
	white hake, windowpane flounder, winter flounder,
	witch flounder, yellowtail flounder;
Atlantic Sea Scallop FMP	Atlantic sea scallop***

^{*}Offshore hake and Atlantic halibut are somewhat data limited, with sufficient observations to model juveniles and adults in combination but not to run life stage-specific models.

^{**}It is likely possible to fit a species distribution model for Atlantic wolffish, but this will almost certainly require a simplified modeling framework.

^{***}EFH will rely on a scallop-specific vs. joint species distribution model, which is already under development.

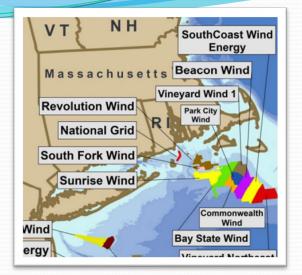
<u>Underline</u> = newly added to 2026 list, previous recommendation was to complete these species in 2027

Other updates: EFH Viewer, Ocean

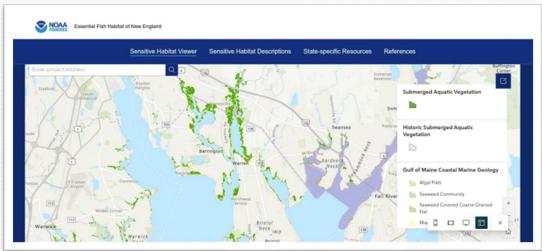
Planning

- Sensitive Habitat Viewer <u>link to slides</u> and viewer <u>https://arcg.is/1DOfrX1</u>
- Offshore wind project and permitting status, updates on other non-fishing activities see slides 47-60
- Offshore Wind Regional Fund Administrator outreach <u>link to slides</u>
- Newport Mussels project outreach <u>link to slides</u>









Questions about DHRA review, future work, or ocean planning updates?