Habitat Committee

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JUNE 12, 2026 - VIA WEBINAR

OBJECTIVES FOR TODAY'S MEETING

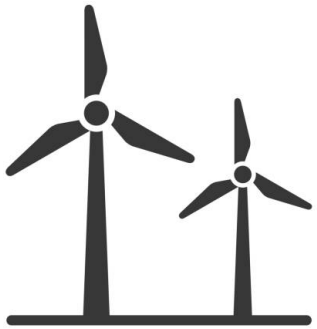
1. Receive updates on current ocean planning issues to prepare ourselves for future engagement and comments
2. Recommend whether to sunset the Georges Bank and Stellwagen DHRAs
3. Discuss the scope of work and objectives for a review of the Great South Channel HMA clam exemption program and offer feedback
4. Review progress on 2026 EFH designation framework, make specific recommendations to improve draft designations, and offer suggestions for outreach and vetting with knowledgeable individuals and groups

OCEAN PLANNING UPDATES

Objective: Receive updates on current ocean planning issues to prepare ourselves for future engagement and comments

Topics:

- Offshore wind
- Mineral mining
- Aquaculture
- Marine Carbon Dioxide Removal



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OFFSHORE WIND PLANNING CONTINUES TO EVOLVE

NYSERDA: Request for Information on potential initiatives to further OSW project readiness → consider value, benefits, risks for any pre-OSW development

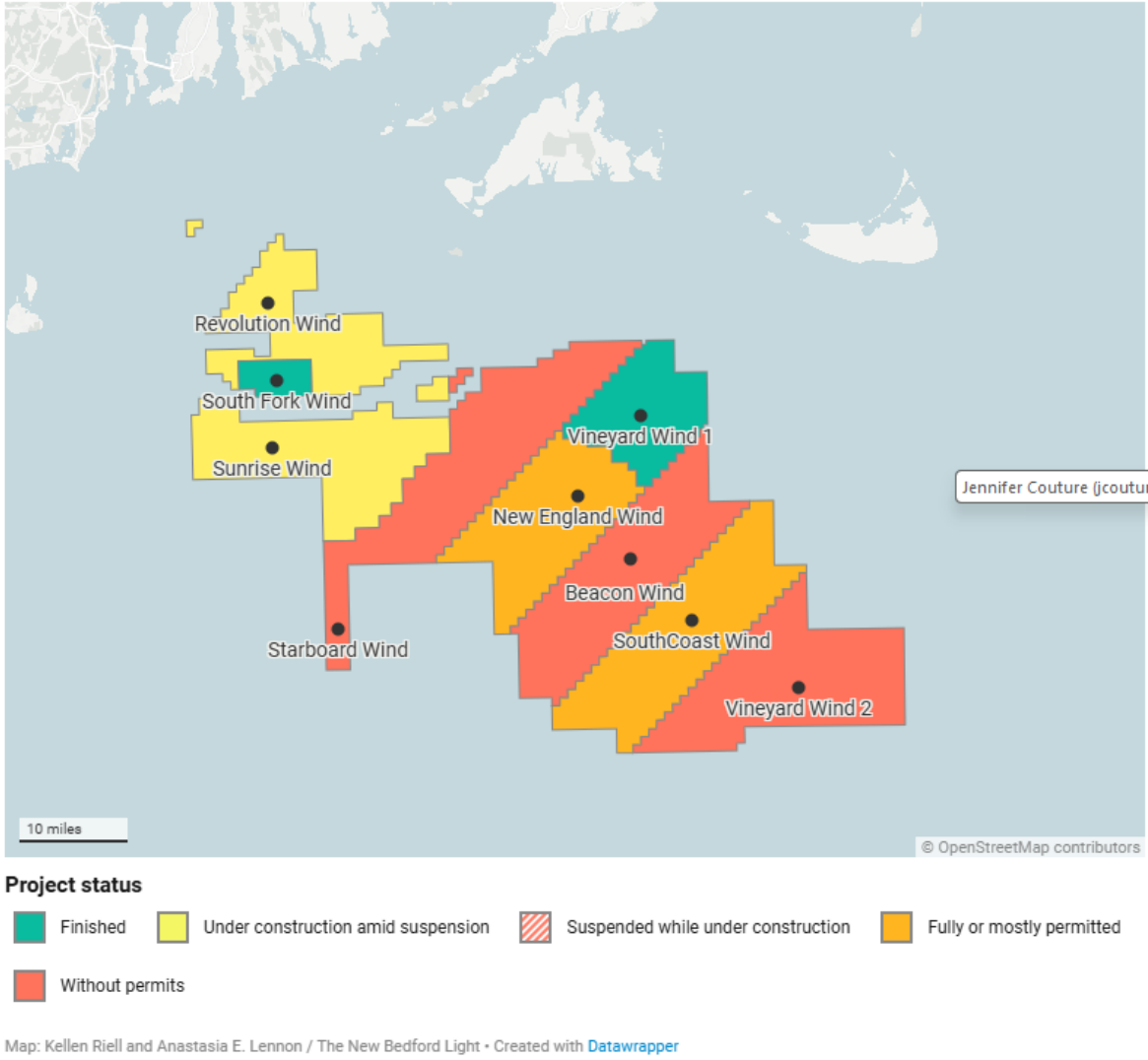
- Evaluating approach to help OSW projects advance timelier with reduced risks

Trump administration pays $928M to Total Energies to relinquish two OSW leases (off NY and NC) and instead invest in fossil fuel projects, with promise to not pursue OSW projects in the US in future;

- 2 separate DOI agreements to promote US energy security and affordability → dollar for dollar reimbursement to voluntarily end their OSW leases & agreeing to make investments in conventional energy projects
- NY and NC governors: 'terrible idea', 'pay-not-to-play scheme', etc.
- Other companies following suit: Bluepoint Wind (off NY), Golden State Wind (off CA); other developers are in discussion to cancel leases unresolved

OSW PROJECT STATUS IS MIXED

- **Completed / generating power**: South Fork & Vineyard Wind 1
- **Under construction**:
  - *Revolution Wind*: anticipated completion in second half of 2026, ship install delays
  - *Sunrise Wind*: anticipated completion in second half of 2027, cable burial not completed before time of year restrictions in summer
  - *Empire Wind 1:* anticipated completion in 2027
  - *Coastal Virginia Offshore Wind*: >70% complete, completion expected in early 2027



Helpful OSW Project Tracker Summary

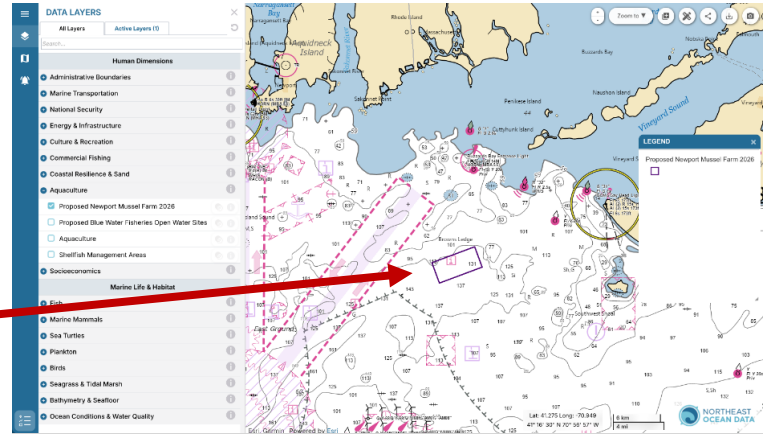
Ports: Salem and New Bedford terminals intended for offshore wind are shifting gears to due to pause/cancellation of offshore wind projects, federal grants rescinded, change in political landscape…

- *New Bedford* = continue to be location for VW1 operations/maintenance
    - Diversified in other businesses including marine construction (bridges, seismic work for pre-OSW development, shipping, fishing)
- *Salem* = considering developing 1 berth now & another in the future when OSW demand improves; redirect some $ into MassCEC fund to support development; planning for future increase in demand

Regional compensation: public hearing program document anticipated this summer, finalization expected in September; some issues re eligibility & transferability remain

NON-OFFSHORE WIND ACTIVITIES:

- *Virginia RFI on offshore mineral mining*
  - Expected in April … no update on timing
- *Newport mussel farm project*
  - NMFS suggested including VMS data but not being processed by NROC because of capacity issues; focused on fishing footprint updates first
  - Timing for next steps on project TBD
  - Council letter: https://d23h0vhsm26o6d.cloudfront.net/260310-NEFMC-to-USACE-RE-Newport-Mussel-Farm-application.pdf
- *Marine carbon dioxide removal*
  - Staff are on WHOI's Advisory Board for ocean alkalinity enhancement project focused on lobster and tautog; lab experimental studies with in-water trials



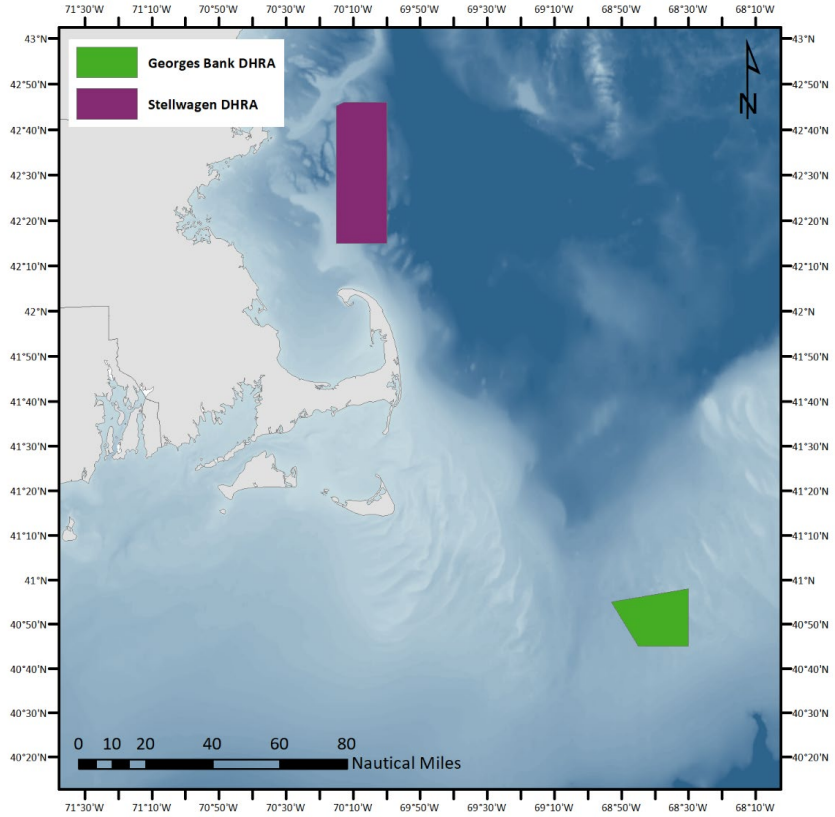
Carbon to Sea Initiative

DEDICATED HABITAT RESEARCH AREA SUNSET REVIEW

Objective: Recommend whether to sunset the Georges Bank and Stellwagen DHRAs

Outline:

- Background: Objectives of DHRAs, DHRA regulations, sunset criteria
- Recent research in each area
- PDT recommendation
- AP recommendation
- Additional considerations



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WHAT IS A DEDICATED HABITAT RESEARCH AREA?

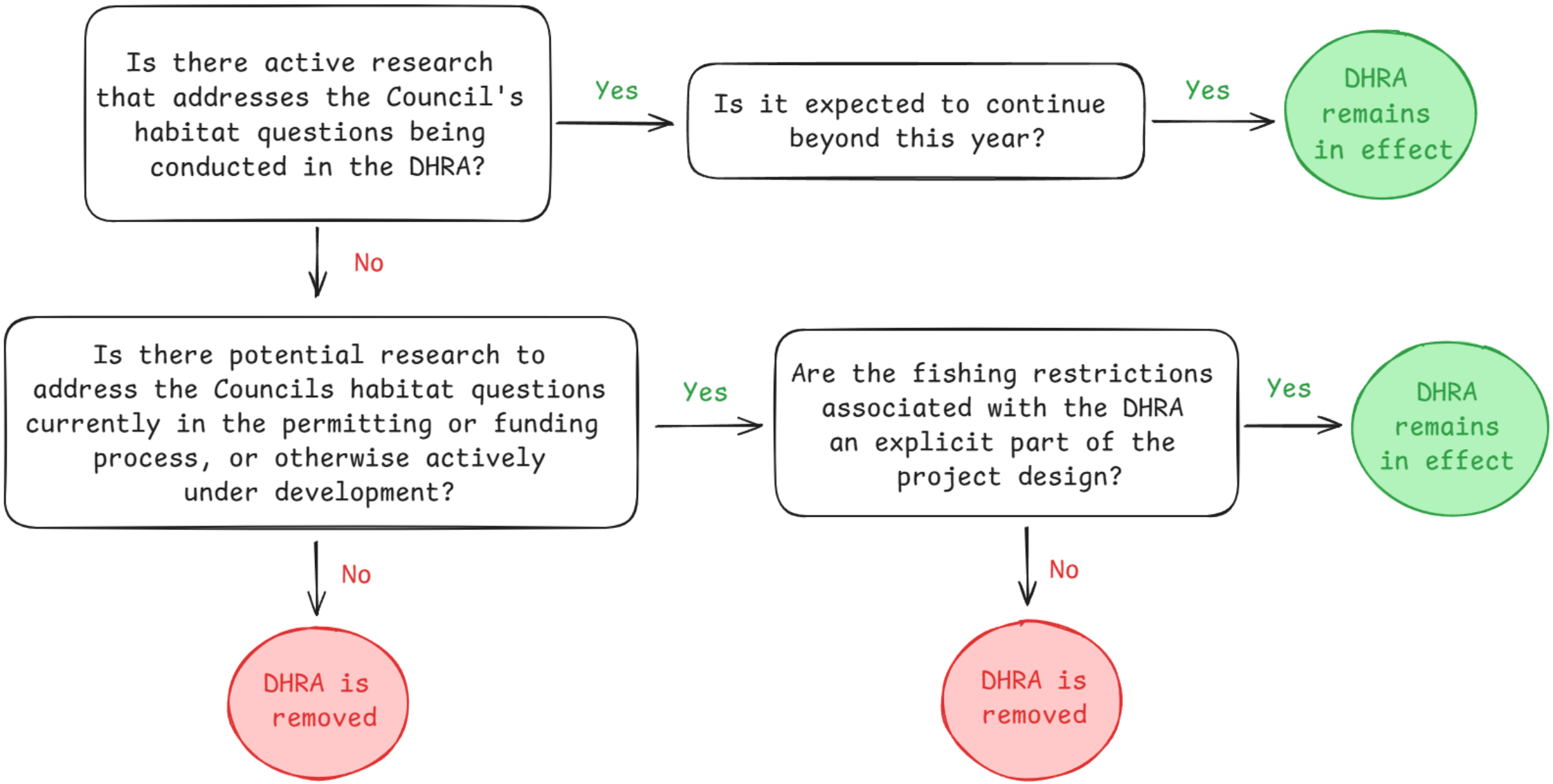
- A designated location where certain fishing activities are restricted to create controlled conditions where research on specific topics can be conducted

DHRA research topics	Fishing restrictions Stellwagen DHRA:	Fishing restrictions Georges Bank DHRA:
1. Tests assumptions of fishing effects modeling: • Differential susceptibility and recovery of habitats by gear type; • Improved estimates of gear contact w/seabed; • Habitat recovery models, patch size effects, and effort-response issues; • Differences between natural and fishing disturbance. 2. Improves understanding of how habitats support managed species	Fishing with bottom trawls and dredges (i.e., mobile bottom tending gear), sink gillnets, bottom longlines Note: Overlapping management areas include Western Gulf of Maine Habitat Closure, Groundfish Closure	Fishing with bottom trawls and dredges (i.e., mobile bottom tending gear) Note: Currently located within PSP closure area which prohibits surfclam and quahog fishing; may change in future

See Document 3, 2022 GARFO report to the Council for full wording of questions

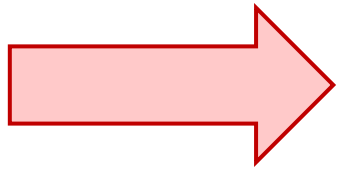
Immediate implications for removing DHRA are different between areas

CRITERIA FOR MAINTAINING A DHRA DESIGNATION



RECENT RESEARCH IN THE GEORGES BANK DHRA

- Research activities
  - Spring and fall trawl survey stations, and Ecosystem Monitoring (EcoMon) survey stations
    - Ongoing, long-term Northeast Fisheries Science Center surveys
  - Drop camera survey stations
    - UMass Dartmouth / SMAST
- No current or planned research focused on DHRA-specific questions



Indicates removal, per flowchart

RECENT / ONGOING RESEARCH IN THE STELLWAGEN DHRA

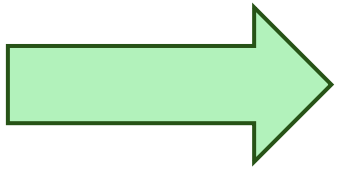
- Spring and fall trawl survey stations, and Ecosystem Monitoring (EcoMon) survey stations
  - Ongoing, long-term Northeast Fisheries Science Center surveys
- Video analysis of patterns and process of natural disturbances and species presence across habitats
  - Stellwagen Bank National Marine Sanctuary, University of Connecticut, Boston University
  - 2023-2025, with possible continuation through Boston University Marine Program in future
- Passive acoustic monitoring to understand human, environmental, and biotic soundscape
  - Stellwagen Bank National Marine Sanctuary
  - 2023-present
- Environmental DNA study to compare whole ecosystem biodiversity inside and outside of the DHRA
  - Gloucester Marine Genomics Institute
  - Fieldwork 2021, published 2025

Recent/ongoing work related to DHRA questions and reliant on regulations indicates retention, per flowchart

POTENTIAL FUTURE RESEARCH IN THE STELLWAGEN DHRA

Stellwagen Bank National Marine Sanctuary is planning:

- An autonomous underwater vehicle survey to compare habitat quality and species composition between areas inside and outside of the Stellwagen DHRA
- To deploy a long-term oceanographic monitoring buoy
- An economic analysis of commercial fishing and ecotourism operations in areas adjacent to the Stellwagen DHRA, to identify any "spillover" effect from increased catchable biomass due to the presence of the DHRA



Future work related to DHRA questions and reliant on regulations indicates retention, per flowchart

PLAN DEVELOPMENT TEAM RECOMMENDATIONS

- The PDT recommends retaining the **Georges Bank DHRA** pending further discussion of tradeoffs between having a relatively undisturbed area in which to conduct dedicated research vs. lost fishing opportunities.
  - No recent, ongoing, or planned research focused on DHRA objectives
  - Removing the DRHA designation would allow fishing with trawls and dredges to occur in the area, subject to catch limits and other gear restrictions
  - The DHRA has been closed to mobile bottom-tending fishing gears since 1994 and establishing analogous conditions in a new location would require several years of limited disturbance
- The PDT recommends retaining the **Stellwagen DHRA** based on documented past, ongoing, and potential future research that addresses habitat research questions posed by the Council via Omnibus Habitat Amendment 2.

ADVISORY PANEL RECOMMENDATIONS

1. Minkiewicz/Bragdon: Recommend that the Habitat Committee and Council request administrative removal of the **Georges Bank DHRA**.

   Motion 1 carried on a show of hands 5/3/0.

2. Minkiewicz/Brogan: Recommend the Habitat Committee request that GARFO and the Habitat PDT complete the dependence analysis required by the Omnibus Habitat Amendment 2 review framework for the **Stellwagen DHRA** before the Council makes any retention or sunset recommendation to the Regional Administrator. GARFO and the PDT are also requested to evaluate the effects of the DHRA designation on the ability to obtain research permits.

   Motion 2 carried by consensus.

DEPENDENCE ON DHRA REGULATIONS / RESTRICTIONS

Advisory Panel recommended considering whether the research in the Stellwagen DHRA is dependent on fishing restrictions associated with the DHRA designation

- In combination, other managed areas confer these restrictions
- Could remove the DHRA designation without changing fishing gears allowed/prohibited

Council's intention via OHA2 was to treat layered designations (DHRA, HMA, groundfish closure areas) as separate

DO DHRAS ENHANCE THE ABILITY OF RESEARCHERS TO OBTAIN PERMITS?

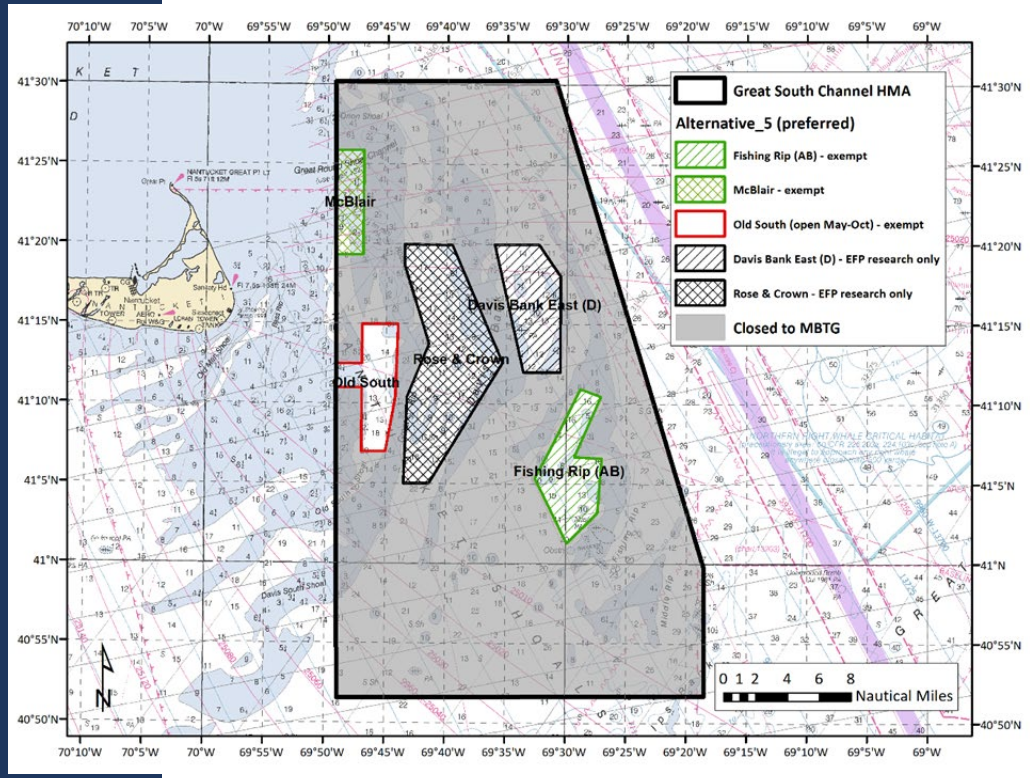
- Existence of a DHRA could facilitate the approval of EFPs in closure areas based on the rationale for their approval
- DHRA designation is not required for a research permit, but supportive
- During OHA2, Council affirmed via motion during final action that fishing vessel-based research could occur in HMAs as well, via exempted fishing permits

DOES REMOVING A DHRA CREATE A NEED TO MITIGATE HABITAT IMPACTS?

- DHRAs were not intended to be adverse effects mitigation measures
- Thus, no need to offset impacts if a DHRA is removed
- Analysis in FEIS estimated positive impact to habitat/EFH if used to conduct research addressing habitat questions

GREAT SOUTH CHANNEL HMA CLAM EXEMPTION PROGRAM REVIEW

- Requested by the Council in December 2025
- Objective is to assess the effectiveness of surfclam exemption areas from habitat conservation and fishery perspectives
- Focus will be on scientific and fishery information since 2018, when the Council took final action on the Clam Dredge Framework
- Purpose of today's discussion is to review the scope of the evaluation and information to be considered
- After the Council receives the report this fall, they may choose to prioritize development of an action to revise the exemption program



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WHAT IS THE GREAT SOUTH CHANNEL HMA CLAM EXEMPTION PROGRAM?

- Via Omnibus Habitat Amendment 2, the Council designated the Great South Channel HMA as a closure to mobile bottom-tending gears (i.e., bottom trawls and dredges)
    - Clam dredges were exempted from the closure for one year while the exemption program was designed
- Via the Clam Dredge Framework, the Council designated three exemption areas (McBlair, Old South, Fishing Rip) and established monitoring requirements
    - Fishing has been restricted to these areas since 2020
- The Council also identified two research areas (Rose & Crown, Davis Bank East)
    - Fishing has occurred in portions of these areas under Exempted Fishing Permits

EXEMPTION PROGRAM OBJECTIVES

- Minimize, to the extent practicable, the impacts of fishing on essential fish habitats within the Great South Channel HMA.
- Provide access to areas within the Great South Channel HMA to create fishing opportunities and support achievement of optimum yield in the surfclam fishery.

Thus, two types of information to explore in evaluation:

1. Habitat and Managed Species
2. Nantucket Shoals Surfclam Fishery

HABITAT AND MANAGED SPECIES

1. **Habitat conditions**, including sediments, depth, natural disturbance, epifauna, temperature; change through time
2. **Species-specific habitat use**, including and environmental drivers; change through time and differences across seasons
3. **Atlantic cod spawning**
4. **Effects of fishing gear**, including updated estimates of fishing effects
5. **Surfclam resource conditions,** including distribution, size composition, changes through time

SURFCLAM FISHERY INFORMATION

1. **Effort, landings, revenues,** focusing on the exemption areas, comparing the time periods pre- and post-implementation of the program
2. **Fleet characterization,** number of vessels, landing ports, home ports, comparing pre- and post- time periods
3. **Overall surfclam fishery trends,** for context

RESEARCH AREAS AND PROJECTS

- This program review will not explicitly consider the effectiveness of the Rose & Crown and Davis Bank East research area designations or revisit the research objectives
- However, we will consider the findings of research projects that have been conducted in these areas, to the extent that they inform our understanding of:
    - Habitat, surfclam resource, natural disturbance regimes in the Great South Channel HMA
    - Relationship between fishing disturbance and natural disturbance

DISCUSSION QUESTIONS – HABITAT CONSERVATION

Is the exemption program minimizing, to the extent practicable, the effects of fishing on essential fish habitats in the Great South Channel HMA?

- How do EFH designations revised in 2025, or being revised during 2026, contribute to our current understanding of the value of the HMA as habitat for managed fish and shellfish species?
- How much habitat disturbance is estimated to be occurring within the HMA now, as compared to pre-designation, based on the results of the Fishing Effects Model?
- Is there any new information about cod spawning activities within or directly adjacent to the Great South Channel HMA and exemption areas? Are the area-based and seasonal restrictions on fishing within the Great South Channel HMA protective of potential cod spawning activity?
- How has recent research impacted our understanding of habitats in the Great South Channel HMA, including characteristics, spatial distribution, and change over time because of fishing and/or natural disturbance?

DISCUSSION QUESTIONS – SURFCLAM FISHERY YIELD

Is the exemption program effective in providing access to areas within the Great South Channel HMA to create fishing opportunities and support achievement of optimum yield in the surfclam fishery?

- How much yield has been generated from the exemption areas and has that changed over the course of the exemption program?
- How many vessels and fishing businesses are participating in the exemption program? Which ports and communities do these businesses support?
- Are all exemption areas being used? What are the patterns of fishing effort within the three exemption areas? What is the relative importance of each exemption area to surfclam yield from the Great South Channel HMA?
- Are the logistics of the program such as monitoring and declaration requirements workable and being complied with?
- How has surfclam harvest from the research areas contributed to total yield from the Great South Channel HMA?

ADVISORY PANEL RECOMMENDATION

3. Minkiewicz/Bragdon: Recommend the Habitat Committee direct the Plan Development Team, in conducting the Great South Channel Habitat Management Area Surfclam Exemption Program Evaluation, to:
    a) Expand the scope of the evaluation to include habitat and surfclam resource conditions in portions of the Great South Channel Habitat Management Area outside the McBlair, Old South, and Fishing Rip exemption areas.
    b) Examine the science supporting the original Great South Channel Habitat Management Area designation in Omnibus Habitat Amendment 2, including whether the productivity rationale advanced for protection of complex benthic habitat important for juvenile cod and other groundfish has been borne out by evidence developed since 2018.
    c) Treat the natural disturbance regime of the Great South Channel as a central analytical input, including an assessment of whether gear impact recovery times on this seabed are shorter than, comparable to, or longer than the natural disturbance return interval.
    d) Incorporate the Coonamessett Farm Foundation multibeam sonar, drop camera, and compensation fishing research outputs as primary data on habitat condition and recovery, rather than as contextual background.
    e) Examine updated cod spawning timing and location evidence relative to the boundaries and seasonal structure of the existing exemption areas.

Motion 3 carried on a show of hands, 5/2/0.

CLAM FRAMEWORK RESOURCES

- Final version of framework document (link)
- Final Rule (link)
- Appendix with image analysis (link)
- Appendix on effects of clam dredge gear (link); also see the Fishing Effects Database App
- Nantucket Shoals clam survey report (link) and SSC subpanel review (link)
- Habitat PDT memos: April, May, October 2018
- Research Objectives for the GSC HMA (link)
- Additional items are available here: https://www.nefmc.org/library/clam-dredge-framework

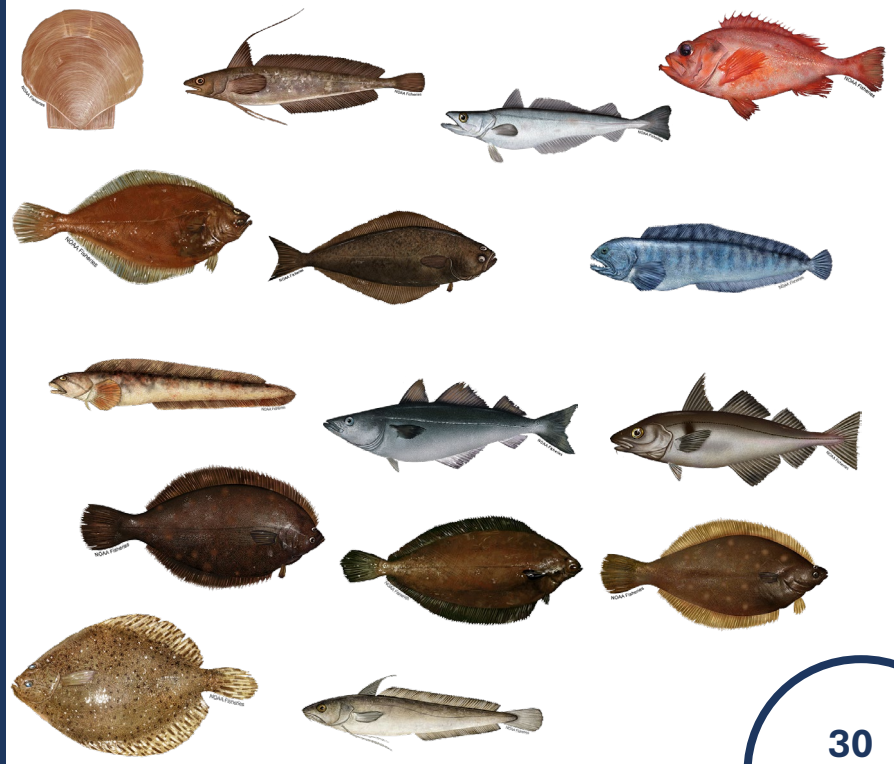
COMMITTEE DISCUSSION

- Are we asking the right questions? Are there other questions we should ask?
- Are we gathering the right information to answer these questions? What other sources of information should we be looking at?
- Who should be consulted as we are preparing this report?

2026 ESSENTIAL FISH HABITAT DESIGNATIONS

- EFH Background: *See prior meetings* ➔
  - EFH Five-Year Review (joint w/ MAFMC)
- Recap: EFH Designations Workflow and Methods
- Draft EFH Designations
- Feedback and Discussion

2026 EFH Meetings to Date:
January Council – Framework Initiation
April 1 – Habitat PDT Webinar
April 30 – Habitat PDT Webinar
May 29 – Habitat AP Webinar



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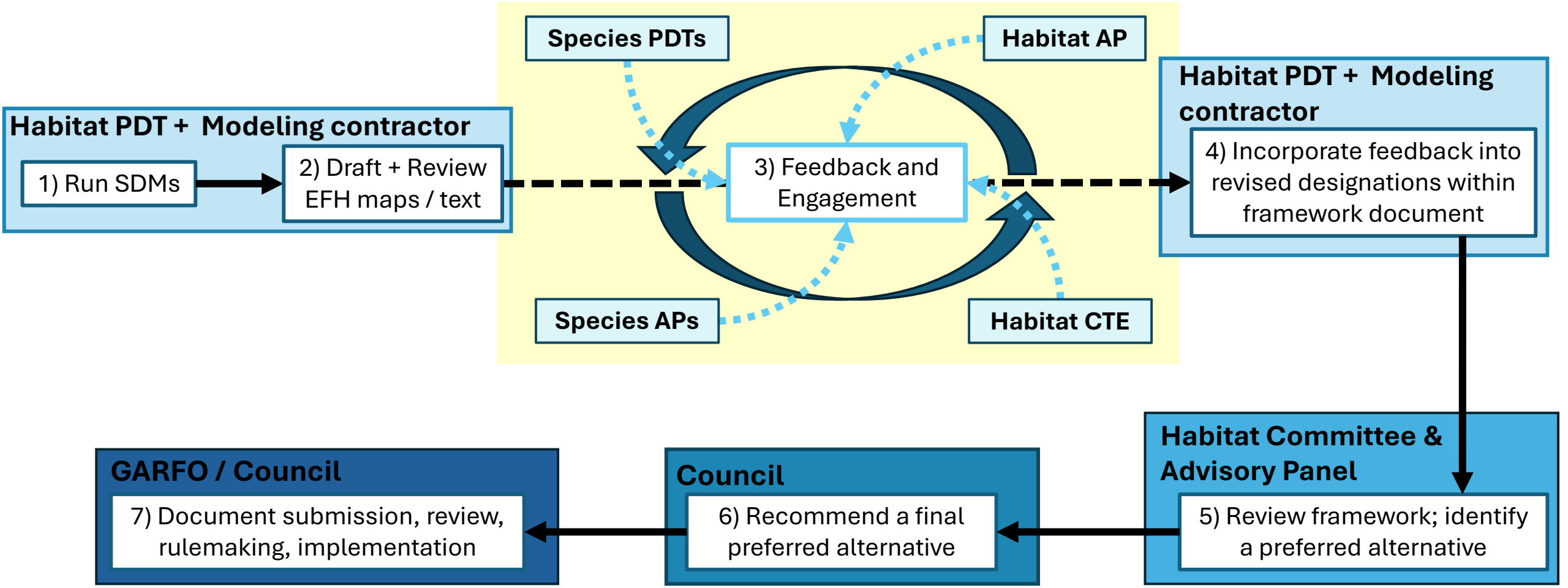
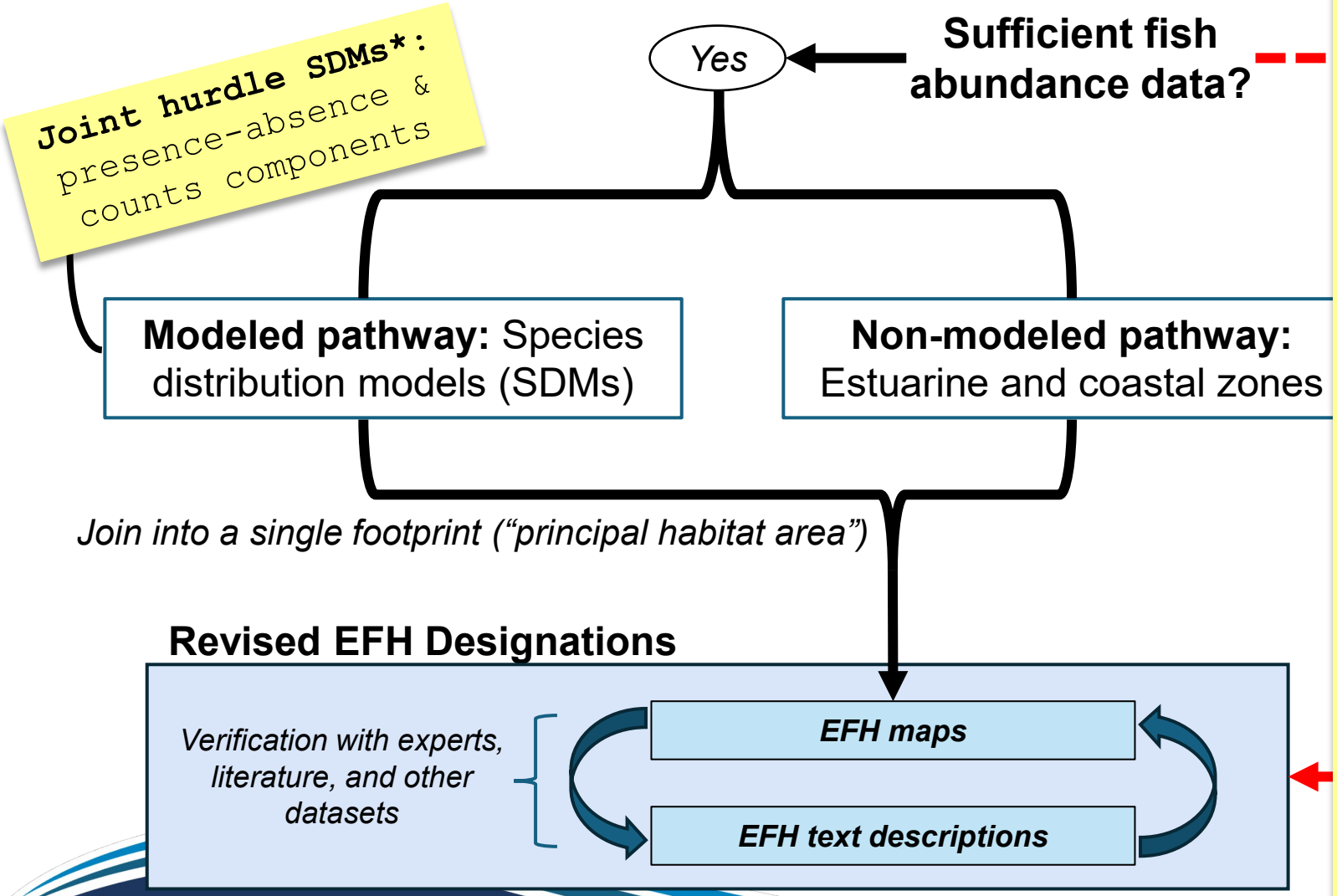
LIKELY RANGE OF ALTERNATIVES

- No action: Current EFH designations from OHA2 (text and maps)
- Single action alternative to update EFH designations for each of the 16 species. For each species:
  - EFH designations consist of life-stage-specific mapped locations and a text description
  - Juvenile & adult stages: maps based on predictive outputs of species distribution models (SDMs)
    - Where possible, separate maps for juveniles and adults
  - Egg & larval stages: Examining EcoMon ichthyoplankton (= larval) data for several case study species
    - Considering utility of egg and larval maps in an EFH consultation context
    - Do juvenile and/or adult maps encompass larval distributions?
    - Are there additional areas beyond juvenile / adult EFH that should be added? *Ad hoc – pending further discussion with the Habitat PDT and/or Committee*

WORKFLOW FOR EFH FRAMEWORK



EFH DESIGNATION METHODS OVERVIEW



Modeled pathway data sources:

- Federal + select state trawl surveys (2000-2022)
- Gridded environmental datasets (remote sensing, reanalyses, etc.)

Non-modeled pathway data sources:

- Inshore trawl surveys
- Salinity and bathymetry datasets

Text information sources:

- Updated designation maps
- Environmental range data
- Inshore occurrence data
- EFH source documents
- Literature review
- Feedback from scientific and industry experts

PLANNED TEXT AND MAP UPDATES BY SPECIES (2026)

Species	Text updates	Map updates*
Joint hurdle SDMs		
Acadian redfish, American plaice, Atlantic halibut, Haddock, Ocean pout, Pollock*, Red hake, Silver hake, White hake, Windowpane flounder, Winter flounder, Witch flounder, Yellowtail flounder	Egg, larvae, juvenile, adult	*Model-based* (joint hurdle SDM) *Separate juvenile & adult (except halibut)* *> Pollock currently pooled, separate in development*
Single index integrated SDM (dredge-trawl integration)		
Atlantic sea scallop	Egg, larvae, juvenile, adult	*Model-based* (dredge-trawl integration, compare to optical surveys) *Separate juvenile & adult*
Simplified, single-species SDM		
Atlantic wolffish, offshore hake	Egg, larvae, juvenile, adult	*Model-based* (longline-trawl integration) *Pooled juvenile & adult*

** Separate is the goal; ability to separate or pool may change as the models are finalized (Halibut, Atlantic wolffish, offshore hake)*

EFH TEXT DESCRIPTIONS – COLOR-CODED EXAMPLE

Life stages, size breaks, and modeling information (if applicable).

Designated temperature and salinity ranges (95% range); including preferred ranges if known

Relevant life history information (i.e., seasonal movements, spawning activity, etc.)

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.

Designated geographic range and depths (full range); also notes narrower 75% range where higher densities are predicted

Habitat types (both inshore and offshore; preferred habitat and substrate types if available).

Geographic range and preferred depths of known spawning areas (literature, consultation)

FEEDBACK AND ENGAGEMENT

- **Format** = species EFH primers (PDFs), ~3 pages each
  - Include discussion questions (next slide) + draft maps and text for each life stage
  - Can share other products as relevant (e.g., R Shiny EFH App, ancillary model outputs, etc.)

- **Target audience** = species PDT, AP members
  - Individually, in small groups, or wholly
  - Zoom meetings, correspondence, etc.

- **Groundfish subgroups** – *leverage availability + expertise*
  - *Group A – Offshore:* Acadian redfish, haddock, pollock
  - *Group B – Rocky longline:* Atlantic halibut, Atlantic wolffish, ocean pout, white hake
  - *Group C – Flounders:* American plaice, windowpane, winter flounder, witch flounder, yellowtail

FEEDBACK AND ENGAGEMENT

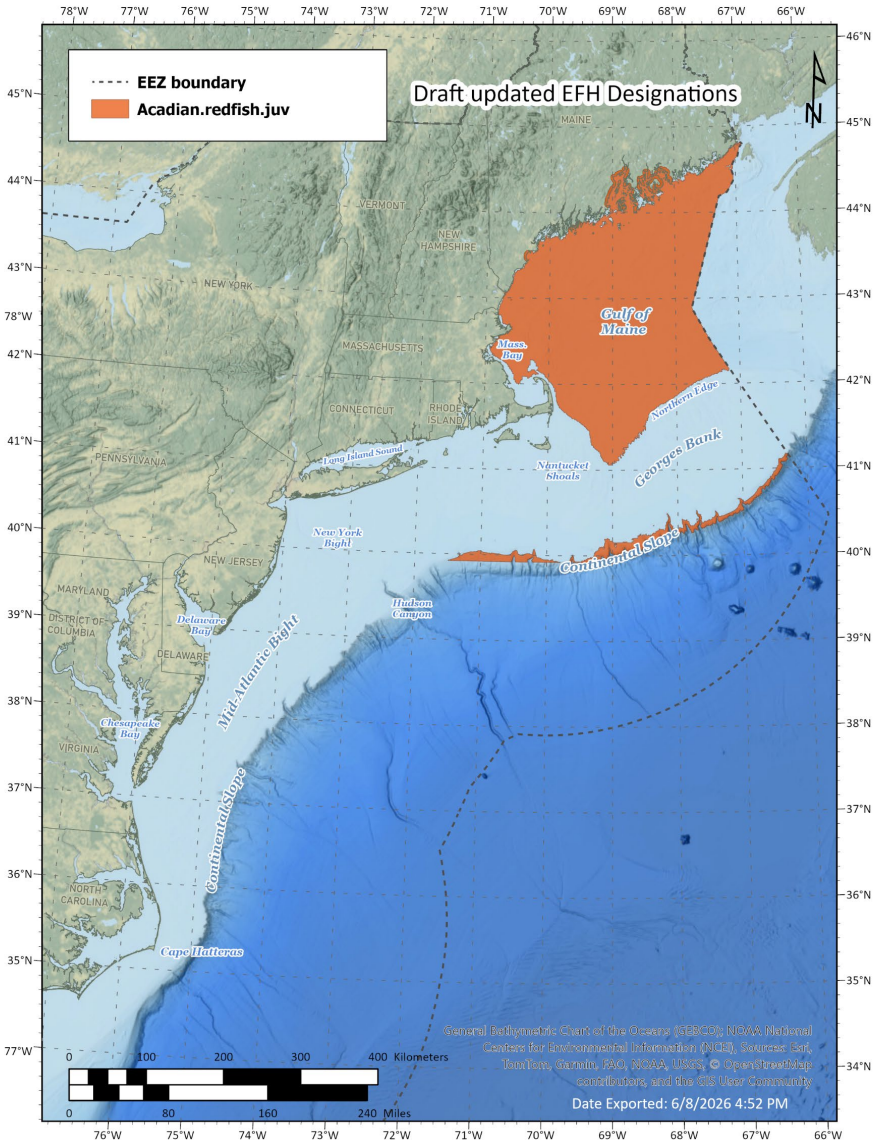
- **Discussion questions** – *identify gaps in maps, text, or information sources:*
  - Is the draft map representative of the life stage's distribution throughout the year? Are there any areas missing? Are there any areas that should be removed?
  - Does the text capture other notable life history traits that influence habitat use, especially spawning information, seasonal differences/migrations, or regional variation?
  - Does the text capture preferred habitat characteristics and types?
  - Are there other individuals, datasets, or sources of information we should engage with?
- **Expectations:**
  - Not looking to make major changes to modeling inputs or methods
  - Adjustments to maps can be considered if well-supported (data, literature, etc.), but aiming to remain relatively consistent in approach across all species
    - Species with less info may be less detailed in the text descriptions
  - Additional datasets can be considered to groundtruth maps and text descriptions
  - Exploring options to groundtruth EFH maps with commercial catch footprints by species

FEEDBACK AND ENGAGEMENT - TIMING

**Additional feedback can be provided via correspondence or follow-up conversations*

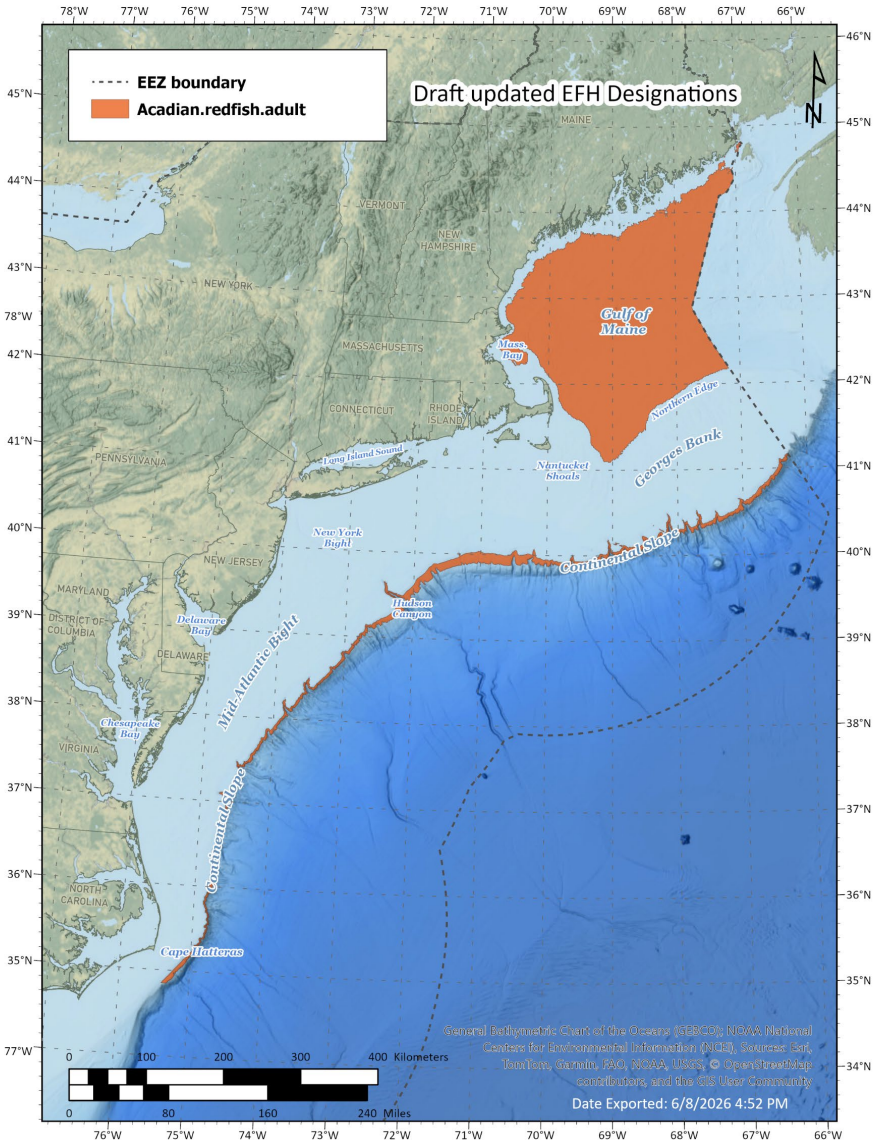
FMP	Group / species	May	June	July	Aug	Sept
Northeast multispecies	Group A – redfish, haddock, pollock	*Maps / text ready for feedback*				
Northeast multispecies	Group C – flatfish (5)	*Maps / text ready for feedback*				
Small-mesh multispecies	Red hake, silver hake	*Maps / text ready for feedback*				
Northeast multispecies	Group B – halibut, wolffish*, ocean pout, white hake		*Simplified SDMs in progress (halibut, wolffish)*			
Small-mesh multispecies	Offshore hake*		*Simplified SDMs in progress*			
Scallops	Atlantic sea scallops		*Single-index SDMs in progress*			
Habitat Advisory Panel		*5/29 – Initial Review*			*Recommend preferred alternatives*	
Habitat Committee			*6/12 – Initial Review*			
Council			*Update*			*Final action*

ACADIAN REDFISH (JUVENILE)



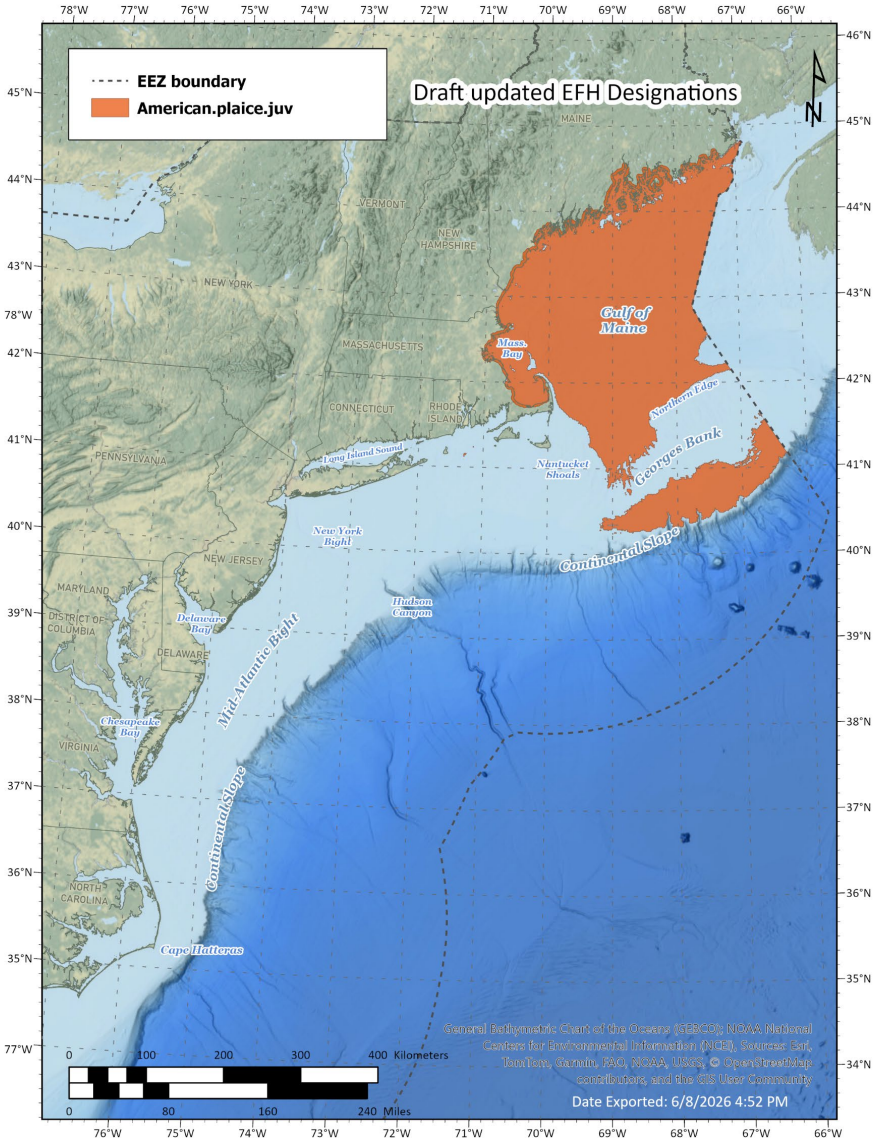
Essential fish habitat (EFH) for juvenile Acadian redfish (TL < 22 cm) consists of the principal habitat area and includes subtidal coastal and offshore benthic habitats in the Gulf of Maine as well as continental slope habitats on the southern edge of Georges Bank (Map 1). Within the principal habitat area, juvenile EFH ranges from 30-244 meters depth, but juveniles most commonly occur between 74-209 meters depth (Appendix B, Table 14). On the continental slope, they can be found to maximum depth of 600 meters (Appendix B, Table 15). Juvenile EFH also includes bottom temperatures between 3-12°C and marine waters between 31-36 ppt (Appendix B, Table 14). Bottom habitats of complex rocky reef substrates with associated structure-forming epifauna (e.g., sponges, corals), and soft sediments with cerianthid anemones are EFH for juvenile redfish. Young-of-the-year juveniles are found on boulder reefs, while older juveniles are found in dense cerianthid habitats. Juvenile redfish expand their distribution to adjacent gravel habitats when local abundance on reefs is high. They do not use unstructured mud habitat. Areas of hard bottom in the deep basins are also good habitat for juveniles.

ACADIAN REDFISH (ADULT)



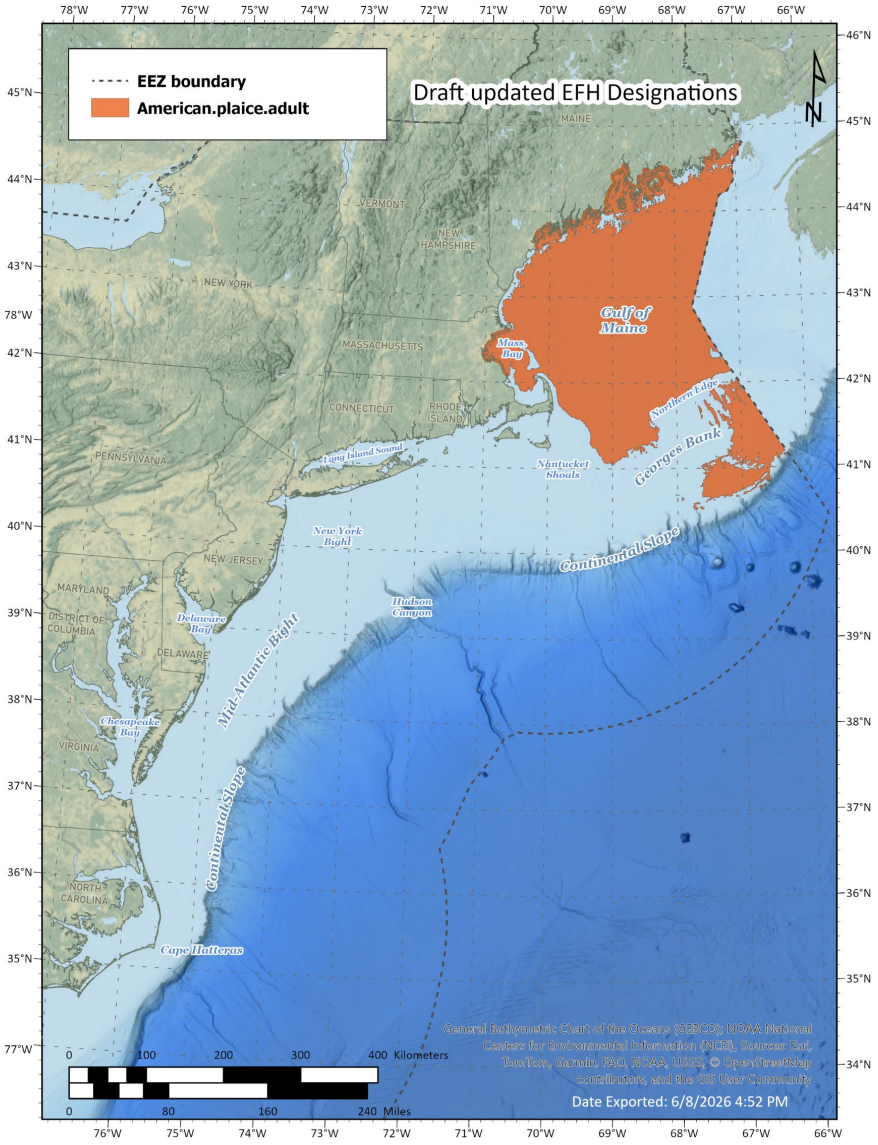
Essential fish habitat (EFH) for adult Acadian redfish (TL ≥ 22 cm) consists of the principal habitat area and includes offshore benthic habitats in the Gulf of Maine and on the continental slope as far south as Hudson Canyon (Map 2). Within the principal habitat area, adult EFH ranges from 48-355 meters depth, but adults most commonly occur between 106-230 meters depth (Appendix B, Table 14). On the continental slope, they can be found to maximum depth of 600 meters (Appendix B, Table 15). Adult EFH also includes bottom temperatures between 3-11°C and marine waters between 32-36 ppt (Appendix B, Table 14). EFH for adult Acadian redfish occurs on finer grained bottom sediments and variable deposits of clays, silts, gravel, and boulders with associated structure-forming epifauna (e.g. corals, sponges, cerianthid anemones, sea pens).

AMERICAN PLAICE (JUVENILE)



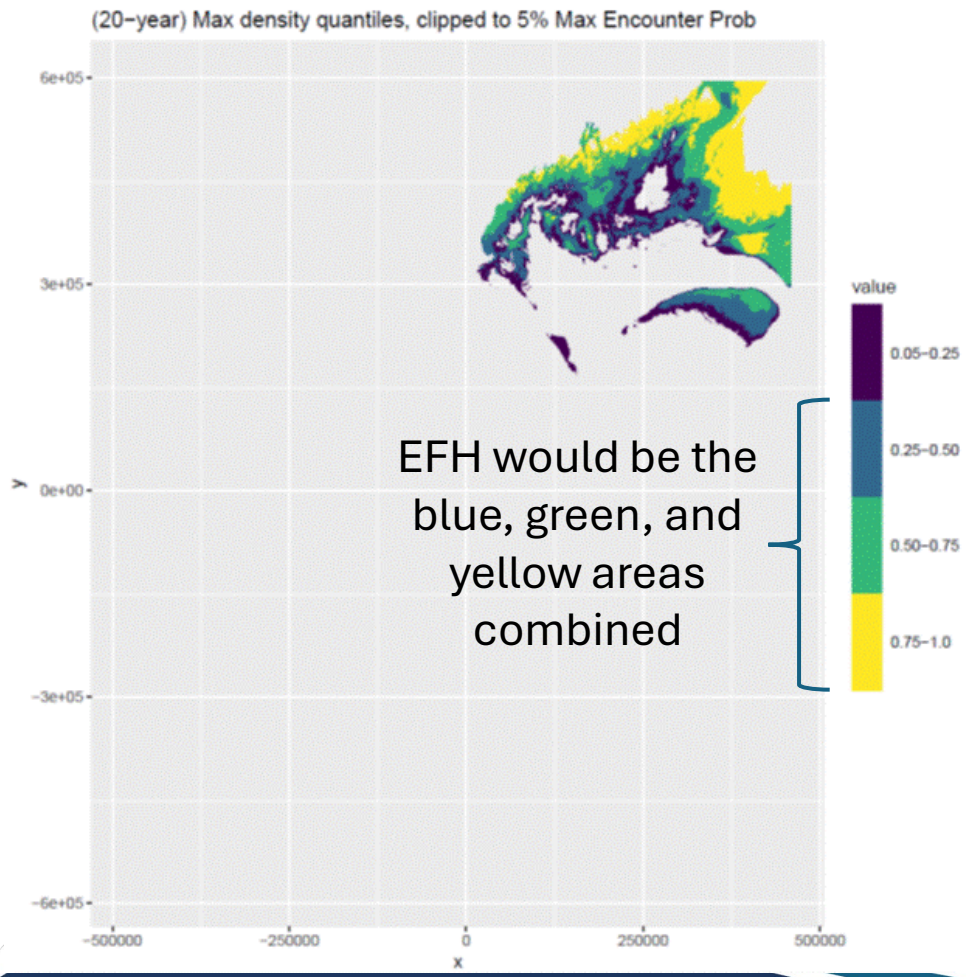
Essential fish habitat (EFH) for juvenile American plaice (TL < 24 cm) consists of the principal habitat area and includes subtidal benthic habitats in the Gulf of Maine and on the western and southern portions of Georges Bank (Map 3). Inshore juvenile EFH typically includes marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 3. Within the principal habitat area, juvenile EFH ranges from 23-273 meters depth, but juveniles most commonly occur between 48-179 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-12°C and marine waters between 31-35 ppt (Appendix B, Table 14). EFH for juvenile American plaice consists of soft bottom substrates (mud and sand), but they are also found on gravel and sandy substrates bordering bedrock.

AMERICAN PLAICE (ADULT)



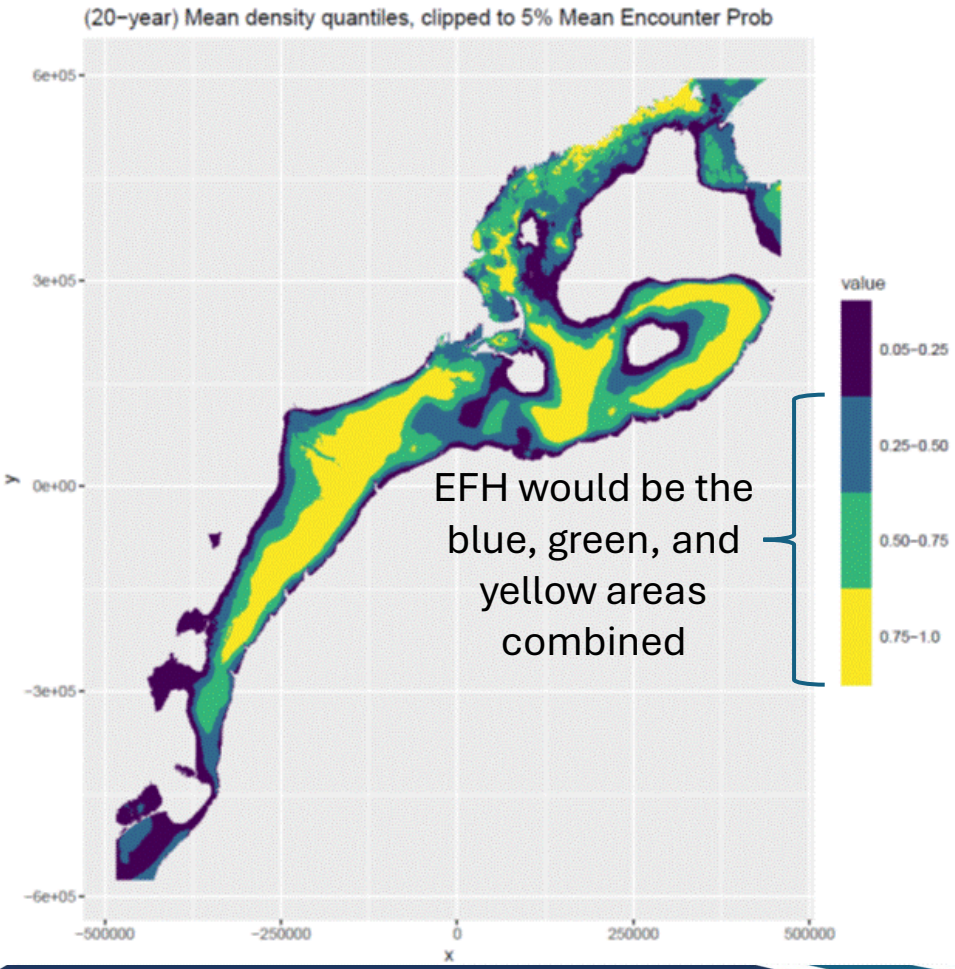
Essential fish habitat (EFH) for adult American plaice (TL ≥ 24 cm) consists of the principal habitat area and includes subtidal benthic habitats in the Gulf of Maine and on the western and eastern portions of Georges Bank (Map 4). Inshore adult EFH typically includes marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 4. Within the principal habitat area, adult EFH ranges from 26-313 meters depth, but adults most commonly occur between 53-200 meters depth (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 3-12°C and marine waters between 31-35 ppt (Appendix B, Table 14). EFH for adult American plaice consists of soft bottom substrates (mud and sand), but they are also found on gravel and sandy substrates bordering bedrock.

ATLANTIC HALIBUT (POOLED - PLACEHOLDER)



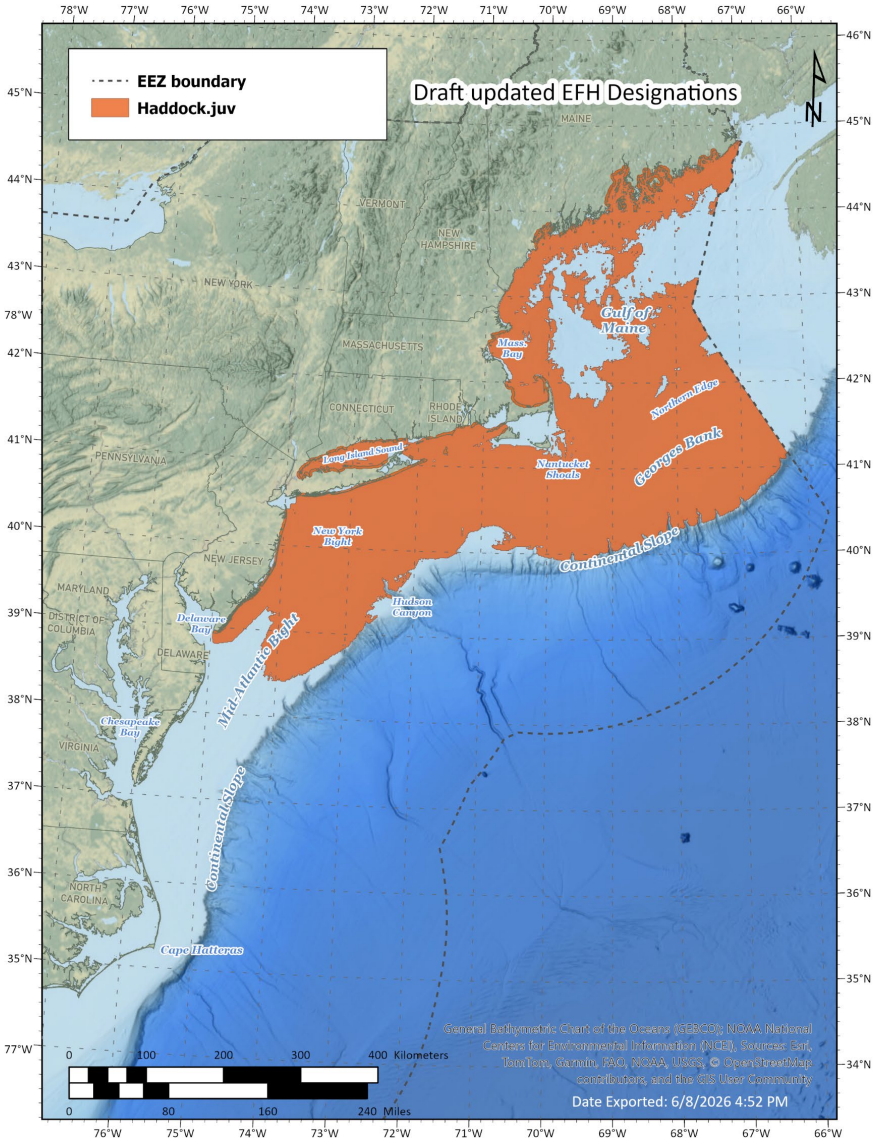
Essential fish habitat for juvenile (TL < 75 cm) and adult (TL ≥ 75 cm) Atlantic halibut consists of the principal habitat area and includes subtidal and coastal offshore benthic habitats in the Gulf of Maine and on Georges Bank (Map 5). Nearshore juvenile and adult EFH typically includes marine zones of coastal areas, which can be identified from Map 5. Within the principal habitat area, juvenile EFH ranges from 13-214 meters depth, but juveniles most commonly occur between 42-125 meters depth (Appendix B, Table 14). On the continental slope, they can be found to a maximum depth of 900 meters (Appendix B, Table 15). Juvenile EFH also includes bottom temperatures between 3-13°C and marine waters between 31-35 ppt (Appendix B, Table 14). Adults occupy similar conditions but are typically found deeper. Adult EFH ranges from 30-255 meters depth, but adults most commonly occur between 70-175 (Appendix B, Table 14). Like juveniles, adults can be found on the continental slope to 900 meters (Appendix B, Table 15). Adult EFH also includes bottom temperatures between 3-12°C and marine waters between 31-35 ppt (Appendix B, Table 14). Generally, EFH for Atlantic halibut consists of sand, gravel, or clay substrates. Juvenile nursery grounds are in waters 20-60 meters deep in apparently well-defined coastal areas with sandy bottoms. Spawning generally occurs over rough or rocky bottom on offshore banks and on the continental slope, but not in the Gulf of Maine.

ATLANTIC SEA SCALLOP (ADULT - PLACEHOLDER)



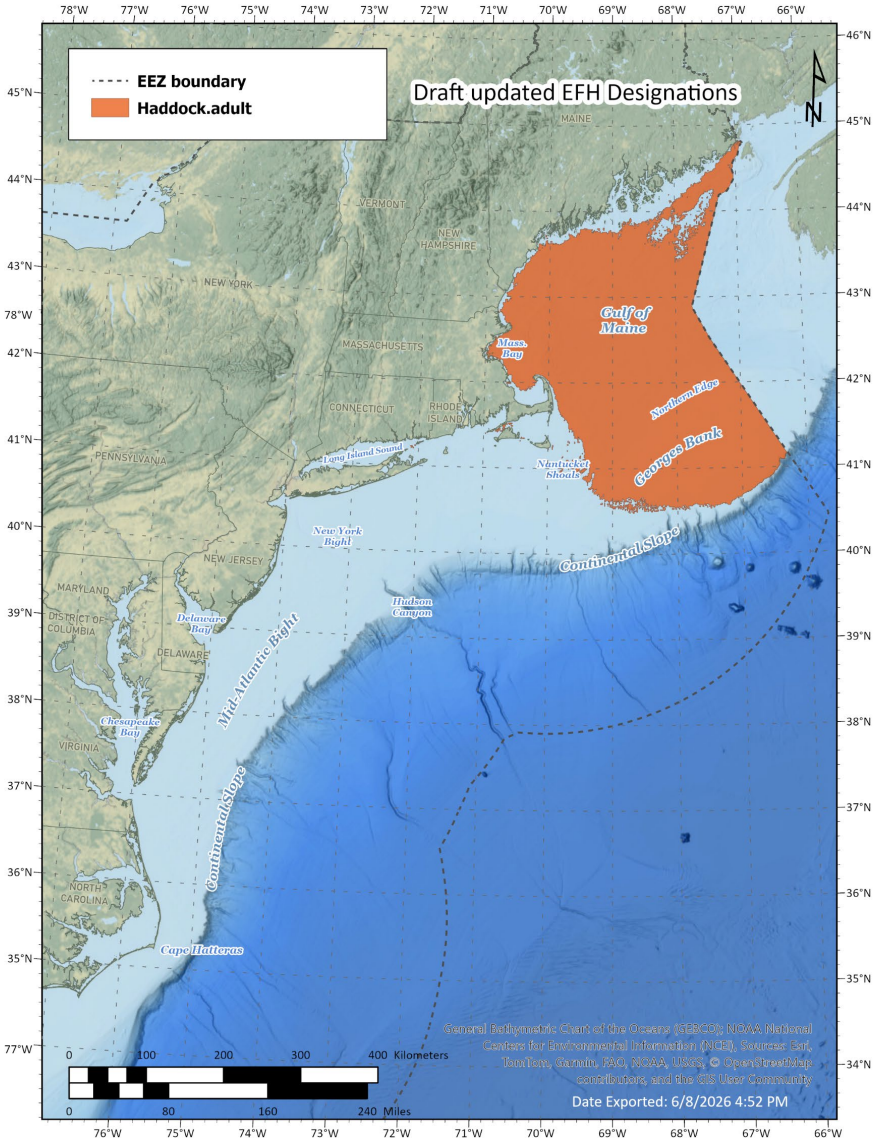
Essential fish habitat (EFH) for adult Atlantic sea scallop (> 75 mm) consists of the principal habitat area and includes subtidal and coastal offshore benthic habitats in the Gulf of Maine, on Georges Bank, and in the Mid-Atlantic region as far south as Cape Hatteras. Inshore adult EFH typically includes the marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 7. Within the principal habitat area, adult EFH ranges from 18 to 110 meters depth, but they are also found in shallower water and as deep as 180 meters in the Gulf of Maine. In the Mid-Atlantic, they are found primarily between 45-75 meters and on Georges Bank they are more abundant between 70-90 meters. Adult EFH consists of sand and gravel substrates, where scallops often form aggregations called beds. These beds may be sporadic or essentially permanent, depending on how suitable the habitat conditions are (temperature, food availability, and substrate) and whether oceanographic features (fronts, currents) keep larval stages in the vicinity of the spawning population. Bottom currents stronger than 25 cm/sec (half a knot) inhibit feeding. Growth of adult scallops is optimal between 10 and 15°C and they prefer full strength seawater.

HADDOCK (JUVENILE)



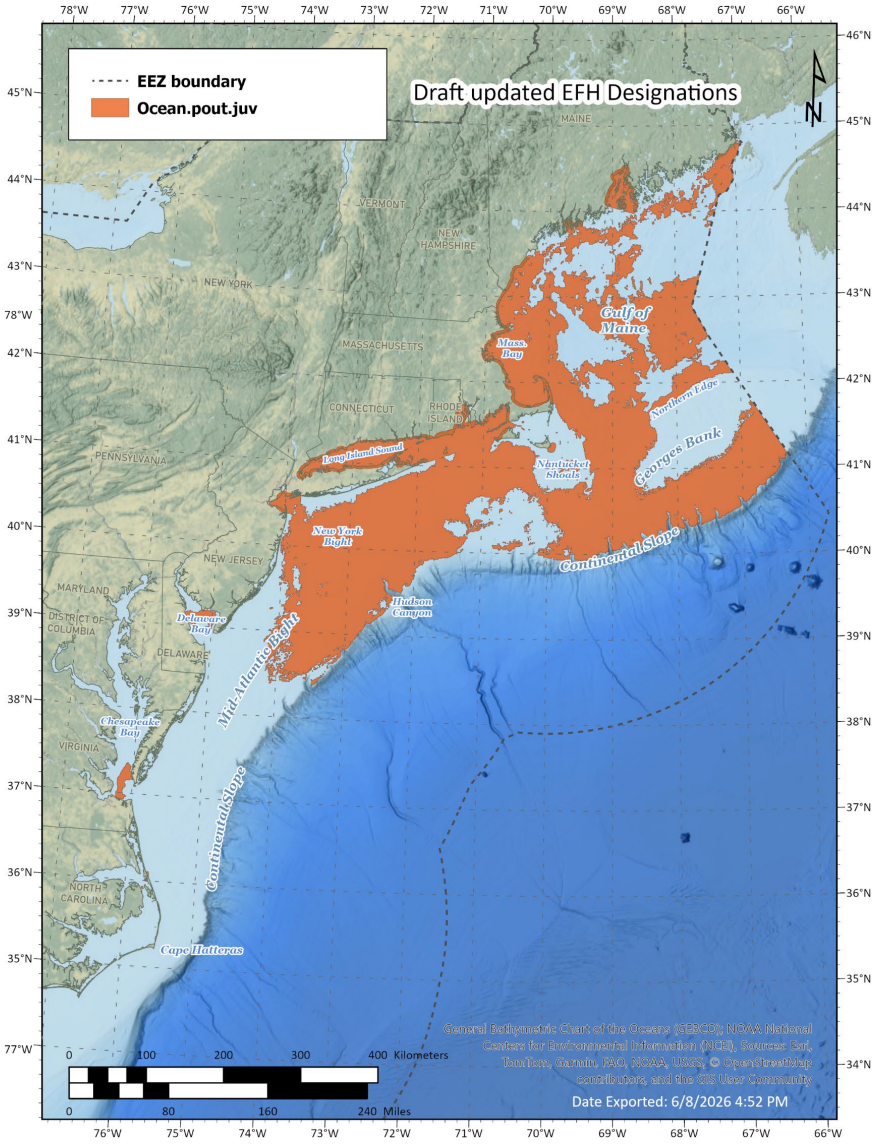
Essential fish habitat (EFH) for juvenile haddock (TL < 32 cm) consists of the principal habitat area and includes coastal and subtidal benthic habitats in the Gulf of Maine, on Georges Bank, and in coastal and continental shelf waters in southern New England including the Long Island Sound, and in the Mid-Atlantic region as far south as Delaware (Map 9). Inshore juvenile EFH typically includes the marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 9. Within the principal habitat area, juvenile EFH ranges from 14-271 meters depth, but juveniles most commonly occur between 44-159 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-15°C and marine waters between 31-36 ppt (Appendix B, Table 14). EFH for juvenile haddock occurs on hard sand (particularly smooth patches between rocks), mixed sand and shell, gravelly sand, and gravel. Young-of-the-year juveniles settle on sand and gravel on Georges Bank, but are found predominantly on gravel pavement areas within a few months after settlement. As they grow, they disperse over a greater variety of substrate types on the bank. Young-of-the-year haddock do not inhabit shallow, inshore habitats.

HADDOCK (ADULT)



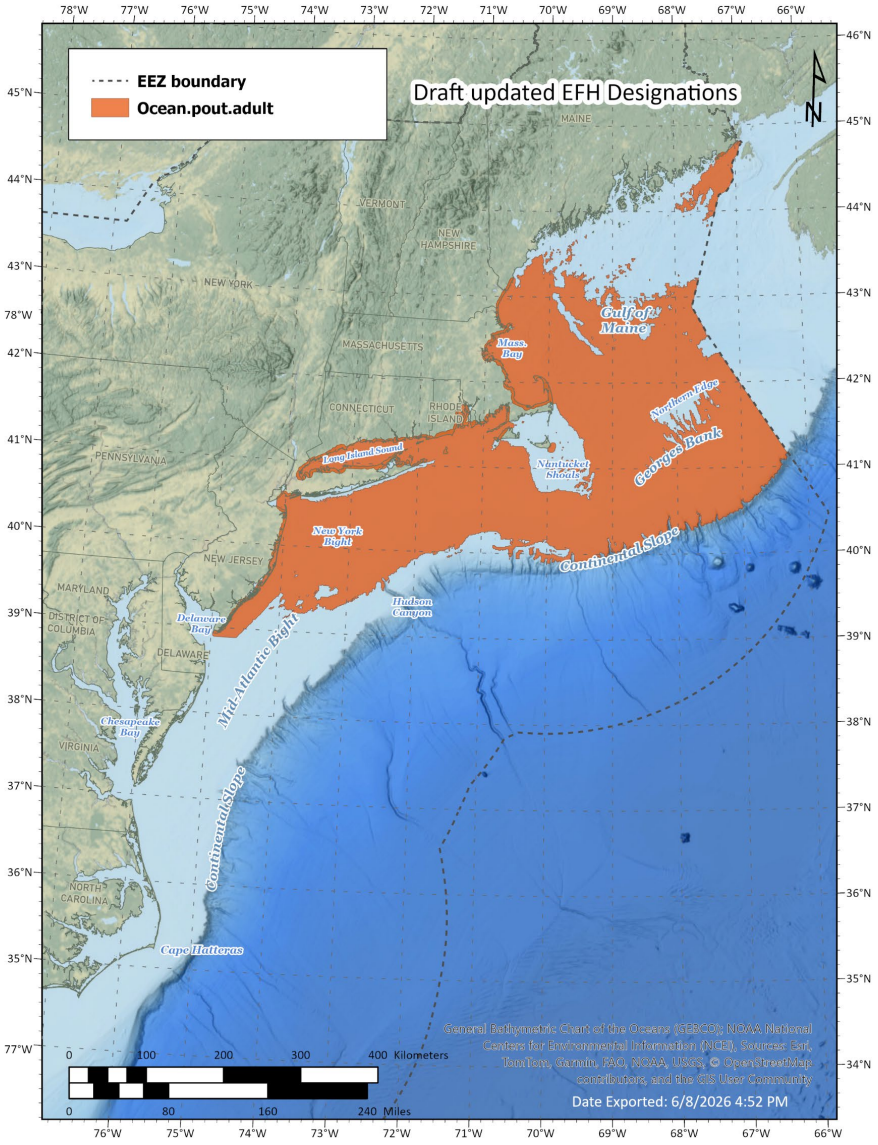
Essential fish habitat (EFH) for adult haddock (TL ≥ 32 cm) consists of the principal habitat area and includes subtidal benthic habitats in the Gulf of Maine, including coastal waters in Massachusetts Bay, and on Georges Bank (Map 10). Nearshore adult EFH typically includes the marine zones of coastal areas, which can be identified from Map 10. Within the principal habitat area, adult EFH ranges from 32-338 meters depth, but adults most commonly occur between 62-205 meters depth (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 3-13°C and marine waters between 32-36 ppt (Appendix B, Table 14). EFH for adult haddock occurs on hard sand (particularly smooth patches between rocks), mixed sand and shell, gravelly sand, and gravel substrates. They also are found adjacent to boulders and cobbles along the margins of rocky reefs in the Gulf of Maine.

OCEAN POUT (JUVENILE)



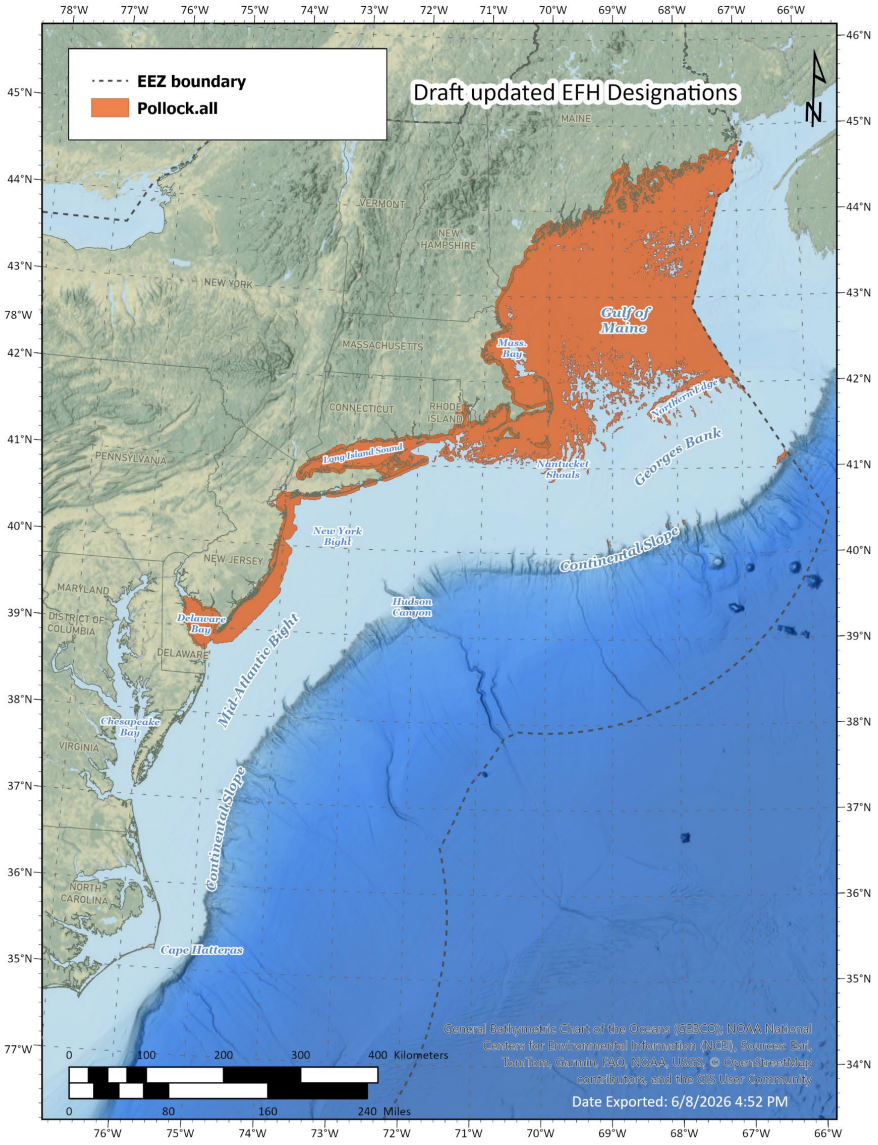
Essential fish habitat (EFH) for juvenile ocean pout (TL < 29 cm) consists of the principal habitat area and includes intertidal and subtidal benthic habitats in the Gulf of Maine, on the western and southern portion of Georges Bank, and in coastal and continental shelf waters in southern New England extending into the Mid-Atlantic region as far south as Delaware. Juvenile EFH is relatively patchy in the Gulf of Maine (Map 11). Inshore juvenile EFH typically includes the polyhaline and marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 11. Within the principal habitat area, juvenile EFH ranges from intertidal areas out to 243 meters depth, but juveniles most commonly occur between 30-144 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-14°C and polyhaline and marine waters between 30-36 ppt (Appendix B, Table 14). EFH for juvenile ocean pout occurs on a wide variety of substrates, including shells, rocks, algae, soft sediments, sand, and gravel.

OCEAN POUT(ADULT)



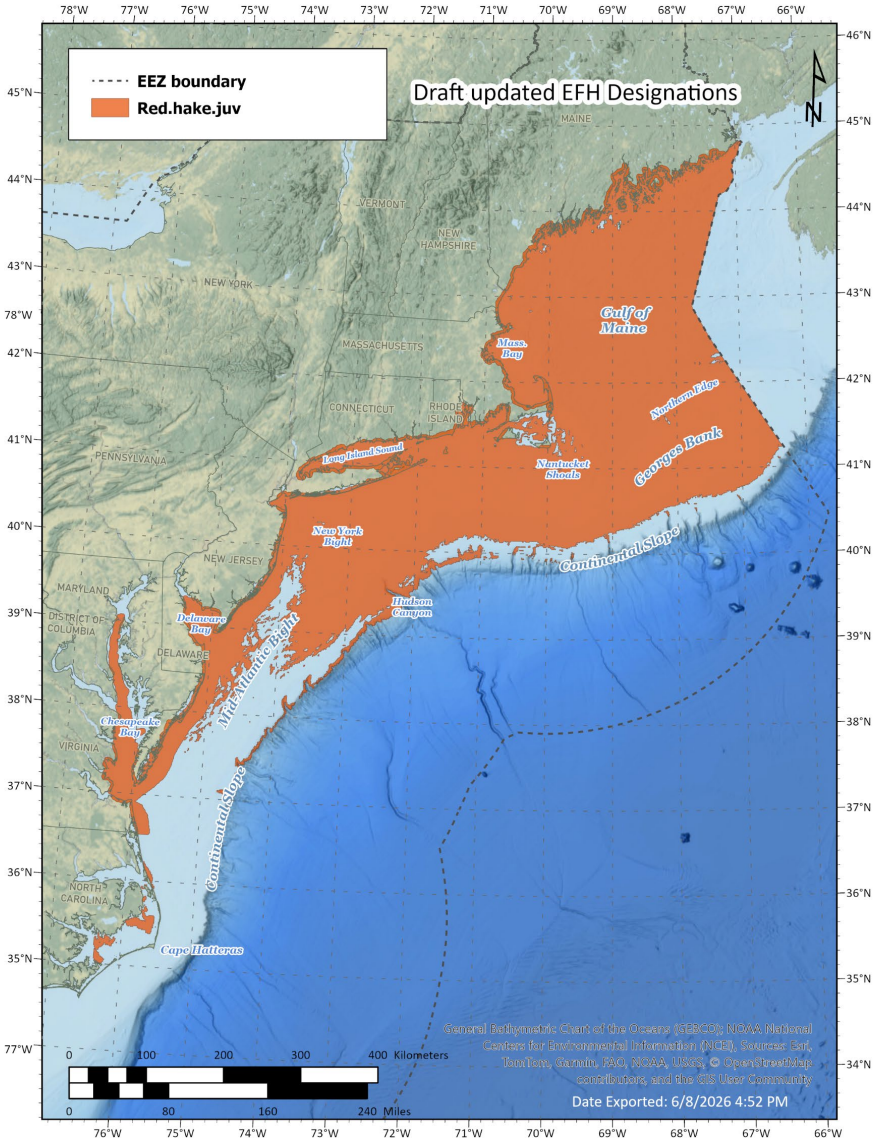
Essential fish habitat (EFH) for adult ocean pout (TL ≥ 29 cm) consists of the principal habitat area and includes subtidal benthic habitats in the Gulf of Maine, on Georges Bank, and in coastal and continental shelf waters in southern New England and the Mid-Atlantic region as far south as the mouth of Delaware Bay (Map 12). Inshore adult EFH typically includes the polyhaline and marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 12. Within the principal habitat area, adult EFH ranges from 8-239 meters depth, but adults most commonly occur between 23-115 meters depth (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 3-13°C and polyhaline and marine waters between 29-36 ppt (Appendix B, Table 14). EFH for adult ocean pout includes mud and sand, particularly in association with structure-forming habitat types, i.e. shells, gravel, or boulders. In softer sediments, they burrow tail-first and leave a depression on the sediment surface. Ocean pout congregate in rocky areas prior to spawning and frequently occupy nesting holes under rocks or in crevices in depths less than 100 meters.

POLLOCK (POOLED – TO BE SEPARATED, IF POSSIBLE)



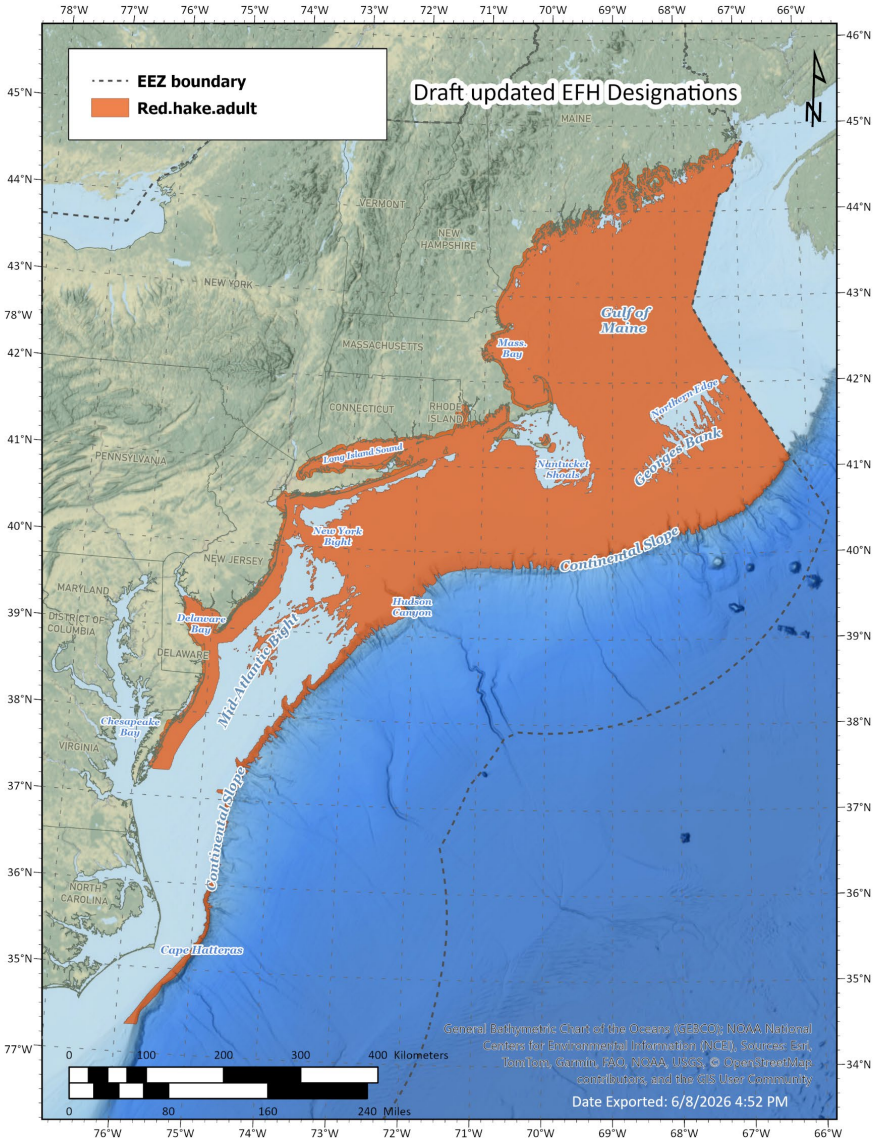
Essential fish habitat (EFH) for juvenile (TL < 39 cm) and adult (TL ≥ 39 cm) pollock consists of the principal habitat area and includes inshore and offshore pelagic habitats in the Gulf of Maine, in coastal waters in southern New England, and along the New Jersey coast as far south as the mouth of Delaware Bay (Map 13). Inshore juvenile EFH typically includes the polyhaline and marine zones of bays and estuaries, whereas adult EFH includes just the marine zones of nearshore areas; specific portions of these areas can be identified from Map 13. Within the principal habitat area, juvenile EFH ranges from intertidal areas out to 253 meters depth, but juveniles most commonly occur between 17-166 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-15°C and polyhaline and marine waters between 29-35 ppt (Appendix B, Table 14). Adult EFH ranges from 26-319 meters depth, but adults most commonly occur between 72-221 meters depth (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 4-11°C and marine waters between 32-36 ppt (Appendix B, Table 14). EFH for juvenile pollock consists of rocky bottom habitats with attached macroalgae (rockweed and kelp) that provide refuge from predators. Shallow water eelgrass beds are also essential habitats for young-of-the-year pollock in the Gulf of Maine. Older juveniles move into deeper water habitats also occupied by adults. Adult EFH consists of the tops and edges of offshore banks and shoals (e.g., Cashes Ledge) with mixed rocky substrates, often with attached macro algae.

RED HAKE (JUVENILE)



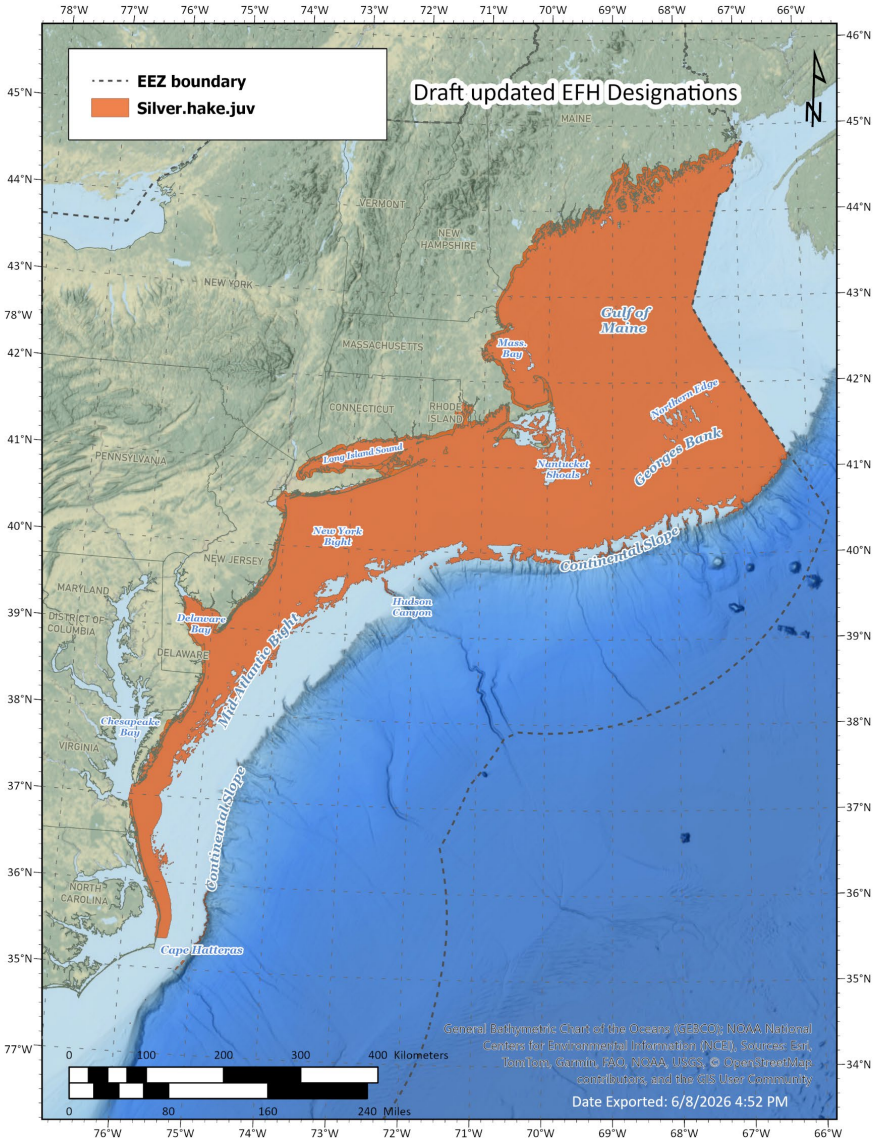
Essential fish habitat (EFH) for juvenile red hake (TL < 22 cm) consists of the principal habitat area and includes intertidal and subtidal benthic habitats in the Gulf of Maine, on Georges Bank, in southern New England, and in coastal waters in the Mid-Atlantic region as far south as Cape Hatteras (Map 14). Inshore juvenile EFH typically includes the polyhaline and marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 14. Within the principal habitat area, juvenile EFH ranges from intertidal area out to 296 meters depth, but juveniles most commonly occur between 15-162 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-19°C and polyhaline and marine waters between 22-36 ppt (Appendix B, Table 14). Bottom habitats that provide shelter are essential for juvenile red hake, including mud substrates with biogenic depressions and other substrates that provide biogenic complexity (e.g., eelgrass, macroalgae, shells, anemone and polychaete tubes). Similarly, artificial reefs provide suitable shelter for juvenile red hake. Newly settled juveniles occur in depressions on the open seabed, while older juveniles are commonly associated with shelter or structure, often including live bivalves.

RED HAKE (ADULT)



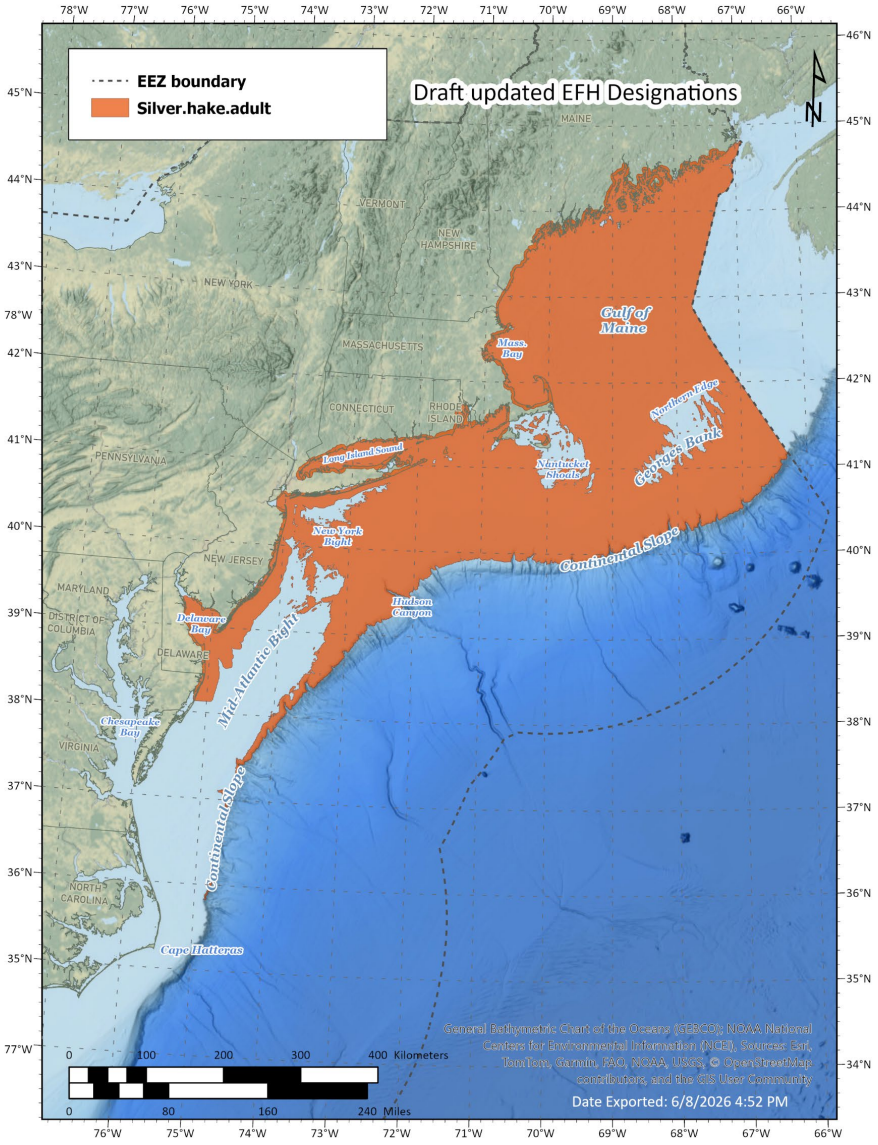
Essential fish habitat (EFH) for adult red hake (TL ≥ 22 cm) consists of the principal habitat area and includes benthic habitats in the Gulf of Maine, on Georges Bank, and in coastal and continental shelf waters in southern New England and the Mid-Atlantic region extending as far south as Chesapeake Bay. Adult EFH also includes continental slope habitats from the southern edge of Georges Bank as far south as Chesapeake Bay (Map 15). Inshore adult EFH typically includes the polyhaline and marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 15. Within the principal habitat area, adult EFH ranges from 8-329 meters depth, but adults most commonly occur between 33-199 meters depth (Appendix B, Table 14). On the continental slope, they can be found to a maximum depth of 1000 meters (Appendix B, Table 15). Adult EFH also includes bottom temperatures between 4-17°C and polyhaline and marine waters between 28-36 ppt (Appendix B, Table 14). EFH for adult red hake includes shell beds, soft sediments (mud and sand) and artificial reefs. They are usually found in depressions in softer sediments or in shell beds but not on open sandy bottom. In the Gulf of Maine, they are much less common on gravel or hard bottom, but they are reported to be abundant on hard bottoms in temperate reef areas of Maryland and northern Virginia.

SILVER HAKE (JUVENILE)



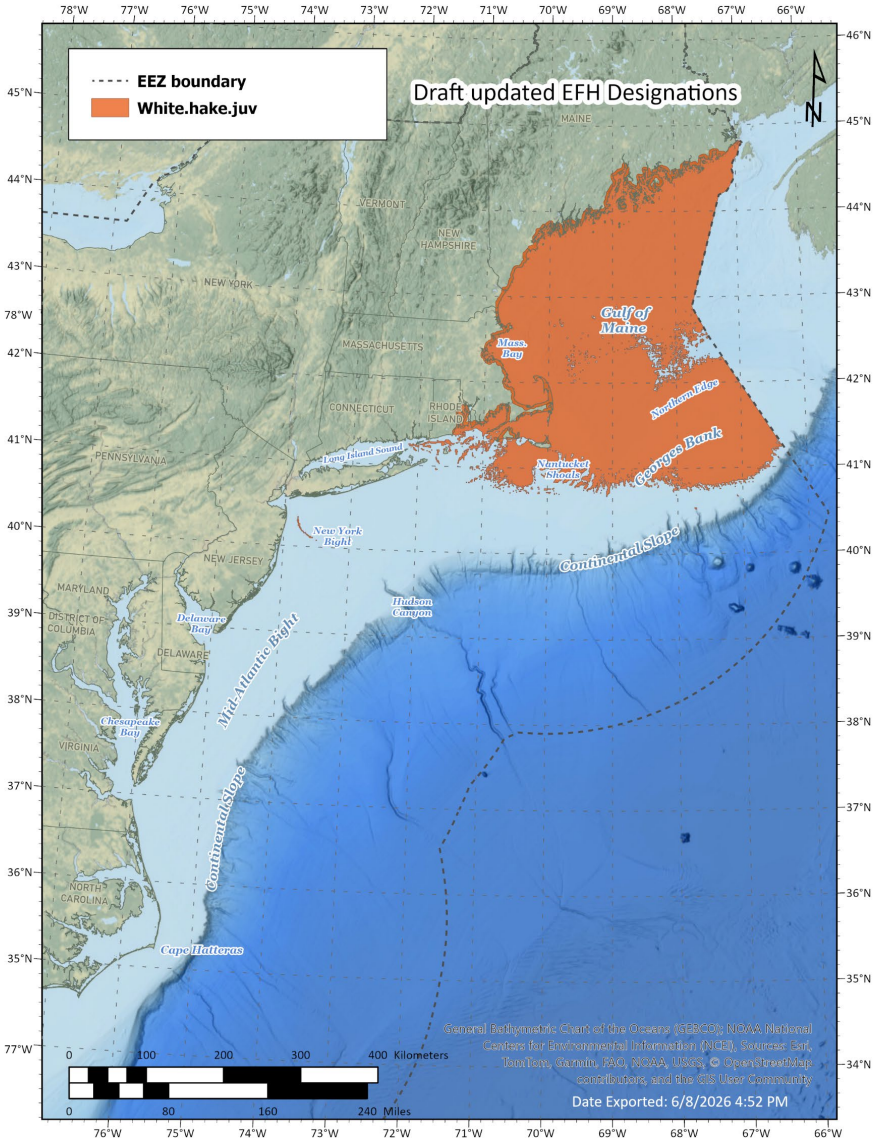
Essential fish habitat (EFH) for juvenile silver hake (TL < 22 cm) consists of the principal habitat area and includes pelagic and benthic habitats in the Gulf of Maine including coastal bays and estuaries, on Georges Bank, in coastal and outer continental shelf waters in southern New England, and along the Mid-Atlantic coast as far south as Cape Hatteras (Map 16). Inshore juvenile EFH typically includes the polyhaline and marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 16. Within the principal habitat area, juvenile EFH ranges from 7-320 meters depth, but juveniles most commonly occur in bottom trawl surveys between 17-179 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-19°C and polyhaline and marine waters between 27-36 ppt (Appendix B, Table 14). EFH for juvenile silver hake occurs on sandy substrates often in association with sand waves, flat sand with amphipod tubes and shells, and in biogenic depressions. In the New York Bight, juveniles settle to the bottom at mid-shelf depths on muddy sand substrates and find refuge in amphipod tube mats.

SILVER HAKE (ADULT)



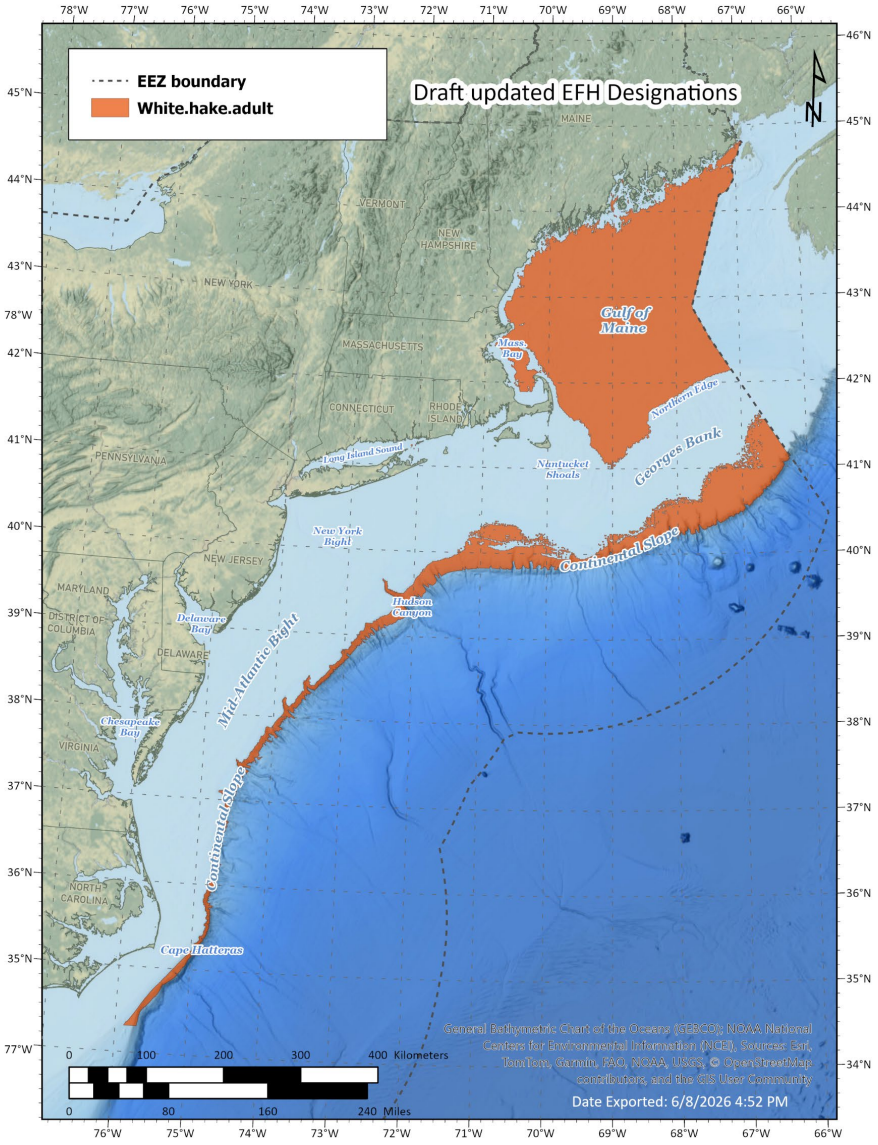
Essential fish habitat (EFH) for adult silver hake (TL ≥ 22 cm) consists of the principal habitat area and includes pelagic and benthic habitats in the Gulf of Maine, on Georges Bank (excluding portions along the northern edge), in coastal and continental shelf waters in southern New England (excluding Nantucket Shoals), and in coastal and outer shelf waters in the Mid-Atlantic Bight (Map 17). Inshore adult EFH typically includes the marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 17. Within the principal habitat area, adult EFH ranges from 11-341 meters depth, but adults most commonly occur in bottom trawl surveys between 34-201 meters depth (Appendix B, Table 14). On the outer continental shelf, they can be found to a maximum of 500 meters (Appendix B, Table 15). Adult EFH also includes bottom temperatures between 4-16°C and marine waters between 31-36 ppt (Appendix B, Table 14). EFH for adult silver hake includes both soft substrates and hard structures. They are often found on sandy substrates in bottom depressions or in association with sand waves and shell fragments. They have also been observed in high densities in mud habitats bordering deep boulder reefs, resting on boulder surfaces, and foraging over deep boulder reefs in the southwestern Gulf of Maine. This species makes greater use of the water column than red or white hake, particularly for nighttime feeding.

WHITE HAKE (JUVENILE)



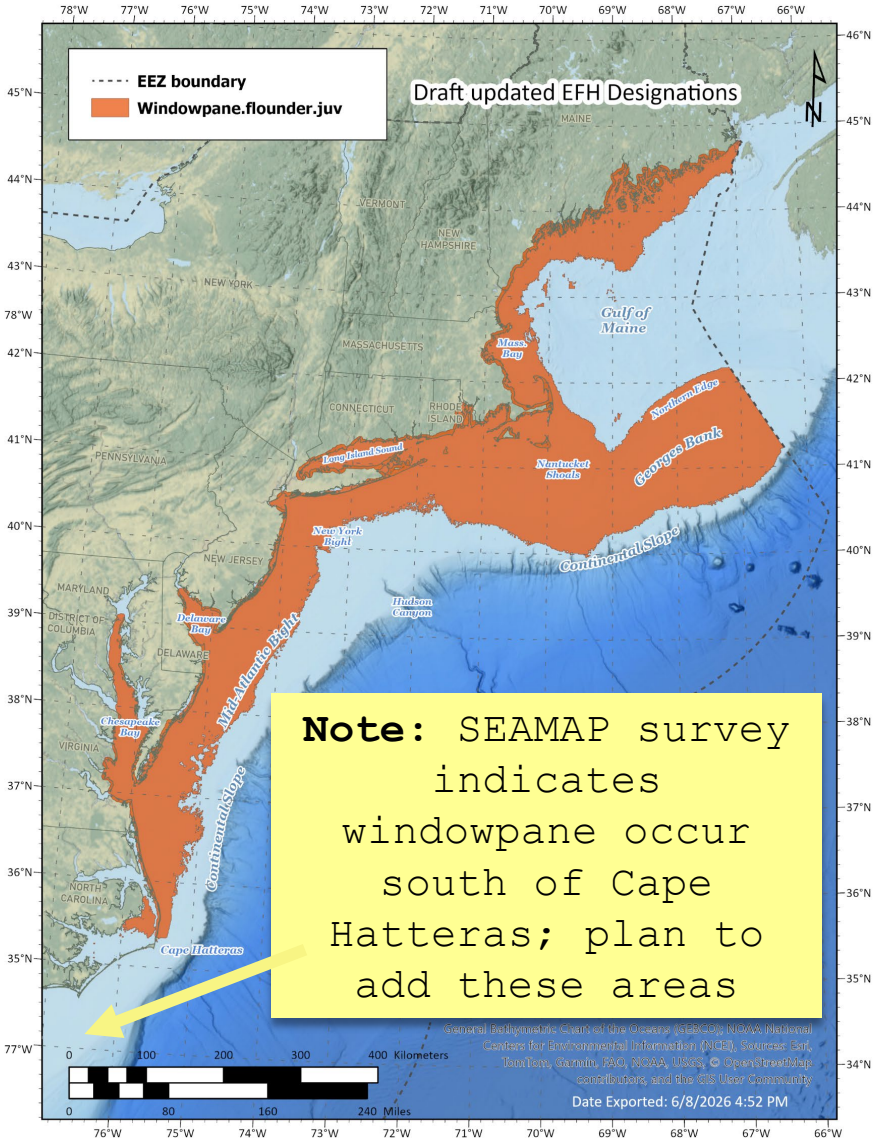
Essential fish habitat (EFH) for juvenile white hake (TL < 32 cm) consists of the principal habitat area and includes intertidal and subtidal habitats in the Gulf of Maine, on the northern portions of Georges Bank, and in southern New England along the Massachusetts and Rhode Island coastline, including Nantucket Shoals and coastal estuaries (Map 18). Inshore juvenile EFH typically includes the marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 18. Within the principal habitat area, juvenile EFH ranges from 0-292 meters depth, but juveniles most commonly occur in bottom trawl surveys between 29-179 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-16°C and marine waters between 31-35 ppt (Appendix B, Table 14). Offshore-spawned pelagic juveniles typically move inshore to estuarine nursery areas Pelagic phase juveniles remain in the water column for about two months. In nearshore waters, EFH for benthic phase juveniles occurs on fine-grained, sandy substrates in eelgrass, macroalgae, and un-vegetated habitats. In the Mid-Atlantic, most juveniles settle to the bottom on the continental shelf, but some enter estuaries, especially those in southern New England. Older young-of-the-year juveniles occupy the same habitat types as the recently-settled juveniles, but move into deeper water (>50 meters).

WHITE HAKE (ADULT)



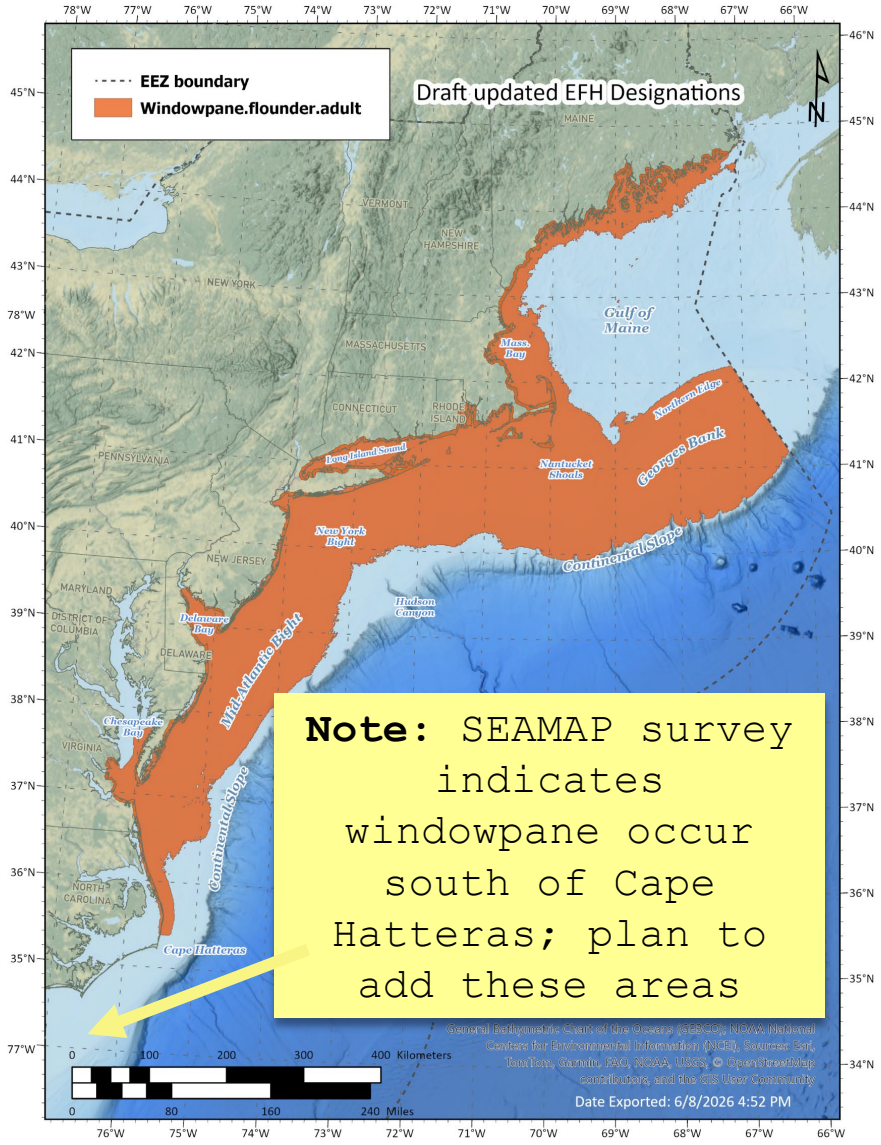
Essential fish habitat (EFH) for adult white hake (TL ≥ 32 cm) consists of the principal habitat area and includes subtidal benthic habitats in the Gulf of Maine, while on the outer continental shelf and slope, EFH ranges from the southern edge of Georges Bank as far south as Cape Hatteras (Map 19). Within the principal habitat area, adult EFH ranges from 29-361 meters depth, but adults most commonly occur in the bottom trawl surveys between 80-236 meters depth (Appendix B, Table 14). On the continental slope, they can be found to a maximum of 1000 meters (Appendix B, Table 15). Adult EFH also includes bottom temperatures between 4-13°C and marine waters between 32-36 ppt (Appendix B, Table 14). EFH for adult white hake occurs on fine-grained, muddy substrates and in mixed soft and rocky habitats. Spawning takes place in deep water on the continental slope and in Canadian waters.

WINDOWPANE FLOUNDER (JUVENILE)



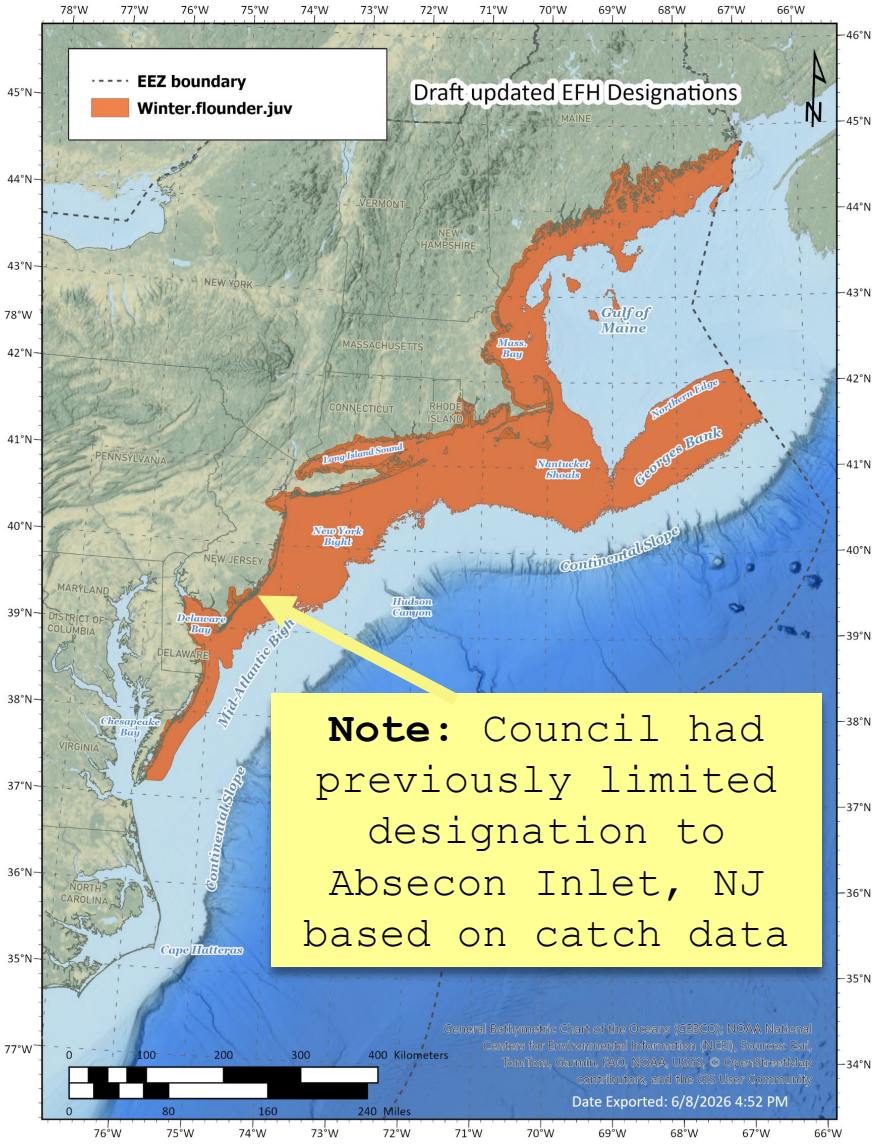
Essential fish habitat (EFH) for juvenile windowpane flounder (TL < 22 cm) consists of the principal habitat area and includes intertidal and subtidal benthic habitats in estuarine, coastal, and continental shelf waters from the Gulf of Maine to northern Florida (Map 20). Inshore juvenile EFH typically includes the polyhaline and marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 20. Within the principal habitat area, juvenile EFH ranges from 0-116 meters depth, but juveniles most commonly occur between 8-55 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-25°C and polyhaline and marine waters between 17-34 ppt (Appendix B, Table 14). EFH for juvenile windowpane flounder occurs on mud and sand substrates and includes polyhaline and marine waters in bays and estuaries. Young-of-the-year juveniles prefer sand over mud.

WINDOWPANE FLOUNDER (ADULT)



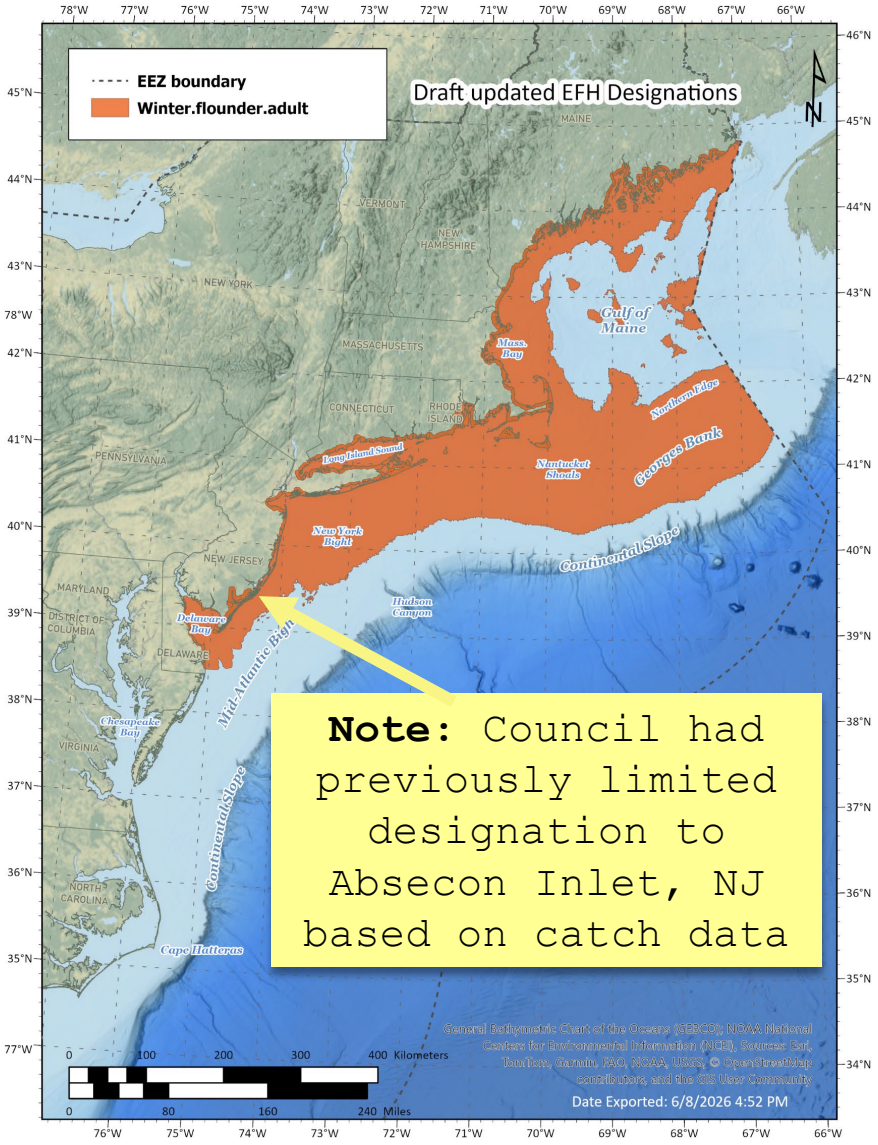
Essential fish habitat (EFH) for adult windowpane flounder (TL ≥ 22 cm) consists of the principal habitat area and includes intertidal and subtidal benthic habitats in estuarine, coastal, and continental shelf waters from the Gulf of Maine to Cape Hatteras (Map 21). Inshore adult EFH typically includes the polyhaline and marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 21. Within the principal habitat area, adult EFH ranges from 0-127 meters depth, but adults most commonly occur between 10-58 meters depth (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 3-22°C and polyhaline and marine waters between 24-35 ppt (Appendix B, Table 14). EFH for adult windowpane flounder occurs on mud and sand substrates and includes polyhaline and marine waters in bays and estuaries.

WINTER FLOUNDER (JUVENILE)



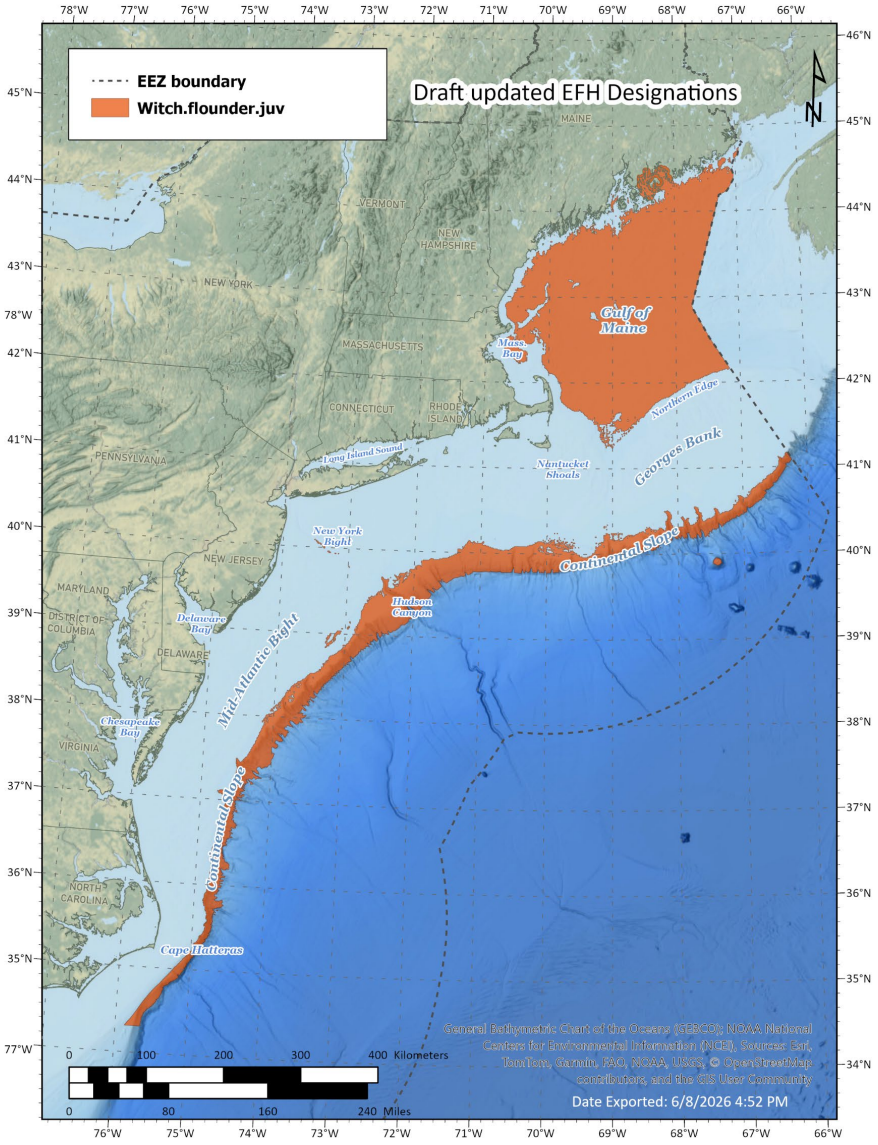
Essential fish habitat (EFH) for juvenile winter flounder (TL < 27 cm) consists of the principal habitat area and includes intertidal and subtidal benthic habitats in estuarine, coastal, and continental shelf waters from the Gulf of Maine to Chesapeake Bay (Map 22). Inshore juvenile EFH typically includes the polyhaline and marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 22. Within the principal habitat area, juvenile EFH ranges from 0-140 meters depth, but juveniles most commonly occur between 11-75 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-22°C and polyhaline and marine waters between 24-34 ppt (Appendix B, Table 14). EFH for juvenile winter flounder occurs on a variety of bottom types, such as mud, sand, rocky substrates with attached macroalgae, tidal wetlands, and eelgrass. Young-of-the-year juveniles are found inshore on muddy and sandy sediments in and adjacent to eelgrass and macroalgae, in bottom debris, and in marsh creeks. They tend to settle to the bottom in soft-sediment depositional areas where currents concentrate late-stage larvae and disperse into coarser-grained substrates as they get older.

WINTER FLOUNDER (ADULT)



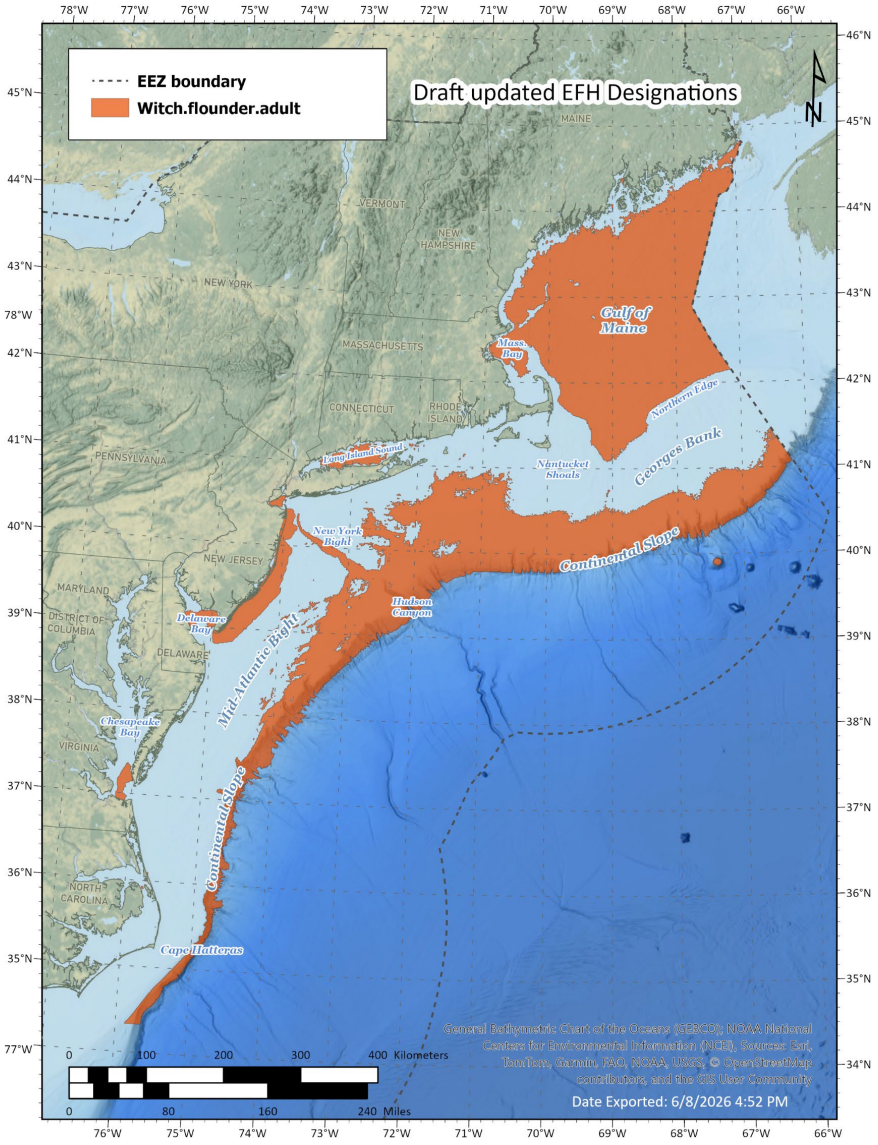
Essential fish habitat (EFH) for adult winter flounder (TL ≥ 27 cm) consists of the principal habitat area and includes intertidal and subtidal benthic habitats in estuarine, coastal, and continental shelf waters from the Gulf of Maine to [the mouth of Chesapeake//Delaware] Bay (Map 23). Inshore adult EFH typically includes the polyhaline and marine zones of bays and estuaries; specific portions of these inshore areas can be identified from Map 23. Within the principal habitat area, adult EFH ranges from 0-173 meters depth, but adults most commonly occur between 12-83 meters depth (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 3-19°C and polyhaline and marine waters between 25-34 ppt (Appendix B, Table 14). EFH for adult winter flounder occurs on muddy and sandy substrates, and on hard bottom on offshore banks. In inshore spawning areas, EFH includes a variety of substrates where eggs are deposited on the bottom.

WITCH FLOUNDER (JUVENILE)



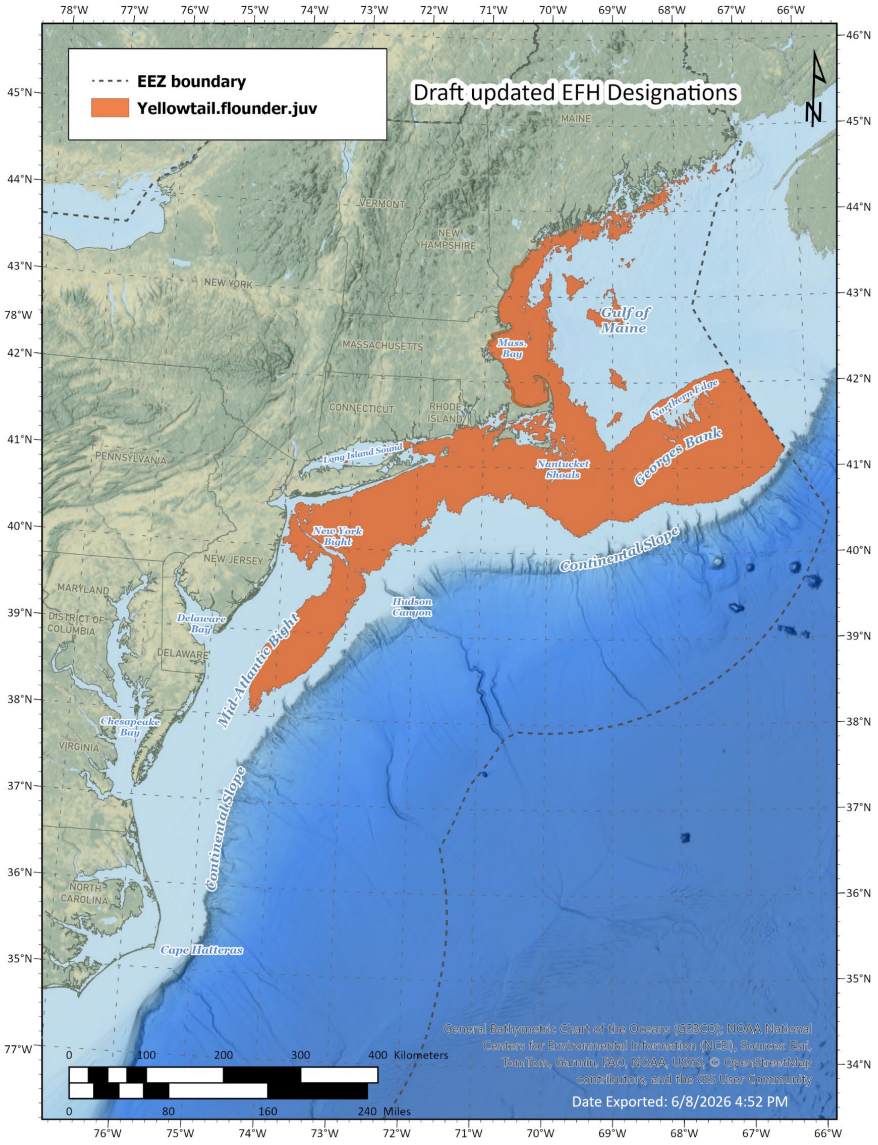
Essential fish habitat (EFH) for juvenile witch flounder (TL < 28 cm) consists of the principal habitat area and includes subtidal benthic habitats in the Gulf of Maine and on the outer continental shelf and slope from the southern edge of Georges Bank extending as far south as Cape Hatteras (Map 24). Within the principal habitat area in the Gulf of Maine and shelf waters, juvenile EFH ranges from 34-376 meters depth, but juveniles most commonly occur between 84-217 meters depth (Appendix B, Table 14). On the continental slope, they can be found to a maximum depth of 1500 meters (Appendix B, Table 15). Juvenile EFH also includes bottom temperatures between 3-13°C and marine waters between 31-36 ppt (Appendix B, Table 14). EFH for juvenile witch flounder occurs on mud and muddy sand substrates.

WITCH FLOUNDER (ADULT)



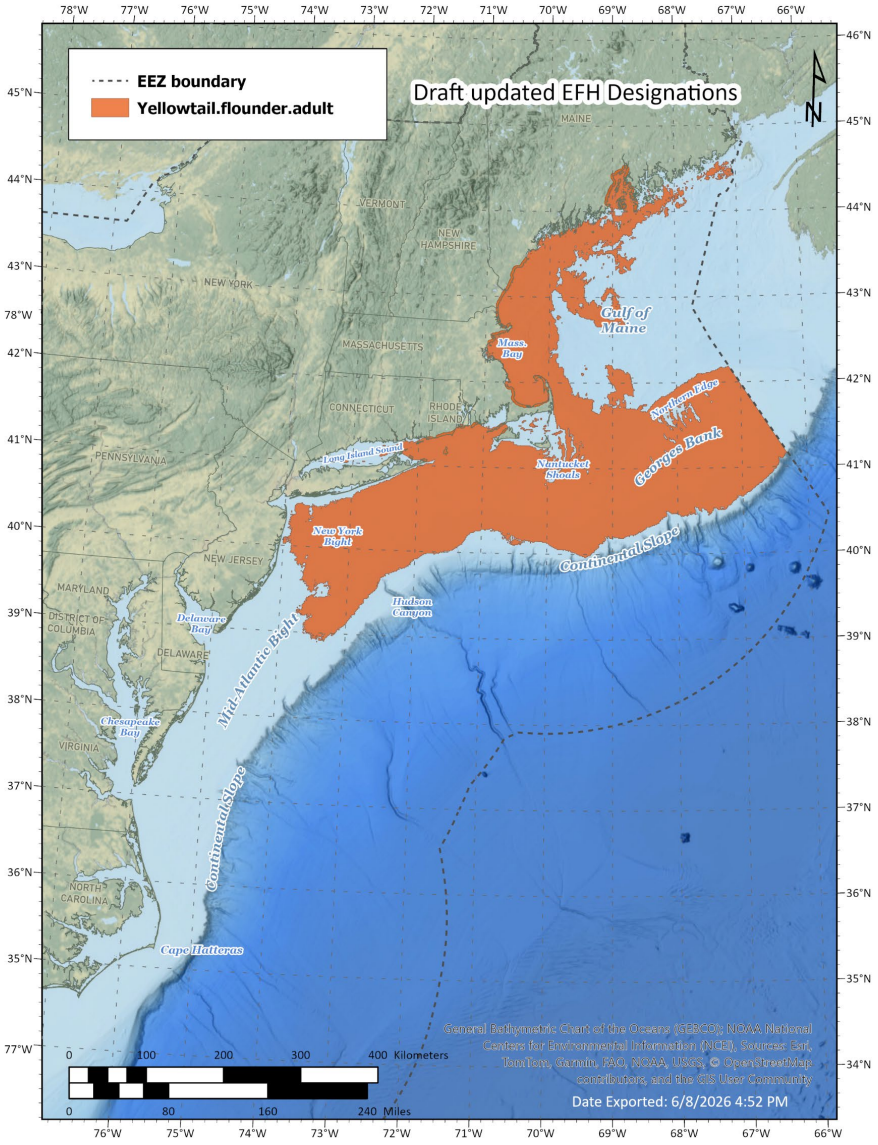
Essential fish habitat (EFH) for adult witch flounder (TL ≥ 28 cm) consists of the principal habitat area and includes subtidal benthic habitats in the Gulf of Maine and on the outer continental shelf and slope from the southern edge of Georges Bank extending as far south as Cape Hatteras (Map 25). Within the principal habitat area in the Gulf of Maine and shelf waters, adult EFH ranges from 23-357 meters depth, but adults most commonly occur between 71-219 meters depth (Appendix B, Table 14). On the continental slope, they can be found to a maximum depth of 1500 meters (Appendix B, Table 15). Adult EFH also includes bottom temperatures between 3-13°C and marine waters between 32-36 ppt (Appendix B, Table 14). EFH for adult witch flounder occurs on mud and muddy sand substrates.

YELLOWTAIL FLOUNDER (JUVENILE)



Essential fish habitat (EFH) for juvenile yellowtail flounder (TL < 24 cm) consists of the principal habitat area and includes subtidal benthic habitats in coastal and continental shelf waters in the Gulf of Mane, on Georges Bank, in southern New England, and extending into the Mid-Atlantic region; south of the New York Bight, EFH primarily occurs in outer shelf waters but not to the continental slope (Map 26). Where applicable, inshore and nearshore juvenile EFH typically includes the marine zones of coastal areas, bays, and estuaries; specific portions of these areas can be identified from Map 26. Within the principal habitat area, juvenile EFH ranges from 7-159 meters depth, but juveniles occur most commonly occur between 24-81 meters depth (Appendix B, Table 14). Juvenile EFH also includes bottom temperatures between 3-15°C and marine waters between 31-34 ppt (Appendix B, Table 14). EFH for juvenile yellowtail flounder occurs on sand and muddy sand; in the Mid-Atlantic, young-of-the-year juveniles settle to the bottom on the continental shelf.

YELLOWTAIL FLOUNDER (ADULT)



Essential fish habitat (EFH) for adult yellowtail flounder (TL ≥ 24 cm) consists of the principal habitat area and includes subtidal benthic habitats in coastal and continental shelf waters in the Gulf of Maine, on Georges Bank, in southern New England, and extending into the Mid-Atlantic region as far south as Delaware Bay (Map 27). Where applicable, inshore and nearshore adult EFH typically includes the marine zones of coastal areas, bays, and estuaries; specific portions of these areas can be identified from Map 27. Within the principal habitat area, adult EFH ranges from 8-183 meters depth, but adults most commonly occur between 27-93 meters depth (Appendix B, Table 14). Adult EFH also includes bottom temperatures between 3-15°C and marine waters between 31-35 ppt (Appendix B, Table 14). EFH for adult yellowtail flounder occurs on sand and sand with mud, shell hash, gravel, and rocks.

EFH DESIGNATIONS: FEEDBACK AND DISCUSSION

- Are the draft maps representative of the species' distribution throughout the year? Are there any areas missing? Are there any areas that should be removed?
- Do the text descriptions capture other notable life history traits that influence habitat use, especially spawning information or seasonal differences/migrations?
- Do the text descriptions capture preferred habitat characteristics and types? For life stages that occur on the continental slope, does the maximum continental slope depth[1] seem reasonable?
- Are there other individuals, datasets, or sources of information we should engage with?

[1]*Continental slope areas are appended to the model-based map because the fishery-independent trawl surveys rarely sample beyond 400 m depth. These slope depths are based on literature and verified via outreach.*