
2023 Essential Fish Habitat (EFH) 5-Year Review

SARAH RHEINSMITH (NPFMC), DR. JODI PIRTLE, MOLLY ZALESKI (NMFS)
Scallop Plan Team, March 6, 2023



EFH 5-Year Review

- 1. EFH descriptions and identification (maps)**
- 2. Fishing activities that may adversely affect EFH**
3. Non-MSA fishing activities that may adversely affect EFH
- 4. Non-fishing activities that may adversely affect EFH**
5. Cumulative impacts analysis
- 6. EFH conservation and enhancement recommendations**
- 7. Prey species list and habitat locations**
- 8. Habitat areas of particular concern (HAPC) identification**
- 9. Research and Information needs**
- 10. Review EFH every 5 years**



Documents

1. **2023 EFH 5-year Review Summary Report** (new document draft for review at this meeting)
2. NPFMC February 2023 eAgenda
 - Council 2023 Motion



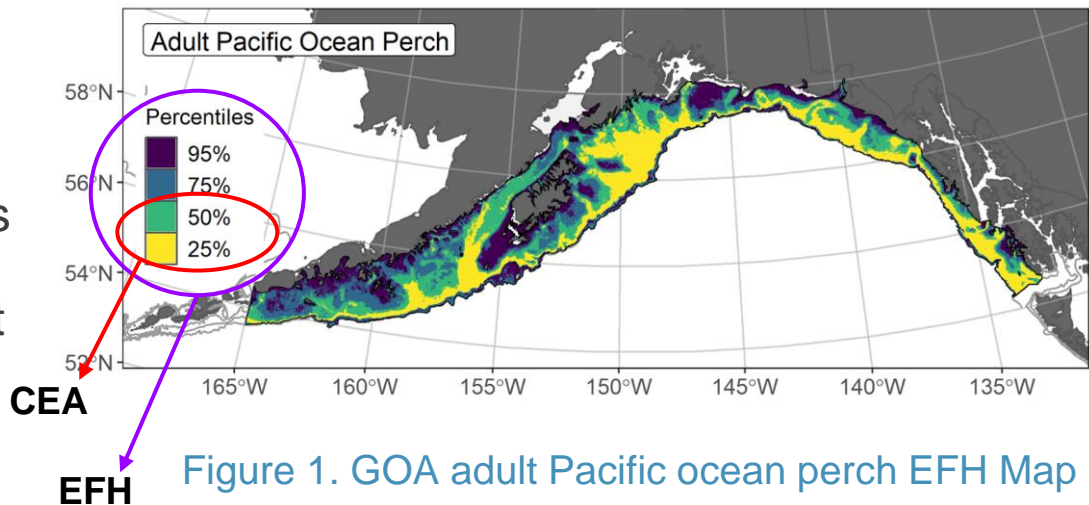
C1: Descriptions and Identification

- **Essential fish habitat (EFH)** means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (50 CFR 600.10).
- **EFH component 1** descriptions and identification: FMP text, tables, and maps.
- EFH component 1 requires individual **species maps** for the fishery management unit of the FMP (50 CFR 600.805(b)), where ***some or all portions*** of the species' geographic range is mapped (50 CFR 600.815(a)(1)(iii)(1)).
- EFH may also be designated **with justification for assemblages** of species or life stages (50 CFR 600.815(a)(1)(iv)(E)).



Alaska EFH Maps

- EFH maps based on species distribution models (SDMs) was established in the 2017 Review.
- SDM ensemble EFH maps for the 2023 Review for the BSAI, GOA, and Crab FMP. SDM EFH maps for the Arctic FMP for the first time
- **EFH** is the upper 95% of the spatial domain of occupied habitat.
- Core EFH area (**CEA**) is the upper 50% of the area of occupied habitat applied to the EFH component 2 Fishing Effects Analysis
- 224 new and revised EFH descriptions and maps for the BSAI, GOA, and Crab FMPs..



Arctic FMP

- 13 new and revised EFH descriptions and maps for Arctic cod, saffron cod, and snow crab for up to four life stages.
- EFH Level 1 and Level 3 maps with *additional* maps for warm and cold years.
 - Substantial improvement to previous survey distribution maps combining all life stages.
 - Considers climate change effects on EFH for Arctic species by examining area in warm and cold years.
 - Robust modeling framework for future EFH mapping and other EBFM applications.
- Publications by this study:
 - Marsh et al. In review NOAA Technical Memorandum
 - Manuscript in preparation.

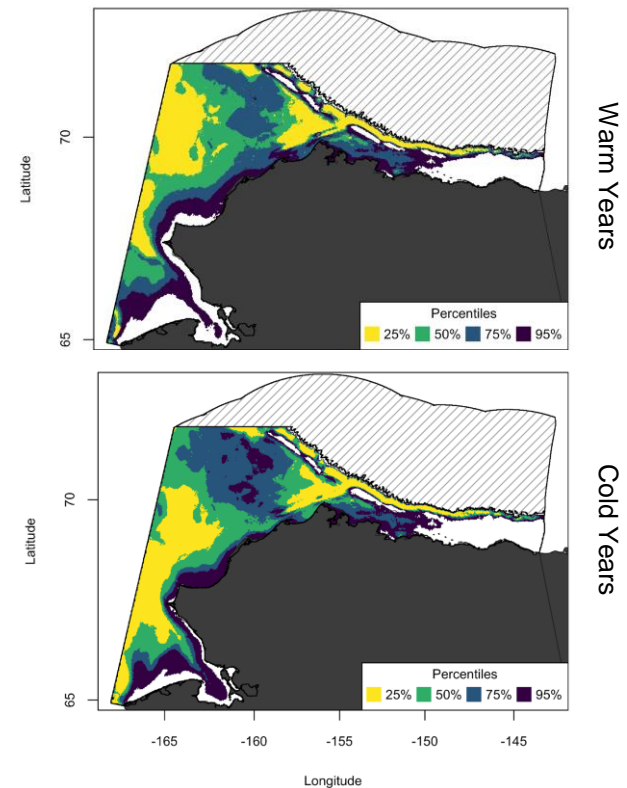


Figure 1: EFH of mature male snow crab in warm and cold years



C2:Fishing Effects Evaluation

EFH component 2 - Fishing activities that may adversely affect EFH

EFH regulations (50 CFR 600.815(a)(2)):

- (i) *Evaluation*: Each FMP must contain an evaluation of the potential adverse effects of fishing on EFH designated under the FMP.

- (ii) *Minimizing adverse effects*: Each FMP must minimize to the extent practicable adverse effects from fishing on EFH. Councils must act to prevent, mitigate, or minimize any adverse effects from fishing, to the extent practicable, if there is evidence that a fishing activity adversely affects EFH in a manner that is **more than minimal and not temporary in nature**, based on the evaluation.

Full evaluations reported in the [Component 2 FE Evaluation Discussion Paper](#) attached in the eAgenda.



Fishing Effects Model

Time series of the model output:
Estimates of % habitat disturbance

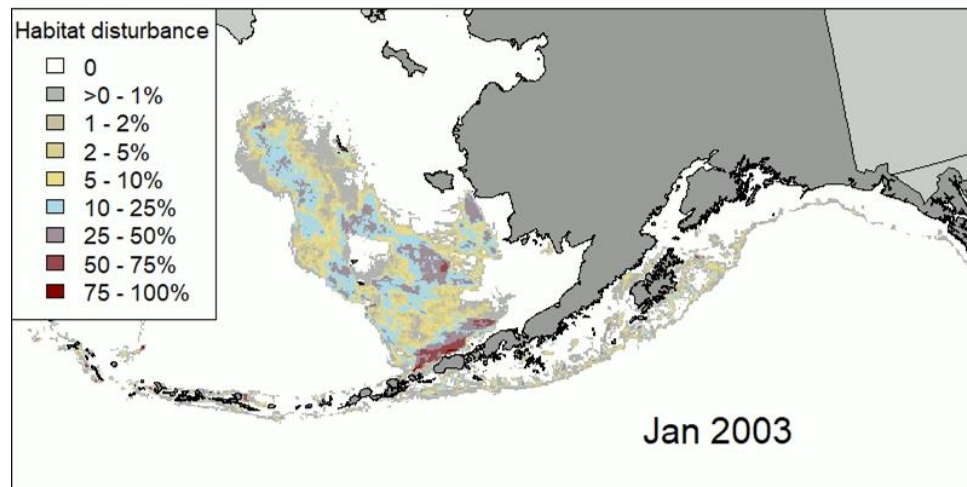
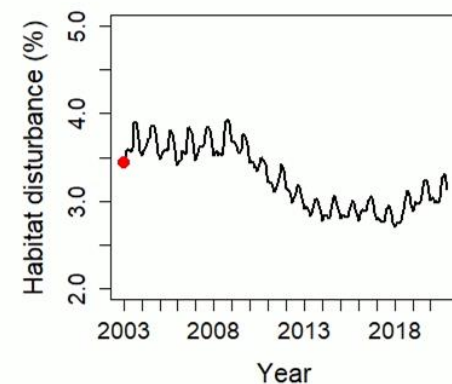
Model components:

Fishing effort (observed and unobserved vessel data)

Gear parameters

Habitat categorizations

Susceptibility and recovery rates



Fishing Effects Model Results

16 species with $\geq 10\%$ CEA disturbed (all EBS):

- Arrowtooth flounder (*Updated SDM EFH map*)
- Atka mackerel (*FE model code correction*)
- Blackspotted/Rougheye rockfish complex* (**No 2017 combined species map for comparison*)
- Giant octopus (*Updated SDM EFH map*)
- Other flatfish complex species: Dover sole, Rex sole (*FE model code correction*)
- Northern rockfish (*FE model code correction*)
- Pacific ocean perch (*FE model code correction*)
- Sablefish (*Increased fishing in CEA*)
- Shortraker rockfish (*Increased fishing in CEA*)
- Shortspine thornyhead rockfish (*Increased fishing in CEA*)
- Skate complex species: Aleutian skate, Bering skate, Mud skate, Whiteblotched skate* (*FE model code correction; *No 2017 map for comparison*)
- Tanner crab (*FE model code correction*)

**No species
were elevated
for mitigation
measures**



EFH 5-Year Review

1. EFH descriptions and identification (maps)
2. Fishing activities that may adversely affect EFH
3. Non-MSA fishing activities that may adversely affect EFH
- 4. Non-fishing activities that may adversely affect EFH**
5. Cumulative impacts analysis
- 6. EFH conservation and enhancement recommendations**
- 7. Prey species list and habitat locations**
- 8. Habitat areas of particular concern (HAPC) identification**
- 9. Research and Information needs**
- 10. Review EFH every 5 years**



C4: Non-fishing Effects Report 2023 Updates

We made substantial updates in the new 2023 report regarding the science, technology, and data analysis related to non-fishing impacts. Key updates include:

- **Chapter 1, Introduction**
 - An overview of an **Ecosystem-based Fishery Management** approach to EFH is added and visited throughout the document.
- **Chapter 2, Climate Change**
 - Climate change is an anthropogenic impact exacerbating other impacts. **NEW:** We offer conservation recommendations targeting the reduction of methane emissions from petroleum extraction facilities.
- **Chapter 3, Watersheds**
 - Chapter updates better represent the connection between ground and surface water and how those processes support salmon. **NEW:** A hydropower project section.
- **Chapter 4, Estuaries and Nearshore**
 - Sources of potential impacts in estuarine and nearshore habitat are identified and updated.
- **Chapter 5, Offshore**
 - The current science and technology of oil spill response strategies, mechanisms and toxicology for fishes is expanded, cited and relevant recommendations are included. **NEW:** A vessel scuttle section was added.

See [Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska: EFH 5-year review from 2018-2023](#)



C6: Conservation and Enhancement recommendations

- FMPs must identify actions to encourage the conservation and enhancement of EFH, including recommended options to avoid, minimize, or compensate for adverse impacts (50 CFR 600.815(a)(6)).
- Habitat conservation and enhancement recommendations address fishing and non-fishing threats to EFH and HAPCs.
- NMFS conducts EFH consultations and makes conservation recommendations for non-fishing activities. NMFS revised the conservation recommendations for non-fishing activities in the Non-fishing Impacts Report.
 - NMFS recommends that the Council amend the current FMP sections to include this update to the Non-fishing Impacts Report under EFH component 4.
- The Council has taken several actions to minimize potential adverse impacts to EFH from fishing activities (Existing EFH Conservation Measures, section 7.1).
 - The 2023 EFH Fishing Effects Evaluation does not indicate that new measures are necessary.
 - The Council may recommend additional habitat conservation measures.



C7: Prey species

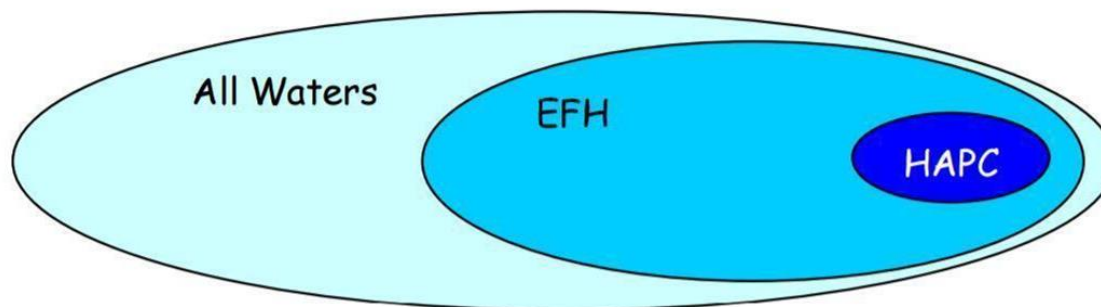
Prey information updates

- Edits to text descriptions in the FMPs provided by stock authors when also reviewing Component 1 (May - September 2021)
- Nearshore Fish Atlas:
 - Publicly accessible database with distribution, relative abundance, and habitat use of nearshore fishes in Alaska
- 2022 AFSC Forage Species Congress (March - April 2022)
 - Improve our state of knowledge regarding forage species in Alaska and integrate research efforts across programs
- Future research plans:
 - **Improve nearshore EFH and prey habitat information** for the next 5-year Review



C8: Habitat areas of particular concern

- HAPCs are subsets of EFH that highlight specific sites with extremely important ecological functions and/or areas that are especially vulnerable to human-induced degradation
- HAPCs are areas within EFH that are rare and are either ecologically important, sensitive to disturbance, or may be stressed.
- HAPC are a site specific management tool for federally managed species that may require additional protection from adverse fishing effects.



C9: Meeting Component 9 Requirements

Research Priorities Identified During the 2023 EFH Review

Each FMP should identify recommendations for research that the Council and NMFS view necessary to improve descriptions and identification of EFH, identification of threats to EFH, and development of EFH conservation and enhancement measures (50 CFR 600.815(a)(9)).

- As part of the 2023 Review, EFH analysts, stock assessment authors, and the SSC and EC provided recommendations to inform research leading up to subsequent EFH 5-year Reviews.
- NMFS uses this information to develop research priorities for the revision to the Alaska EFH Research Plan ([Sigler et al. 2017](#)).
- These recommendations can also become the EFH research priorities identified in the FMPs.
 - *Not revised in the FMPs following the 2017 EFH Review.*
 - *Does the Council want to revise this FMP language now?*



C9: EFH Research Plan Draft Priorities 2023 - 2027

- Improve EFH information for species and life stages that were identified as requiring further research during 2023 Review and other FMP species that were not updated in 2023 (e.g., salmon and scallops).
 - Include additional and intercalibrated species data sources so that SDMs can be developed that extend spatial scale into areas not well represented by the bottom trawl, and to infer habitat utilization in non-summer seasons.
 - Incorporate temporal scale considerations, dynamic covariates, trophic interactions, and other processes that allow estimates of spatial-temporal shifts in habitat use and habitat-related population productivity.
 - Include IBMs or other process models as covariates in SDMs or as distribution models.
- Improve understanding of nearshore and forage species distribution and habitat use and develop associated SDMs and maps.
- Improve the fishing-effects assessment.
 - Improve the existing Fishing Effects model and/or develop and implement new methods.



C10: EFH 5 year review

- Federal regulations require Fishery Management Councils review and revise EFH components at least every 5 years, and amend EFH provisions in the FMPs, as warranted, based on available information.
 - **2005**
 - **2010**
 - **2017**
 - **2023**
- The next 5 years of EFH research will be guided by and conceptualized in the 2023-2027 EFH Research Plan, which will be published as a NOAA Technical Memorandum in 2023.
- Section 10.6 details research priorities for the next EFH 5-year review, that were identified during the 2023 EFH process

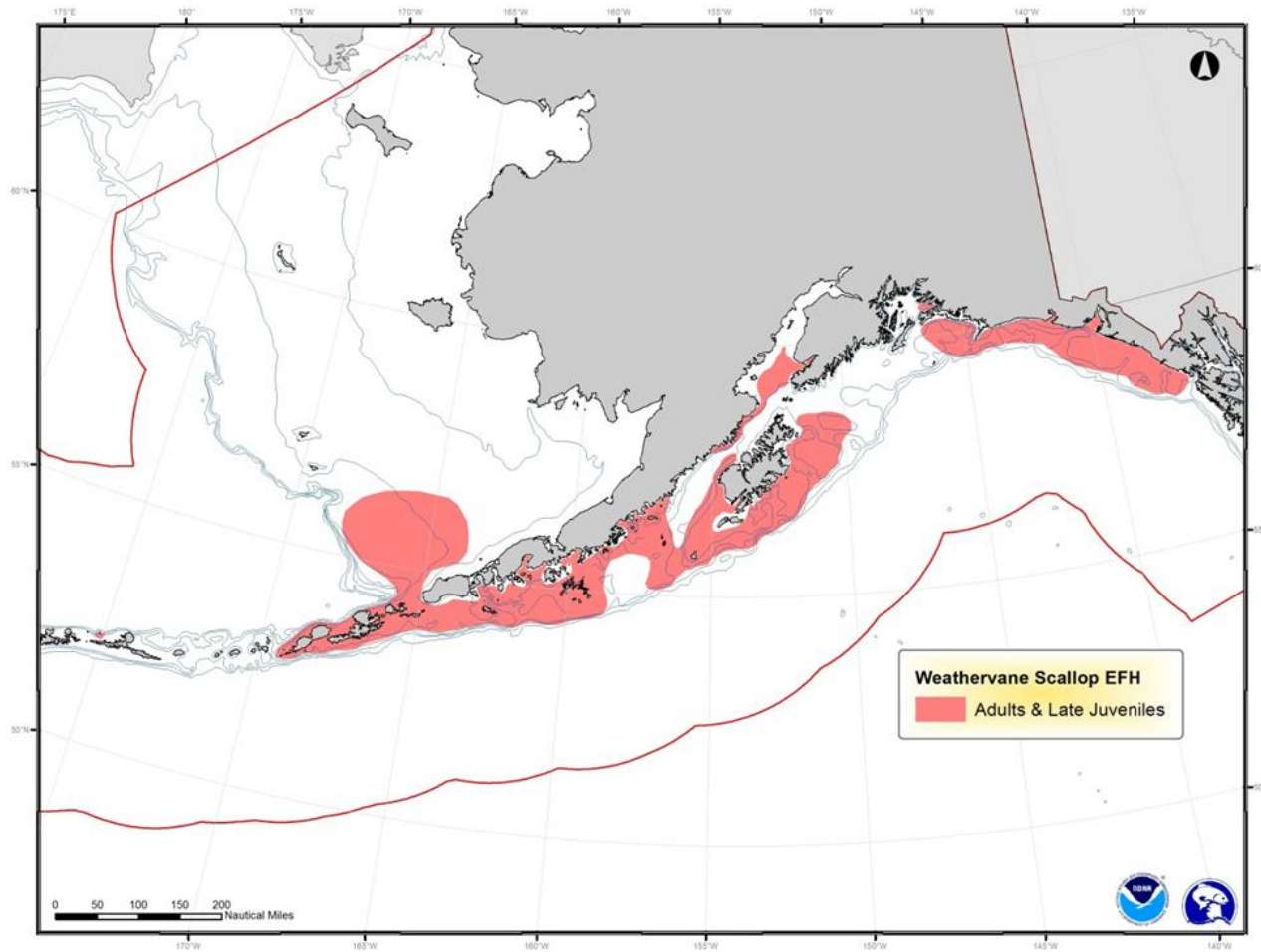


Scallop EFH Definition

Scallop Species	Eggs	Larvae	Early Juvenile	Late Juvenile	Adult	
Weathervane scallop	x	x	x	1	1	



Current Scallop EFH definition



Scallop FMP: Appendix D

