

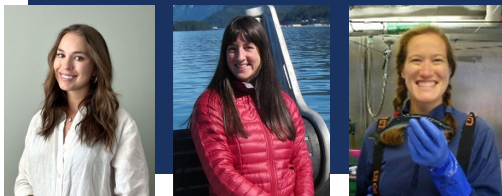
2023 Essential Fish Habitat (EFH) 5-Year Review

SARAH RHEINSMITH (NPFMC), DR. JODI PIRTLE, MOLLY ZALESKI (NMFS)

Ecosystem Committee, January 18, 2023

Advisory Panel, February 9, 2023

Council, February 11, 2023



Outline

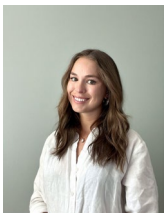
1. Introduction to EFH Council process and timeline
2. Review Components of 2023 EFH 5-Year Review

Previous presentations to EC: October 2022, March 2022, January 2022
SSC review and recommendations: February 2022, October 2022



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**

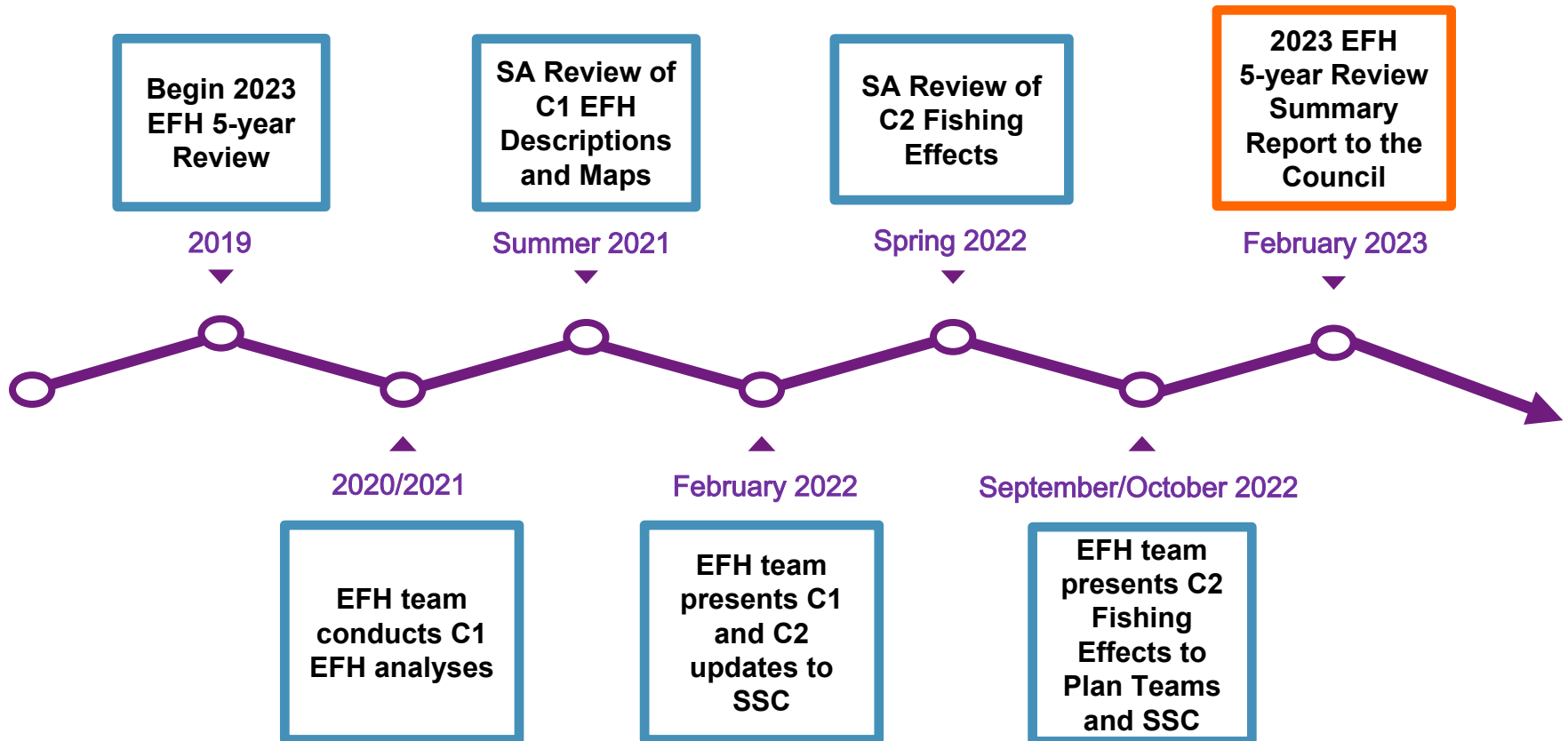


EFH 5-Year Review

- The objective of an EFH 5-year Review is to review the ten EFH components of FMPs and revise or amend the ten EFH components as warranted based on available information (50 CFR 600.815(a)(10)).
- The EFH 5-year Review is a mechanism to ensure NOAA Fisheries and Fishery Management Councils incorporate the most recent and best science available into fishery management for EFH.
- The current 2023 EFH 5-year Review encapsulates the recent habitat related literature and research developed in the North Pacific.



2023 EFH 5-Year Review Timeline



SSC review and recommendations: February 2022, October 2022



Documents

1. **2023 EFH 5-year Review Summary Report** (new document draft for review at this meeting)
2. **EFH component 1 Descriptions and Maps Synthesis Report** (updated January 2023 as one comprehensive report of all the C1 stages of the review)
3. **Arctic SDM EFH component 1 descriptions and maps** (new, Marsh et al. In review, all newly available maps included in report)
4. **EFH component 2 Fishing Effects Evaluation Report** (updated January 2023 with October meeting outcomes)
5. **EFH component 4 Non-fishing Effects Report** (new)
6. **Three regional NOAA Technical Memoranda on EFH component 1 for GOA, BSAI and Crab FMPs** (these will be the updated versions for final publication (proofs), intended at this meeting to show the new EFH maps comprehensively for GOA, BSAI and Crab FMPs)

*Note that the reports (other than # 6) will be published as
Technical Memoranda by AKRO.*



Component 1. EFH descriptions and identification

NMFS Alaska Region, Habitat Conservation Division

AFSC, Groundfish Assessment Program, Habitat and Ecological Processes Research Program, Fisheries Behavioral Ecology Program, Marine Ecology and Stock Assessment Program, Resource Ecology and Fishery Management Division

UAF, College of Fisheries and Ocean Sciences



EFH Component 1 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)).

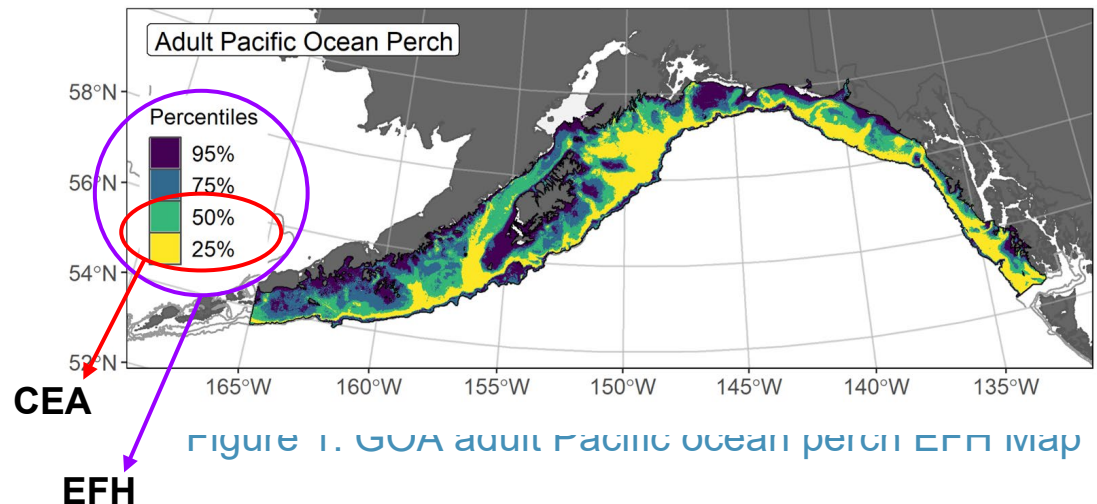


2023 EFH Review Summary Report, section 2, page 21; and EFH Component 1 Synthesis Report.



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.



2023 EFH Review Summary Report, section 2, Figure 1, page 22; EFH Component 1 Synthesis Report; and three regional NOAA Technical Memoranda



Council Considerations

To complete the 2023 Review and decide if FMP amendments are warranted regarding EFH Component 1 (Section 1.4 Table 4):

- Does the new information and analysis for the EFH geographical distributions for individual species warrant revising in the FMPs?
- Should the FMPs be revised to reflect new information on their life history, distribution, biological/ habitat/ predator-prey associations, or fishery?
- This section summarizes the new information that NMFS has developed for Component 1 in the 2023 Review.
- Refer to the *2023 Review Summary Report* and the *Component 1 Synthesis Report* attached to eAgenda for this meeting.



2023 EFH Review Summary Report, section 1.4, Table 4, page 19, and section 2, page 21



New Component 1 Information

New and revised EFH descriptions and maps are available to update the BSAI, GOA, Crab, and Arctic FMPs:

- Advancing model-based EFH descriptions and maps for groundfishes and crabs (Laman et al. study, sections 2.1-2.6).
- Individual-based models to advance EFH for groundfish pelagic early life history stages (Shotwell et al. study, section 2.5).
- First model-based Arctic EFH (Marsh et al. study, section 2.7).
- All studies provide new and revised EFH Level 1, 2, or 3 information, representing exciting progress on the Alaska EFH Research Plan objectives for the 2023 Review.



SDM EFH Methods Overview and Comparison

2023 SDM Ensemble

Response Variable:

- Numerical abundance (1982-2019 catches)

Models:

- MaxEnt, paGAM, hGAM, Poisson GAM, Negative Binomial GAM
- Skill testing with RMSE

Ensemble:

- Best performing SDMs retained

Performance Metrics:

- Applied to all SDMs and ensemble
- k-fold cross validation to generate RMSE and other fit metrics
- Spearman's correlation (ρ), AUC, Poisson Deviance Explained (PDE)

2017 SDM

Response Variable:

- 4th root transformed CPUE (1982-2014 catches)

Models:

- MaxEnt, hGAM, GAM
- One SDM selected *a priori*
- **New for 2023**

Ensemble:

- **New for 2023**

Performance Metrics:

- Applied based on SDM
- MaxEnt (AUC) and GAMs (Deviance Explained)
- 80/20 training/testing
- Fit metrics examined for out of sample comparison



Laman et al. study for BSAI, GOA, and Crab FMPs

EFH Descriptions and Maps Synthesis Report, section 3, page 28; and three regional NOAA Technical Memoranda with complete methods, results, and new EFH maps.



Groundfish and Crab FMPs

- 224 new and revised EFH descriptions and maps for the BSAI, GOA, and Crab FMPs.
- The 2023 SDM ensemble EFH mapping approach is a foundational improvement to the 2017 single SDM method:
 - Reduced model-dependent prediction bias,
 - Improved overall model performance, and
 - Robust modeling framework for future EFH mapping and other applications.
- Publications by this study:
 - Three regional NOAA Technical Memoranda in process ([eAgenda links](#)).
 - R repository available on GitHub (<https://github.com/alaska-groundfish-efh>).
 - Manuscript: *Ensemble models mitigate bias in area occupied from commonly used species distribution models* by Harris et al. In review.
- SSC noted that this work represents substantial advancements since the 2017 Review and recommended these methods to support the fishing effects evaluation (October 2022).



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 ([eAgenda link](#))
 - Manuscript in preparation.



2023 EFH Review Summary Report, section 2.7, page 70, and Arctic SDM EFH Descriptions and Maps (Marsh et al. In review).

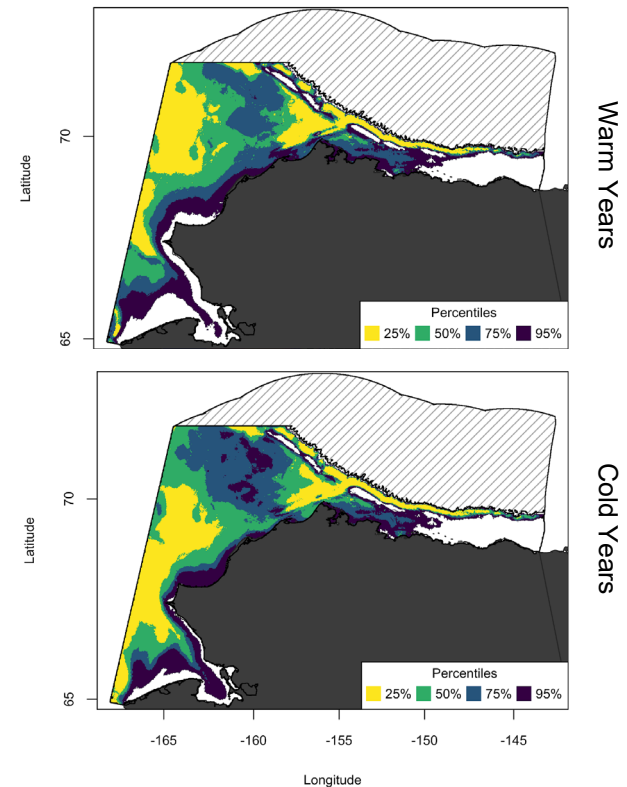


Figure 1: EFH of mature male snow crab in warm and cold years



NMFS Recommendations for Council Action

Add or revise the EFH text description and add or replace the maps:

- For 41 species or complexes in the BSAI FMP
 - section 2.4, page 32
- For 46 species or complexes in the GOA FMP
 - section 2.5, page 48
- For all five species in the Crab FMP
 - section 2.6, page 67
- For all three species in the Arctic FMP
 - section 2.7, page 70

Replace the distribution maps with the EFH maps as a correction:

- For all five species in the Salmon FMP
 - section 2.8, page 73

Scallop FMP EFH sections pending Plan Team review in March 2023



Habitat Science Supporting EBFM

- Habitat science provides the analytical basis to meet the EFH requirements for habitat conservation and fishery management.
- This work supports other EBFM information needs for to stock assessment and understanding climate change impacts on habitat and species distributions. *Climate change is habitat change from a species' perspective.*
- The SSC and EC encouraged extensions of habitat science outside of EFH 5-year Reviews to address other EBFM information needs (Summary Report section 10.6.3).
- EBFM on-ramps can be refined to include habitat and climate-integrated products that are accessible and easily communicated. Encouraging examples; more progress is needed:
 - [Shotwell et al. 2022](#) (DSRII) on developing metrics and indicators from EFH SDMs and other habitat studies for the ESPs, risk tables, and report cards as stock assessment on-ramps to improve EBFM.
 - [Rooper et al. 2021](#) (ICES J Mar Sci) and [Barnes et al. 2022](#) (Ecography) on investigating the SDM EFH time series scale and improving *near term forecasting* methods, and [Marsh et al.](#) Arctic EFH maps, as habitat-informed products to more effectively address climate change implications for fishery management.
 - Stock climate vulnerability assessments are proposed for the Gulf of Alaska and Bering Sea (e.g., [Spencer et al. 2019](#)) using updated methods with EFH and ACLIM SDMs and regional community participation (e.g., ACLIM3 and CEFI).



Component 2. Evaluation of Fishing Effects on EFH

NMFS Alaska Region, Habitat Conservation Division

AFSC, Groundfish Assessment Program, Habitat and Ecological Processes Research Program, Marine Ecology and Stock Assessment Program, Resource Ecology and Fishery Management Division

APU, Fisheries, Aquatic Science, and Technology Lab



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.

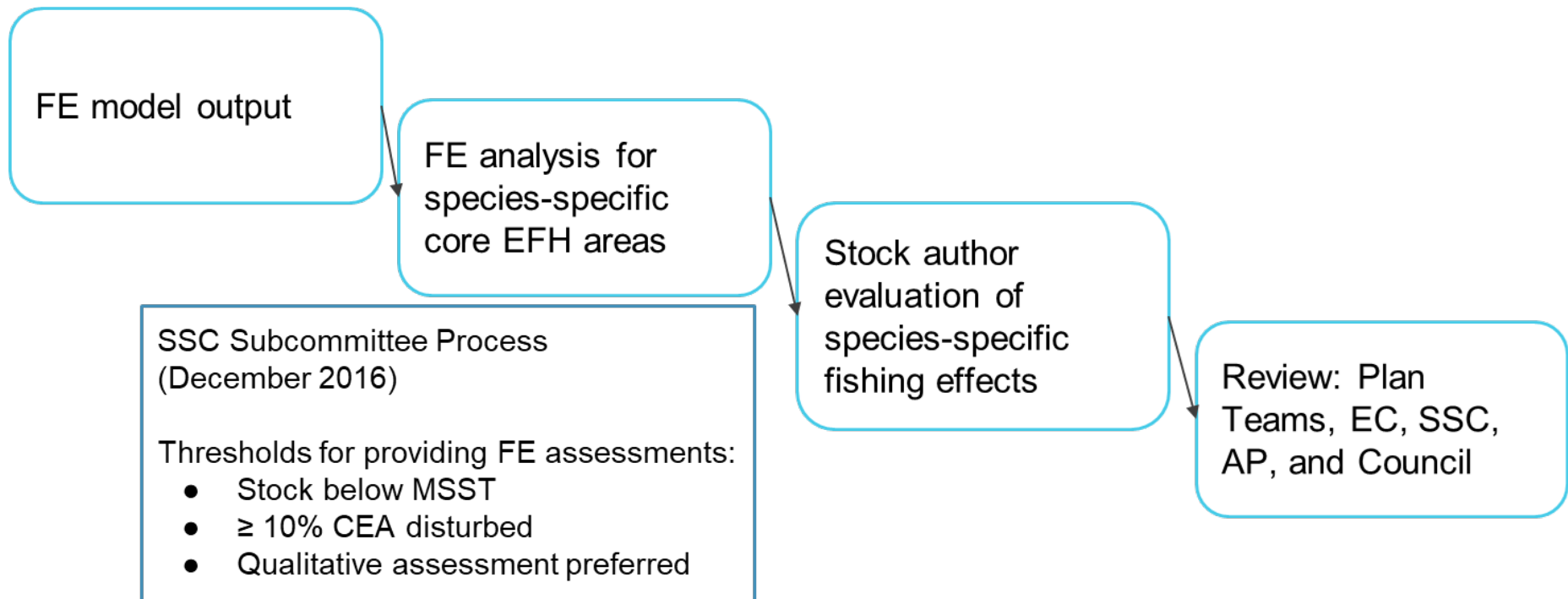


Full evaluations reported in the [Component 2 FE Evaluation Discussion Paper](#) attached in the eAgenda.



Fishing Effects Evaluation

Fishing Effects (FE) Evaluation Process:



Fishing Effects Model

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

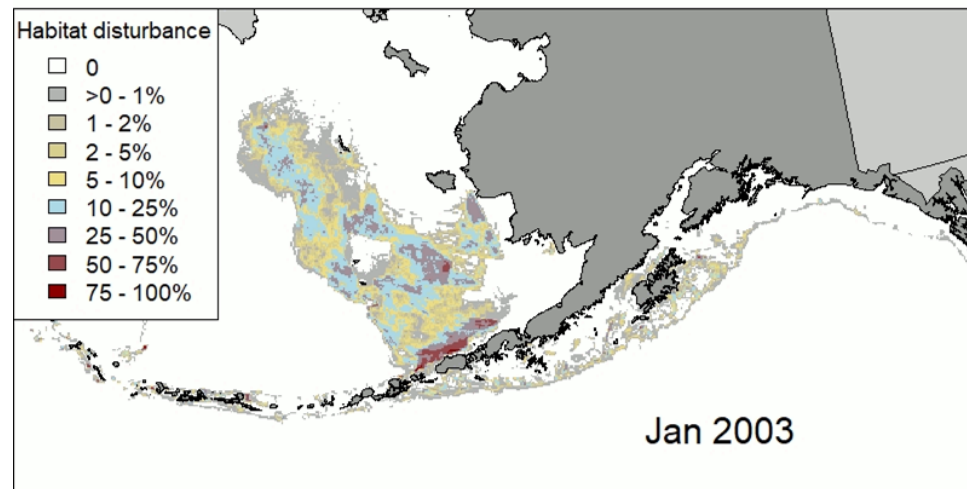
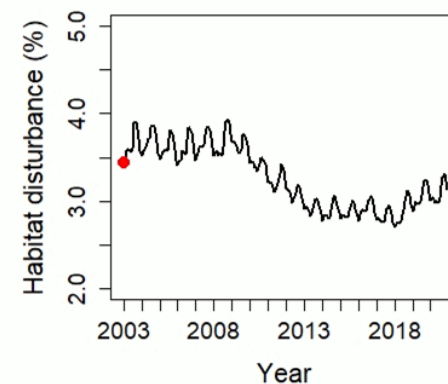
Model components:

Fishing effort (observed and unobserved vessel data)

Gear parameters

Habitat categorizations

Susceptibility and recovery rates



Fishing Effects Model

Changes to the Fishing Effects model since the 2017 EFH Review:

- Corrected model code
- Included fishing data up to 2020
- Incorporated new information on gears and habitat recovery
 - Longline nominal width: from 2 m to > 6 m (Welsford et al. 2014)
 - GOA rockfish trawls contact adjustment: from 0 to > 0.2 (public testimony)
- New EFH maps (Component 1)



2023 EFH Review Summary Report, Section 3.3, page 78



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**



2023 EFH Fishing Effects Evaluation Summary

Big Picture Takeaways:

1. The FE evaluation incorporated the best available science to provide an evaluation of fishing effects on some or all of the species' EFH.
2. **The results from this evaluation are that fishing effects are minimal and temporary, and no species were elevated for mitigation measures.**
3. For data limited species, the SSC supports the EFH and FE evaluation methods for species complexes or by combining data across species' life history stages as necessary to adequately determine EFH and evaluate fishing effects.

The SSC found that the current EFH evaluation methodology is appropriate for the 2023 5-year Review.

Component 2 Actions:

Appendix F in BSAI Groundfish and GOA Groundfish FMPs and in the BSAI Crab FMP will be amended to include this updated FE information.



Component 4. Non-fishing activities that may adversely affect EFH

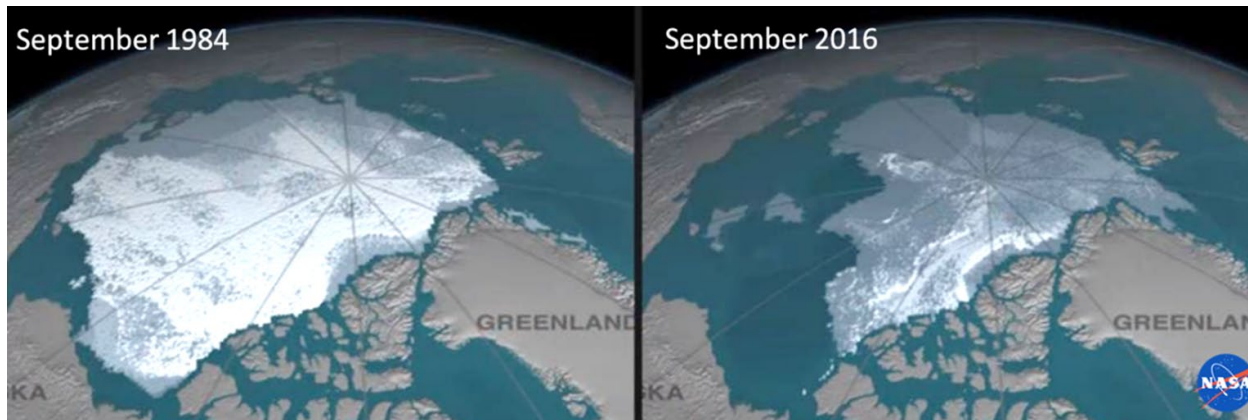
NMFS Alaska Region, Habitat Conservation Division

Limpinsel, D., S. McDermott, C. Felkley, E. Ammann, S. Coxe, G.A. Harrington, S. Kelly, J.L. Pirtle, L. Shaw, and M. Zaleski. *In Progress*. [Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska: EFH 5-year review from 2018-2023](#). National Marine Fisheries Service, Alaska Region, Juneau, Alaska. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/AKR-



Meeting Component 4 Requirements

- Federal regulations require FMPs to identify activities other than the act of fishing that may adversely affect EFH at 50 CFR 600.815 (a)(iii)(A)(4)
- The Non-fishing Impacts Report guides understanding of the potential adverse effects of non-fishing activities on EFH and provides conservation recommendations to avoid and minimize those effects. Used by NMFS and action agencies.
- ****Climate Change is one of the biggest threats to EFH. This report touches on these impacts and provides Climate Change specific guidance and conservation recommendations.****



2023 EFH Review Summary Report, Section 5, page 88. See also [Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska: EFH 5-year review from 2018-2023](#)



Non-fishing Effects Report 2023 Updates

We made substantial progress with the 2017 version of the report:

Limpinsel, D. E., Eagleton, M. P., and Hanson, J. L., 2017. Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska. EFH 5 Year Review: 2010 through 2015. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-F/AKR-14, 229p. doi:10.7289/V5/TM-F/AKR-14

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](#)



NMFS Recommendations for Council Action

Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska

EFH 5-Year Review: 2018 to 2023

*HCD's work proactively addresses these non-fishing impacts.
This is an important management practice for supporting
sustainable fisheries and healthy ecosystems.*

- NMFS recommends that the Council amend the current FMP sections to include this update to the Non-Fishing Impacts Report.
- More will be shared at the April Council meeting with the annual NMFS EFH Consultation Report.

2023 EFH Review Summary Report, Section 5, page 88. See also [Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska: EFH 5-year review from 2018-2023](#)



Component 6. EFH conservation and enhancement recommendations

NMFS Alaska Region, Habitat Conservation Division
North Pacific Fishery Management Council



Meeting Component 6 Requirements

- 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.



Component 7. Prey species list and habitat locations

NMFS Alaska Region, Habitat Conservation Division
AFSC, Groundfish Assessment Program, Habitat and Ecological Processes
Research Program, Fisheries Behavioral Ecology Lab, Marine Ecology and Stock
Assessment Program, Resource Ecology and Fishery Management Division



Component 7 Prey species

Prey component introduction:

- The definition of EFH includes waters and substrate **necessary to fish for feeding**.
- A loss of prey species is considered an adverse effect to EFH of managed species.
- Adverse effects on prey species and their habitats may result from **fishing and non-fishing activities**.

Prey information in the FMPs:

- Appendix F in the BSAI and GOA Groundfish FMPs and in the BSAI Crab FMP
- Text descriptions of known prey for all life history stages
- Predator-prey association tables



Component 7 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

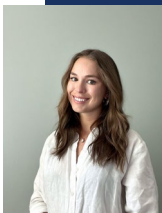


2023 EFH Review Summary Report, Sections 8.2 and 8.3, page 95



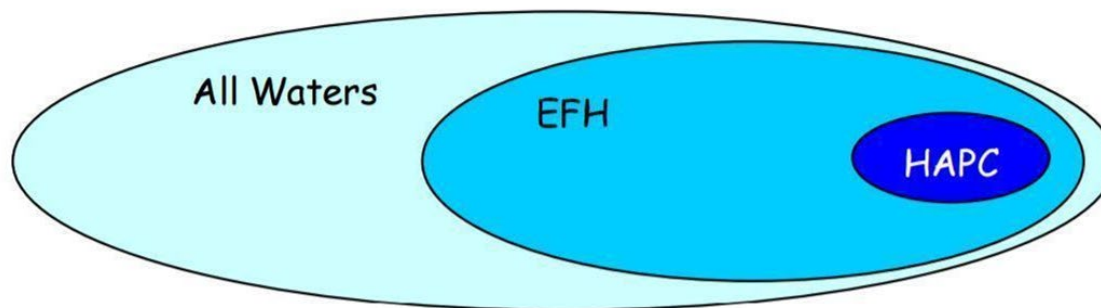
Component 8. Habitat areas of particular concern (HAPC) identification

North Pacific Fishery Management Council



Component 8 - HAPC

- 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.



Component 8 - HAPC

Species	Recommendations
SMBKC/ PIBKC	<p>Activities such as dredging which could remove or substantially alter cobble and shell hash habitat. Any such activities near the Pribilof Islands, St. Matthew Island, or St. Lawrence Island should be evaluated for their potential impact on these important benthic nursery habitats for blue king crab</p> <p><i>Note: this recommendation was originally made by the individual species authors, and endorsed by the Crab plan team.</i></p>
WAIRKC	<p>Habitat disturbance is quite high on Petrel Bank, north of Semisopochnoi Island. While the overall spatial scale of this high disturbance area is small relative to the Aleutian Island chain and effects of this disturbance are unknown for WAIRKC populations, it may have significant ecological importance for [red king crab]. Most of the historical WAIRKC stock catch came from the Petrel Bank area; however, the most recent industry-cooperative survey (2016) indicated very low [red king crab] abundance with reduced spatial distribution in this area, likely caused by recruitment failure.</p> <p><i>Note: this recommendation was originally made by the individual species authors, and endorsed by the Crab plan team.</i></p>

Component 8 - HAPC

HAPCs are those areas of special importance that may require additional protection from adverse effects. 50 CFR 600.815(a)(8) provides that FMPs should identify specific types or areas of habitat within EFH as habitat areas of particular concern based on one or more of the following considerations:

- 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
- The importance of the ecological function provided by the habitat;
- The extent to which the habitat is sensitive to human-induced environmental degradation;
- Whether, and to what extent, development activities are, or will be, stressing the habitat type;
- **The rarity of the habitat type**



Component 8 - HAPC

Step 1

Council initiates the HAPC process by setting management priorities

Step 2

A call for HAPC proposals is issued:

Any member of the public may submit a HAPC proposal

Step 3

Council Staff would screen proposals and present a preliminary report to the Council

Step 4

Council determines which proposals move forward to the next review step: scientific, socioeconomic and enforcement review. (Additional option for selection for plan team review for ecological merit)

Step 5

Proposals are ranked by HAPC criteria .



HAPC Criteria

HAPC Evaluation	Proposal A	Proposal B	Proposal C
Rarity	0	2	3
Ecological Importance	2	1	3
Sensitivity	2	3	3
Stress	n/a	n/a	2
Criteria Total (+)	4	6	11
Data Certainty Factor	3	3	1
HAPC Proposal Rank (=)	4	6	11
Research Priority Flag			



Component 8 - HAPC

Step 6

Staff provides Council of summary and Council selects which proposals to move forward for analysis for possible HAPC designation

Each proposal received and/or considered by the Council has one of three possible outcomes:

1. The proposal could be accepted, and, following review, the concept from the proposal could be analyzed in a NEPA document for HAPC designation.
2. The proposal could be used to identify an area or topic requiring more research, which the Council would request from NMFS or another appropriate agency.
3. The proposal could be rejected.



Component 9. EFH research and information needs

NMFS Alaska Region, Habitat Conservation Division
AFSC, Groundfish Assessment Program, Habitat and Ecological Processes
Research Program, Fisheries Behavioral Ecology Lab, Marine Ecology and Stock
Assessment Program, Resource Ecology and Fishery Management Division
North Pacific Fishery Management Council



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?*



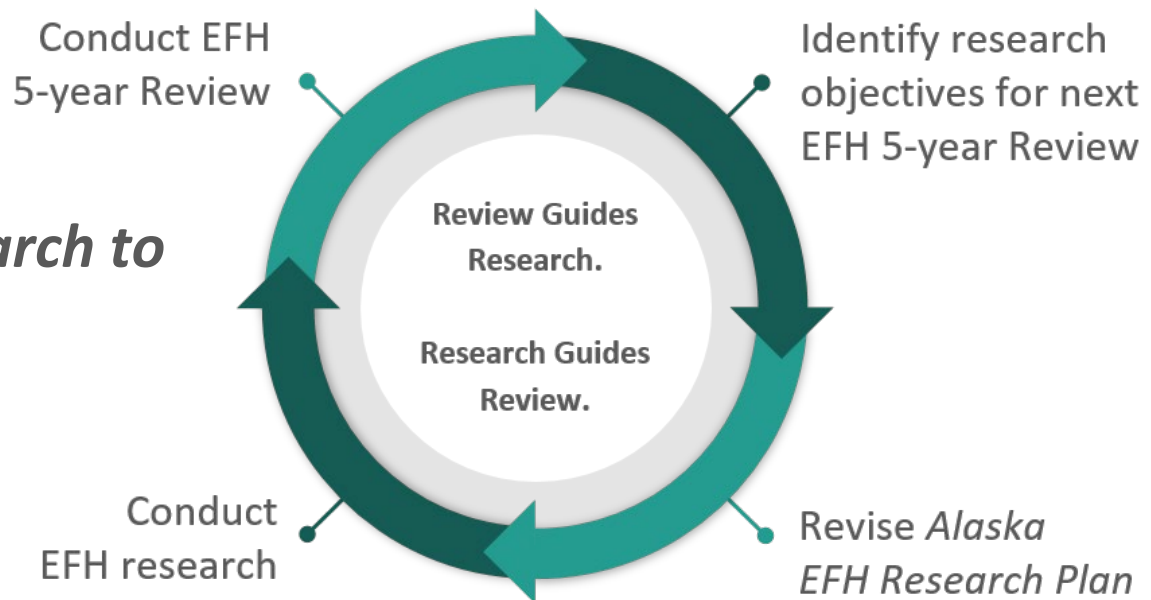
2023 EFH Review Summary Report, sections 10.1, page 106 and 10.6, page 123.



Alaska EFH Research Plan

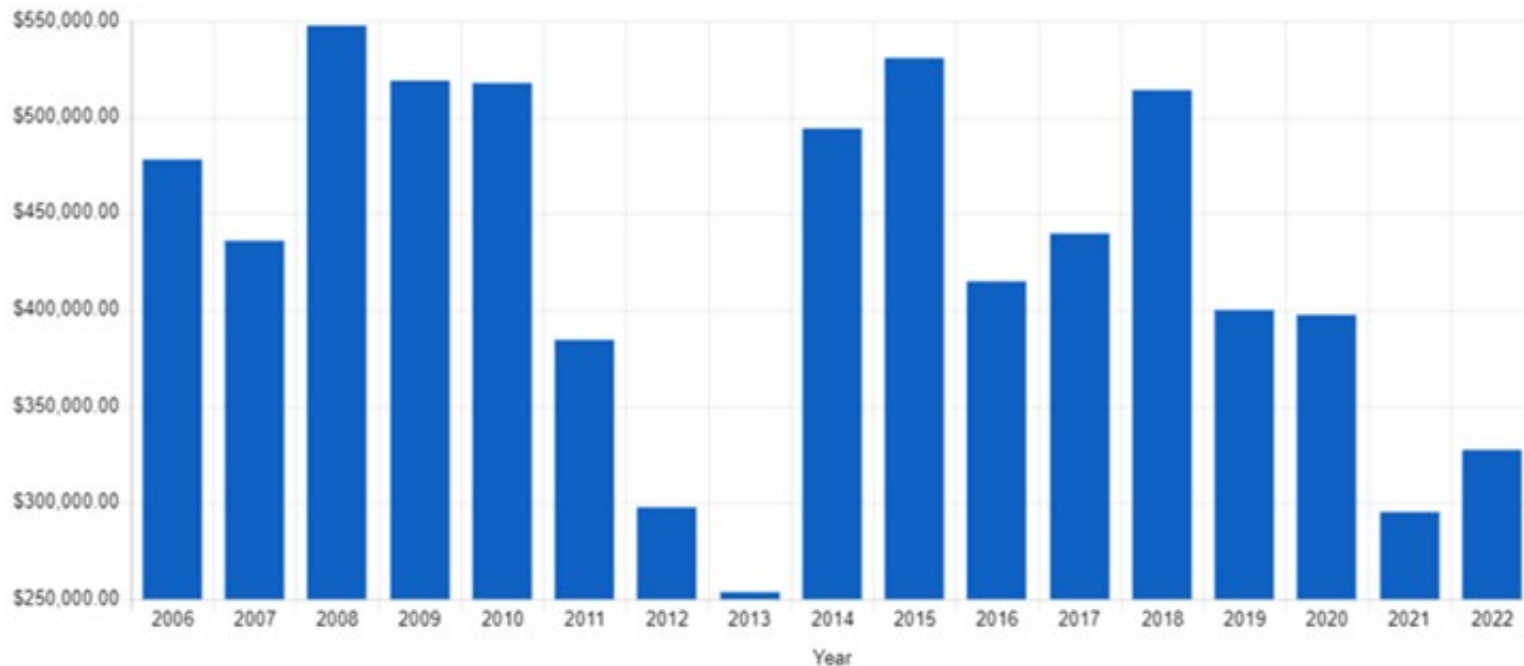
Contains five long term goals and prioritized objectives revised after an EFH Review. First plan published in 2006. Current plan published in 2017, following that EFH Review (Sigler et al. 2017). Revised plan is in development.

Alaska EFH Research to Review Cycle



EFH Research Funded

NMFS EFH Research Plan Funding, 2006-2022



NMFS has funded [117 studies](#) leading to [88 publications](#) and other research products advancing habitat science and EFH information in the North Pacific.



2023 EFH Review Summary Report, section 10.4, page 110.



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.

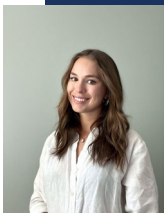
In addition to considering the EFH research priorities in the FMPs, does the Council have input on the proposed emphasis for the next 5 year Research Plan?

2023 EFH Review Summary Report, section 10.5, page 122.



Component 10. EFH 5-year Reviews

NMFS Alaska Region, Habitat Conservation Division
North Pacific Fishery Management Council



Component 10

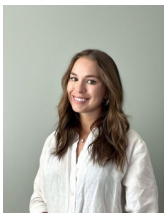
- Federal regulations require Fishery Management Councils review and revise EFH components at least every 5 years, and amend EFH provisions in the FMPs, as warranted, based on available information.
 - **2005**
 - **2010**
 - **2017**
 - **2023**
- The next 5 years of EFH research will be guided by and 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



Summary

Conclusion of the 2023 EFH Summary Report

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



Summary-Next Steps

- 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.
- The draft 2023 Summary Report provides information to the Council that NMFS and Council staff developed to inform the Council's decision to initiate FMP amendments to revise the EFH information.
- If, after reviewing this draft summary report and supporting documents, the Council chooses to update any EFH components in its FMPs, FMP amendments will be prepared along with the appropriate analytical documents.



THANK YOU

SARAH
RHEINSMITH

sarah.rheinsmith@noaa.gov

JODI PIRTLE

jodi.pirtle@noaa.gov

MOLLY ZALESKI

molly.zaleski@noaa.gov

