



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
*National Marine Fisheries Service*  
P.O. Box 21668  
Juneau, AK 99802-1668

March 20, 2023

## **Agenda B2: NMFS Annual Essential Fish Habitat Report**

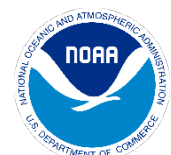
As part of the North Pacific Fishery Management Council’s Essential Fish Habitat (EFH) consultation policy, the Council requested regular reports from the National Marine Fisheries Service (NMFS) on EFH consultations that may be of interest to the fishing industry, and/or that may affect habitats of direct concern to the Council. This report developed by our Habitat Conservation Division (HCD) focuses on major consultations, with a brief summary of routine activities with minor effects on EFH. We also provide advance notice for those activities that could have major effects on EFH and where the Council may consider a consultation action.

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### **1. Council’s Role in EFH Consultations**

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) provides a role for Fishery Management Councils in commenting on Federal or State agency actions that may affect fish habitat. Under section 305(b)(3)(A) of the MSA, Councils may comment on and make recommendations to the Secretary of Commerce and any Federal or State agency concerning any activity or proposed activity authorized, funded, or undertaken by the agency that, in the view of the Council, may affect the habitat, including EFH, of a fishery resource under its authority. **In addition, under section 305(b)(3)(B) of the MSA, Councils must provide such comments and recommendations concerning any activity that, in the view of the Council, is likely to substantially affect the habitat, including EFH, of an anadromous fishery resource under Council authority.** The EFH regulations at 50 CFR 600.930(a) state that each Council should



establish procedures for reviewing Federal or State actions that may adversely affect the habitat, including EFH, of a species under its authority.

As part of the EFH consultation policy, the Council identified the following criteria to guide NMFS in determining whether an activity is likely to be of particular interest to the Council:

- The extent to which the activity would adversely affect EFH;
- The extent to which the activity would adversely affect Habitat Areas of Particular Concern or other areas established by the Council to protect sensitive habitat features;
- The extent to which the activity would be inconsistent with measures taken by the Council to minimize potential adverse effects of fishing on EFH; and
- The extent to which the activity would conflict with Council-managed fishing operations.

Every year, the NMFS Alaska Region receives approximately 150 non-fishing actions proposed by Federal and State agencies that have the potential to affect EFH and living marine resources. We focus our limited staff time to reviewing only those activities that may adversely affect EFH and where early coordination could improve the proposed action. In a typical year, actions include a wide range of activities such as aquaculture development, coastal construction, forestry, harbor improvement, hydropower development, mining, navigation dredging, oil and gas exploration, offshore disposal of materials, pollutant discharges, Naval training exercises, and transportation infrastructure projects.

Federal action agencies include the U.S. Army Corps of Engineers (USACE), U.S. Coast Guard, Environmental Protection Agency, Bureau of Ocean Energy and Management (BOEM), Bureau of Land Management (BLM), Federal Energy Regulatory Commission, Federal Highway Administration, Federal Aviation Administration, U.S. Forest Service, NOAA's Office of Marine and Aviation Operations, and others. State action agencies include Alaska Department of Natural Resources (ADNR), Alaska Department of Transportation and Public Facilities (ADOT&PF), and Alaska Department of Environmental Conservation.

HCD's staff are effective at providing technical assistance to project proponents and action agencies during pre-consultation coordination for proactively avoiding, minimizing, or mitigating impacts to EFH that support Alaska's valuable fishery resources. During EFH consultations with Federal action agencies, we provide reasonable and scientifically based conservation recommendations for mitigating potential project related adverse effects on EFH. Our EFH conservation recommendations are non-binding, as specified by the MSA. However, if the Federal agency does not follow NMFS' conservation recommendations, the MSA requires that Federal agencies must provide scientific justification for any disagreement and describe the measures they propose to avoid, minimize, mitigate, or offset adverse effects on EFH.

We provide written comments at various stages of projects including: project scoping, environmental impact statement comment periods, project permitting, and at other times as

requested. The formal EFH consultation occurs when the Federal action agency provides NMFS with an EFH Assessment prepared under 50 CFR 600.920(e). NMFS then has 30 or 60 days to complete its review of the EFH Assessment and supporting material and provide comments and conservation recommendations, as appropriate. Where a number of actions are similar with similar anticipated impacts on EFH, we look for efficiencies by conducting consultations at the programmatic level when appropriate.

## 2. EFH Consultations - April 2022 to April 2023

Since our April 2022 report to the Council, we have engaged in 115 early coordination and EFH consultations, including the following actions:

- Aquaculture

We provided early coordination with ADNR and formal consultations with the USACE on the development or amendments to 25 permits for kelp, oyster, or multi-trophic aquaculture operations throughout the state.

- Coastal Development

- Johnson Fill - Wrangell
- Whittier Cruise Ship Dock
- Kuskokwim River/Bethel Sheet Pile Bulkhead and Dock
- Whittier Passage Canal Geotechnical Survey
- Hoonah Harbor Way Pedestrian Improvements
- Campbell Creek/Amazon Distribution Center
- St. Paul Cemetery Erosion Control
- Trail Mix Inc EFH Inquiry: Russian Jack Springs Park, Chester Creek
- Chukchi Sea GCI's Maniilaq Fiber Cable Project
- Private Dock Construction (7)

- Department of Defense and Department of Homeland Security Projects

- USN Gulf of Alaska (GOA) Training
- Adak Island Remediation Work
- USCG Seward Dock

- ADOT&PF Projects

- Kalifornsky Beach Road to Kenai Spur Highway Bridge Access Preservation
- Hope HWY Culverts
- Cottonwood Creek Bridge/ South Weeping Birch St Bridge
- Juneau Douglas North Crossing
- Haines Airport Rehabilitation
- Kenai Spur
- Sitka Seawalk Tidal Fill
- Hydaburg Seaplane Base
- Kenai Bridge Deck Rehabilitations
- Kodiak Rezanof Dr resurfacing

- Bridget Cove Creek Culvert Replacement
- Dredging and Harbor Improvement
  - Valdez Small Boat Harbor Maintenance
  - Goodnews Bay Harbor Improvements POA-1998-00165
  - Port of Alaska (Port of Anchorage) Maintenance Dredging
  - Port of Alaska Cargo Terminal Construction
  - Port of Alaska Shoreline stabilization
  - Auke Bay East Berth Ferry Terminal project
  - Atka Harbor Improvements Cooperating agency Request
  - Shemya Harbor Improvements
  - Cordova Harbor Rebuild
- Hydropower
  - Blind Slough license amendment
  - Ekltunta Year 2 study concurrence
  - Dixon Glacier study requests
  - Nuyakuk licensing
  - Igiugig HEC monitoring
- Mines
  - Coggins Nome Dredge Mining
  - Eskay Creek Mine (British Columbia)
  - Niblack Project Proposal
- Mitigation
  - Southeast Alaska Watershed Coalition In-Lieu Fee Program
- Research
  - USGS proposed acoustic sampling in Kachemak Bay
  - Naval Arctic Research Activities 2022-2025
- Oil and Gas Development
  - BOEM Lease Sale 258
  - National Outer Continental Shelf Oil & Gas Proposed Program
  - Willow Master Development Plan North Slope Oil and Gas
  - ConocoPhillips Colville River
- Oil Spill
  - Resources At Risk Report for the F/V Pacific Sounder
- Alaska Pollution Discharge Elimination System (APDES) - Water Quality
  - North Slope APDES General Permit
  - State-wide APDES Oil and Gas General Permit
  - Eielson AFB Heat and Power Plan
  - UniSea Wastewater Discharge Permit

The following highlights early coordination activities and EFH consultations for more substantial projects that may be of interest to the Council.

**Proposed IPOP Mine:** On September 8, 2022, the USACE denied IPOP's application for a permit to mine gold via suction dredge in Safety Sound near Nome. The proposed mine included dredging and placing fill in wetlands and estuarine nearshore environments. Total impacts from the five year mining plan includes dredging 195 acres of subtidal habitat and the disposal of approximately 4,827,161 cubic yards of material. After evaluation of all information submitted by IPOP, and all comments received from various agencies, organizations, and individuals, the USACE determined that the project proposal failed to comply with Section 404 of the Clean Water Act; in particular, the proposed project is not the least environmentally damaging practicable alternative under the Clean Water Act 404(b)(1) Guidelines (40 CFR 230.10(a)). Additionally, the USACE determined that issuance of this particular permit would not be in the public interest with regards to recreation. Our EFH consultation with the USACE was an important basis for the decision that ultimately protects extensive aquatic habitat that supports many Federally managed fishes, including Pacific salmon.

**Federal Highway Administration (FHWA):** In 2022, we reported on an anticipated increase in Federal projects funded under the Infrastructure, Investment and Jobs Act (IIJA, Public Law 117-58) over the next 5 years. We have been coordinating with the FHWA on a National Culvert Removal, Replacement, and Restoration Grant Program. Grants under the Culvert Aquatic Organism Passage Program will result in the distribution of up to \$196 million in Federal Fiscal Year (FY) 2022. Projects will be awarded on a competitive basis for the replacement, removal, repair, and improvement of culverts or weirs that would meaningfully improve or restore fish passage for anadromous fish. AK received 10 project proposals requesting funding by the deadline. HCD staff are involved in the coordination with FHWA for the review process, and are serving as technical reviewers for projects. Anticipated award date is summer 2023.

**Federal Emergency Management Administration (FEMA) Disaster Response:** Typhoon Merbok hit Alaska's west coast in September, 2022. Forty communities not connected to the road system were directly impacted. In response, FEMA received a federal disaster declaration for the State of Alaska and is initiating recovery operations. FEMA eligible projects will take place within areas that were previously developed and had existing infrastructure. Anticipated projects involve repairs to previous community infrastructure such as buildings and utilities, road repair, and damage to bridges and culverts. HCD staff have been in discussions with FEMA regional representatives regarding process, timeline and expectations of EFH consultation when needed in the future. The period to Apply for Disaster Assistance recently closed. HCD and FEMA coordination has included coordination on potential FEMA-funded projects and reviewing damage information obtained from applicants and FEMA staff.

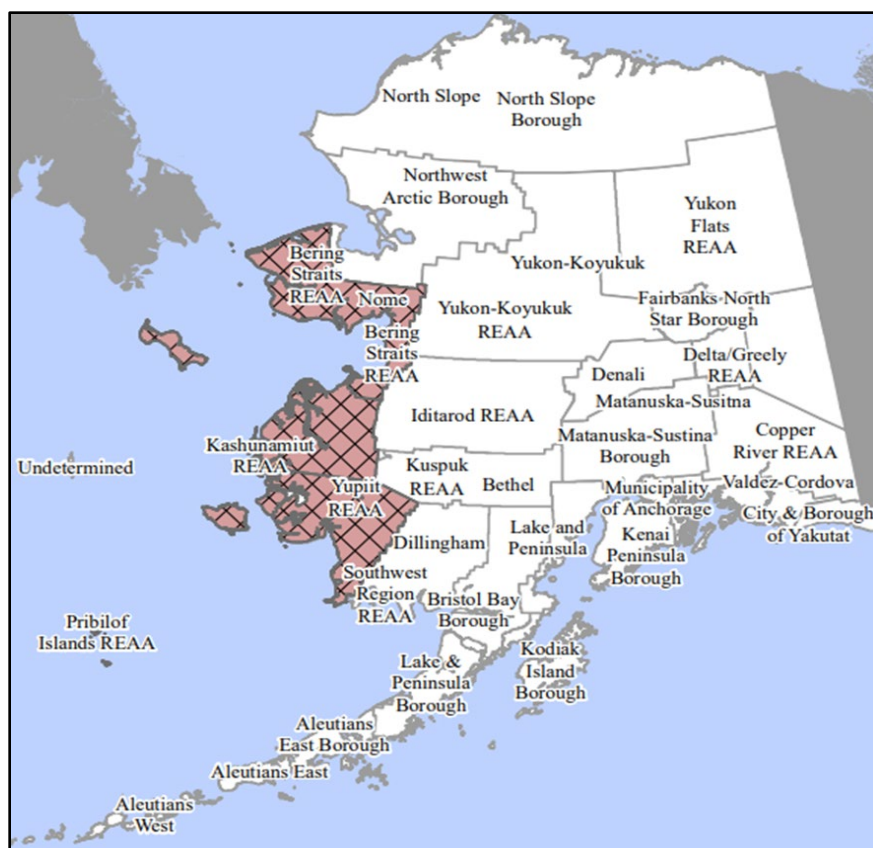


Figure 1. Map of Alaska depicting the FEMA Disaster Designated Area as a result of Typhoon Merbok. Image Credit: FEMA.

**Joint Base Elmendorf Richardson (JBER), Mortar and Artillery Training:** The United States Air Force (USAF) representing the Army, is proposing to modify conditions under which live-fire munition and weapons training (mortar and artillery fire) occurs at JBER. Current live-fire training is restricted to winter firing between November 1st and March 31st. The proposed change includes all seasons training. The down range area receiving fire is Eagle Bay estuary in Knik Arm. This area lies within designated Beluga Critical Habitat. The Council has identified EFH for groundfish and Pacific salmon in marine and freshwater phases. Beluga and Pacific salmon often occur together in the waters of Eagle Bay and Eagle River between July and November. The USAF is conducting an in depth analysis of potential physical and acoustic impacts, as well as preparing an Environmental Impact Statement, EFH Assessment, and fulfilling their regulatory responsibilities under NEPA for all aspects of Endangered Species Act, Marine Mammal Protection Act and the Incidental Harassment Authorization. Monthly meetings have been occurring and are anticipated to continue through completion in late 2023 early 2024.

**US Navy training activities in the GOA:** HCD staff reviewed the joint Supplemental Environmental Impact Statement and Overseas Environmental Impact Statement for an upcoming United States Department of the Navy (U.S. Navy) training exercise in the GOA,

referred to as Northern Edge (April to October 2023). Early coordination with the U.S. Navy ensured that the MSA regulatory requirements were met and potential adverse impacts to EFH were minimized. The U.S. Navy provided extensive habitat-related information within the consultation analysis and new, is a large mitigation area that covers the continental shelf and slope out to 4,000 meters depth with the purpose of minimizing adverse impacts to salmon and their migration routes.

### 3. Tools for EFH Consultations

We have developed tools to assist Federal and State agencies in conducting their EFH Assessments and to assist in EFH consultations.

**Alaska EFH Web Application:** We launched the Alaska EFH Web Application in December 2018. The “AK EFH Mapper” is an ESRI-powered ArcGIS online platform that hosts the complete collection of Alaska EFH maps, including the species distribution model-based maps of EFH Level 1 and 2 information for species in the Council’s Fishery Management Plans. This online map interface is intended to provide an improved, efficient, and effective way to view, search, and query EFH map information. Alaska EFH maps are also available on the National EFH Mapper, although with reduced interactive user function to query information and without ability to distinguish between EFH Levels. **We are currently working to update to the AK EFH Mapper to improve user accessibility and function of this first launch.** Alaska EFH maps are also available from our website as polygon shapefiles for GIS and R statistical software (R Core Team) users. The new set of EFH maps from the 2023 EFH 5-year Review will be added to the EFH mappers and websites following the conclusion of the Fishery Management Plan (FMP) amendment process.

**Alaska ShoreZone:** For the coastal-nearshore environment, we have the [Alaska ShoreZone website](#) with a mapping system. *ShoreZone* has mapped more than 120,000 km of shoreline in Alaska, Oregon, Washington, and British Columbia. Approximately 95% of Alaska's extensive coastline is imaged and mapped. *ShoreZone* catalogs both geomorphic and biological resources at mapping scales of better than 1:10,000. The high resolution, attribute-rich dataset is a useful tool for extrapolation of site data over broad spatial ranges for creating a variety of habitat models and oil spill response tools. Low tide, oblique aerial imagery sets this system apart from other mapping efforts of this type. You can “fly the coastline” (aerial video), view and download still photos, and access physical and biological data using this interactive website.

**Nearshore Fish Atlas of Alaska:** The Nearshore Fish Atlas of Alaska (NFAA) catalogs the distribution, relative abundance, and habitat use of nearshore fishes in Alaska. Shallow, nearshore waters are some of the most productive habitats in Alaska and the most vulnerable to human disturbance. Using a beach seine as the primary sampling method, more than 100 fish species in a variety of nearshore habitats have been documented throughout Alaska in an effort to identify EFH. This collection was expanded in 2020 with 25 new fish survey data sets from



seven organizations, including and not limited to an additional 3,800 beach seine hauls (total 5,154) and 768 nearshore trawls (total 1,017) from 1995-2018. **NMFS publicly launched the expanded version in June 2022.** The [online NFAA database](#) provides additional information and contacts.

The NFAA:

- Helps resource managers identify EFH for life stages of commercially important and forage fish species and prepare biological opinions for ESA species;
- Provides a quick reference for identifying species in areas designated for development or impacted by human disturbance (e.g., oil spill); and
- Allows resource managers to track long-term and large-scale changes in fish distribution and habitat use that may result from regional impacts of climate change.

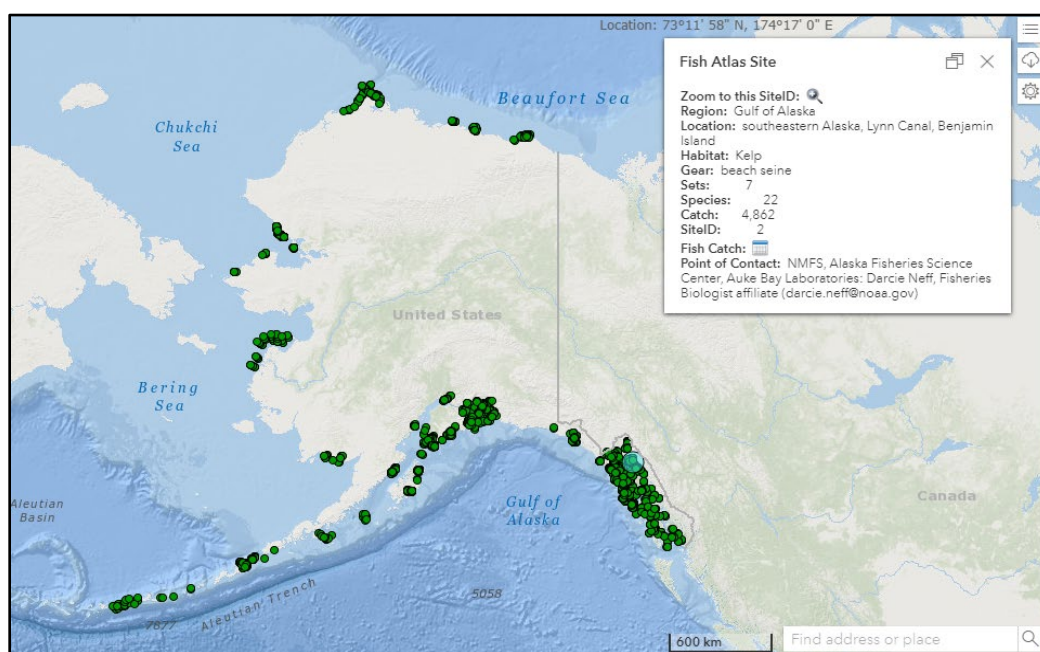


Figure 2. Nearshore Fish Atlas of Alaska expanded spatial data sampling coverage as previewed on the updated database web platform launched in June 2022.

#### 4. Updates to EFH Non-Fishing Effects Report

NMFS Alaska Region publishes the [Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska](#) (Non-fishing Impacts Report) to inform decision makers and the public on activities that may affect EFH, summaries of potential effects on fish habitat. Last published in 2017, the Non-fishing Impacts Report provides a range of EFH conservation recommendations to mitigate adverse project related effects, conserve healthy habitats, and support sustainable fisheries. NMFS habitat biologists use the non-fishing report as a reference, along with other relevant information, when reviewing proposed actions for potential effects to EFH and



developing mitigation measures. Federal action agencies also use this report as a reference when preparing the EFH Assessments in support of the EFH consultation process.

NMFS recently updated this report for component 4 of the 2023 EFH 5-year Review. We provided the updated draft report for review to the Council at their February 2023 Meeting. This report reflects the best available information and our professional experience. It is not an exhaustive assessment of total potential impacts and conservation recommendations. New information is continually being developed. Our understanding of anthropogenic activities and related impacts, especially related to greenhouse gases and climate change, is evolving.

In this iteration of the Non-fishing Impacts Report, we (1) incorporate Ecosystem-based Fishery Management (EBFM) into the context of our review and (2) expand on the climate change review by addressing consultation review guidelines, criteria, and outlining EFH conservation recommendations for large emission sources. EBFM aims to maintain ecosystems in a healthy, productive, and resilient condition to support sustainable fisheries by accounting for ecosystem interactions and considerations. Many ecosystem functions come into play when assessing effects of a proposed action, such as species interactions and the effects of environmental changes, anthropogenic impacts, including climate change, and other stressors on habitat. An EBFM approach ensures that these elements are considered to more effectively assess the effects of an action and develop the best conservation recommendations to mitigate those effects. The information, analyses, and conservation recommendations within this report reflect this commitment to EBFM.

Climate change and the associated problem of ocean acidification are impacting habitats, including designated EFH, from coastal rivers to estuaries and ocean waters. The Arctic and Alaska are experiencing climate change-related effects at a rate far greater than the rest of the planet. Climate-related effects on habitat are impacting commercial, recreational, and subsistence fishing, and associated traditional ways of life. The Non-fishing Impacts Report provides an overview of how climate change is influencing EFH in Alaska beginning with a summary of findings from the International Panel on Climate Change. We then bring the discussion to climate change effects on EFH in the Arctic, Bering Sea, Aleutian Islands, and Gulf of Alaska. Included in this discussion are climate related effects on riverine habitat and an upstream to downstream evaluation of the resultant implications. In an effort to advance the incorporation of climate related effects into our consultations, we provide guidance and criterion for including climate change effects in EFH assessments, and potential conservation recommendations for large emission sources.

## **5. NOAA's Restoration Center in Alaska**

Habitat restoration projects benefiting NOAA trust resources are seeing a boost in funding due to the IJA. Under this Act, NOAA released four Federal Funding Opportunities through the NOAA Restoration Center (RC) as well as increasing funding to Pacific Coast Salmon

Restoration Fund (PCSRF), which funds Alaska Sustainable Science Fund (AKSSF). NOAA posts all funding opportunities at the [NOAA Fisheries Funding and Financial Services homepage](#).

The 2022 funding for these opportunities included:

- [Coastal Habitat Restoration and Resilience Grants for Underserved Communities](#) \$10 million per year for five years
- [Transformational Habitat Restoration and Coastal Resilience Grants](#), - \$85 million per year for five years
- [Restoring Tribal Priority Fish Passage through Barrier Removal Grants](#)- \$12 million per year for five years;
- [Restoring Fish Passage through Barrier Removal Grants](#) - \$65 million per year for five years

In FY22 over \$5 million in fish passage restoration funds have been recommended for funding in Alaska through this program. Funded fish passage projects are located in Matanuska-Susitna Valley, Cordova, and Hope. Coastal Resilience grants are still under review. NOAA RC anticipates the release of another set of funding opportunities in FY23. Additionally the AKR and RC are providing input for Alaska projects funded under PCSRF, FHWA infrastructure funding, and National Ocean Service coastal resilience funding.



Figure 3. Fish passage culvert replacement in the Copper River Basin depicting the location of the old culvert (yellow dotted circle) with the new culvert. Photo credit: CRWP.

## 6. 2023 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 EFH components as warranted based on available information ([50 CFR 600.815\(a\)\(10\)](#)). The EFH regulations outline 10 components for the EFH contents of FMPs. NMFS and the Council prioritized the eight EFH components in bold for a comprehensive review this cycle:

1. EFH descriptions and identification
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 locations
8. Habitat Areas of Particular Concern identification
9. Research and information needs
10. Review EFH every 5 years.

NMFS and the Council launched this EFH 5-year Review in April 2019 with a presentation to the Ecosystem Committee of the preliminary plan for review of the EFH components of FMPs. NMFS started the 5-year Review with focusing on the EFH descriptions and identification because of the work required for the species distribution models (SDMs) used to create the EFH maps under component 1. From June 2020 through October 2022, this component 1 work was extensively reviewed through the Council's public processes. Stock authors and experts reviewed the component 1 and component 7 information from January 2021 to November 2021.

The new information for EFH component 1 modernizes the SDM EFH mapping approach of the 2017 Review and represents a substantial advancement. The new 2023 SDM ensembles and other methods and data improvements have reduced methods-based prediction bias leading to greater confidence in the modeling results and EFH maps. A total of 237 new and revised EFH descriptions and maps are available for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI FMP), Groundfish and Gulf of Alaska (GOA FMP), Bering Sea/Aleutian Islands King and Tanner Crabs (Crab FMP), and Fish Resources of the Arctic. The new EFH descriptions and maps include up to EFH Level 3 information on habitat-related vital rates and climate-informed mapping for the first time, while comprehensively using an SDM approach across FMPs.

The Science and Statistical Committee (SSC) reviewed the Fishing Effects (FE) model and plan for the FE evaluation in February 2022. Stock authors reviewed the FE model results, conducted their FE assessment, and provided input on data limitations by SSC request starting in April 2022. The results of the FE evaluation were presented to the SSC in October 2022. The results of

the FE evaluation support the continued conclusion that adverse effects of fishing activity on EFH are minimal and temporary in nature. The new component 2 information is available to update the BSAI, GOA, and Crab FMPs.

NMFS also revised the Non-fishing Impacts Report, as described above for component 4. NMFS also identified research and information needs for component 9 from input received throughout the EFH 5-year Review process. We are now developing a new Alaska EFH Research Plan to guide research for the next EFH 5-year Review.

A comprehensive review of each of the prioritized EFH components was presented to the Council in a Summary Report in February 2023<sup>1,2</sup> Through this iterative review process beginning in 2019, NMFS and Council staff have presented many times to the Plan Teams, SSC, Ecosystem Committee, Advisory Panel, and the Council, which provided opportunities for broad and inclusive stakeholder engagement and participation. The work supporting the 5-year Review is complete and ready to be incorporated into the FMPs through the amendment process, which NMFS and Council staff are working on at this time.

## 7. EFH Research Projects Funded in FY23

Each year, the NMFS Alaska Region and the Alaska Fisheries Science Center provide funding for EFH Research under the Alaska EFH Research Plan<sup>3</sup>. NMFS Office of Habitat Conservation (OHC) also supports Alaska EFH research through the annual EFH Innovation and Advancement request for proposals. For fiscal year 2023, NMFS is funding the following projects:

- Condition indicators for Pacific cod and walleye pollock from the eastern Bering Sea (Year 4 of 3 year proposal).
- Defining essential habitats for juvenile FMP crab species (*Chionoecetes* spp.): the importance of bottom temperature and diatom flux in defining juvenile crab abundance and condition across a warming Bering Sea (Year 3 of 3 year proposal).
- Predictive distribution models to support flexible management of Bering Sea crab fisheries: a combined modeling, field, and laboratory approach (Year 2 of a 3 year proposal).
- Northern Bering Sea effects of trawling study (NETS) (Year 1 of a 3 year proposal).
- Pacific salmon ocean life history stages next generation spatiotemporal and climate-informed EFH descriptions and maps (OHC funded; Year 1 of a 1 year proposal).

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<sup>1</sup> [2023 EFH 5-year Review Summary Report](#) (prepared for the Council's February 2023 Meeting).

<sup>2</sup> [February 2023 Council Meeting eAgenda](#) item C4 EFH 5-year Review with linked documents.

<sup>3</sup> [Alaska Essential Fish Habitat Research Plan \(Sigler et al. 2017\)](#).

## **8. HCD Accomplishments Report for FY22**

HCD's Accomplishments Report for FY22 (attached) is the twentieth annual summary report highlighting the Division's work to conserve healthy habitats in support of sustainable commercial, recreational, and subsistence fisheries. Changes to the content and format of the report over the years track the changes in how we work to accomplish our mission, the changing nature of projects that may adversely affect EFH, the heightening awareness of climate change, and the growing body of habitat science in support of EFH consultations. Feature stories include anadromous fish habitat and renewable energy, upgrades to the Mendenhall Glacier visitor center and potential effects to salmon EFH, eDNA in support of EFH consultations, implementing EBFM as an element of our work, invasive green crabs in Alaska, and much more.



# Accomplishments Report

## Alaska Region's Habitat Conservation Division

Fiscal Year 2022



Rockfish and sea urchins congregate around a large red tree coral (*Primnoa pacifica*) in the Gulf of Alaska. Photo Credit: NOAA Fisheries

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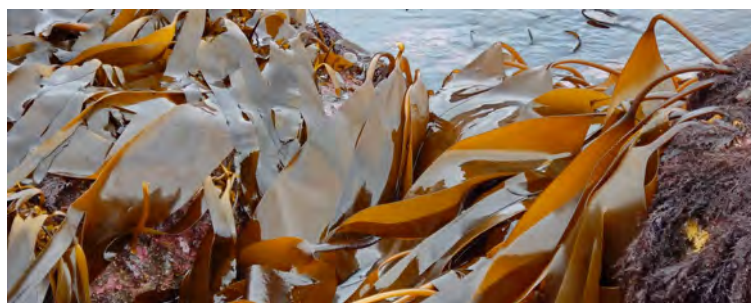
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## Our Mission

Habitat conservation, protection, and restoration are the foundation for sustaining the nation's fisheries. The Alaska Region (AKR) Habitat Conservation Division (HCD) carries out the National Marine Fisheries Service's (NMFS) statutory responsibilities for habitat conservation in Alaska under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Fish and Wildlife Coordination Act (FWCA), the National Environmental Policy Act (NEPA), the Federal Power Act (FPA), and other laws.

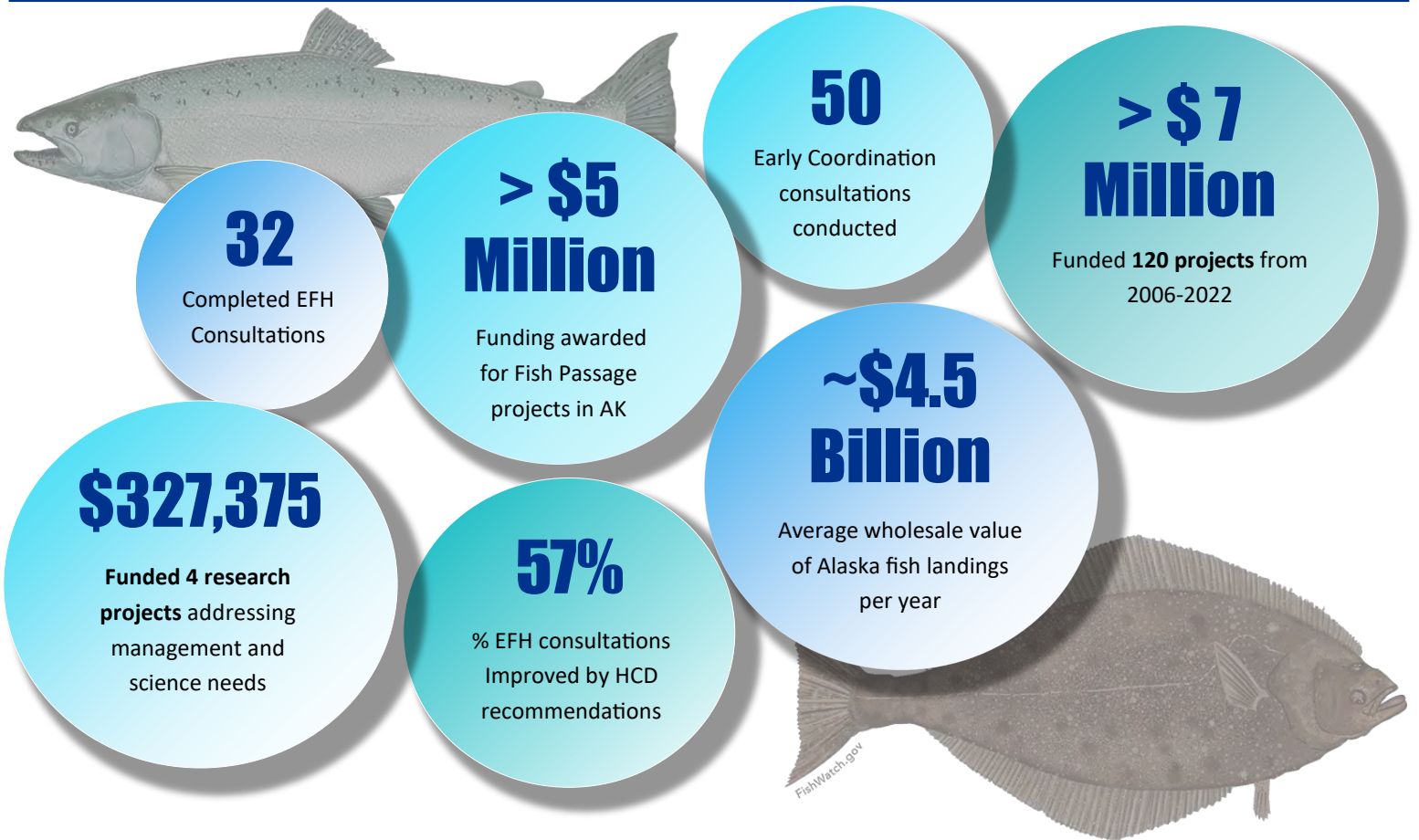
To prioritize our resources and activities, make decisions in an ecosystem context, and strengthen the science behind our decision-making, HCD works closely with the Alaska Fisheries Science Center (AFSC), other National Oceanic and Atmospheric Administration (NOAA) line offices, the North Pacific Fishery Management Council (NPFMC/Council), other federal and state agencies, non-governmental organizations, local governments, and a variety of industry and conservation groups.

The Alaska Region's mission is science-based stewardship of living marine resources and their habitat in the waters of the North Pacific and Arctic Oceans off Alaska. Responsibilities include supporting sustainable fisheries, recovering and conserving protected species, and promoting healthy ecosystems and resilient coastal communities.



Kelps, Alaska Peninsula. Photo Credit: NOAA Fisheries

# Summary of 2022: By the Numbers



## *A Message from Gretchen Harrington, ARA HCD*

The Habitat Conservation Division’s activities support NOAA Fisheries’ mission for the stewardship of the nation’s ocean resources and their habitat. We provide vital services for the nation, all backed by sound science and an ecosystem-based approach to management. In support of this mission, our team implements several federal laws: the Magnuson-Stevens Fishery Conservation and Management Act, the Fish and Wildlife Coordination Act, and the Federal Power Act, established to conserve Alaska’s marine and freshwater fish habitats. Our efforts through these mandates support culturally and economically important fisheries. After all, healthy habitats support healthy fisheries. Our staff bring diverse and valuable skills to the region to support the agency’s mission and our goals. This accomplishments report highlights the good work we completed in FY22, the diversity of activities, and the collaborations that support our goals. This is, however, just a glimpse into our work. In reality, a great deal more effort and dedication and collaboration with partners goes into attaining our goals. This was also a year of change. We said hello to one new staff member, Skylar Bayer, and said farewell to several others. With these changes comes new opportunities, new perspectives, and new directions. Those changes will undoubtedly influence our approach to achieving our goals. Enjoy reading about our work and seeing how we are changing, and that it inspires you to learn more.



## The 2022 HCD Team

- **Erika Ammann**, Fisheries Biologist, NMFS Restoration Center
- **Cheryl Barnes**, Ph.D., Postdoctoral Research Associate
- **Skylar Bayer**, Ph.D., Resource Management Specialist
- **Ashley Bolwerk**, Alaska Sea Grant State Fellow
- **LTJG Stefanie Coxe**, Resource Specialist
- **Sean Eagan**, Hydropower Coordinator
- **Charlene Felkley**, Essential Fish Habitat Coordinator
- **Bill Hines**, Marine Resource Specialist
- **Seanbob Kelly**, Fisheries Biologist
- **Barb Lake**, Administrative Assistant
- **Doug Limpinsel**, Fisheries Biologist
- **Joshua Markwell**, Administrative Assistant
- **Sean McDermott**, Supervisory Marine Habitat Resource Specialist
- **John Olson**, Fisheries Biologist
- **Jodi Pirtle**, Ph.D., Juneau Branch Chief & Deputy Assistant Regional Administrator
- **Linda Shaw**, Wildlife Biologist
- **Ellen Ward**, Ph.D., Resource Management Specialist
- **Molly Zaleski**, Resource Management Specialist

## Welcome Aboard!



**Dr Skylar Bayer** joined HCD in September. Skylar is a marine ecologist with expertise in shellfish population dynamics, aquaculture, science communication, and policy. Skylar is joining us from Roger Williams University where she was the faculty supervisor of the Shellfish Program and in 2021 as a Fulbright Scholar studied Icelandic scallops and their fishery in Iceland. Prior to that she was a postdoctoral research associate with NOAA Fisheries Milford Lab and a Knauss Marine Policy Fellow in 2018. Skylar has a PhD in Marine Biology from the University of Maine, an MS in Biological Oceanography from MIT/Woods Hole Joint Program, and a BS in Marine Biology from Brown University.



*HCD Anchorage Staff.  
 Photo credit:  
 Michael Williams*

## Fair Winds and Following Seas .....

**Dr. Cheryl Barnes** has a new position at the AFSC in the Gulf of Alaska Climate Integrated Modeling Project (GOA-CLIM). Cheryl was a postdoctoral research associate with HCD since January 2020, where she developed temporally dynamic species distribution models (SDMs) to integrate climate change considerations in EFH mapping for North Pacific species.

**Ashley Bolwerk** completed her year-long Sea Grant Fellowship with HCD. Ashley formed a pinto abalone working group and conducted a survey of attitudes about management of this species in Southeast Alaska communities. Ashley is moving on to a subsistence resources position with the US Forest Service (USFS) in Sitka. We are so appreciative of the time we had with Ashley and wish her well.

**Sean Eagan** is now working with the National Park Service at Glacier Bay National Park. Much of Sean's federal career has been with the Park Service, including American Samoa. Sean joined HCD in 2015 as a hydrologist supporting the hydropower review program.

**Joshua Markwell** moved on to train for a new career in safety management. Joshua joined HCD as an administrative assistant in May 2021 after leaving the U.S. Air Force. His time here was short but we enjoyed getting to know him.

**Dr. Jennifer Marsh** is continuing her research on Arctic fish communities with the University of Alaska Fairbanks. Jen was a postdoctoral research associate with HCD since January 2020, where she developed Arctic species SDMs to support EFH mapping for the 2023 5-year Review.

**John Olson** is now working with the Army Corps of Engineers Civil Works program. John joined HCD in 2000 working primarily on EFH consultations and fishing effects assessment.

**Dr. Ellen Ward** has moved to NOAA's Office of International Affairs in Washington, DC. Ellen joined HCD in June 2020 working on EFH consultations, climate action and fish habitat partnerships. Notably, she studied muskrats as an ecohydrologic indicator species (e.g., muskrat in the wetlands).

# Goal #1 Identify and pursue opportunities to conserve and restore marine and anadromous water habitats.



*Allison Creek Hydroelectric Project in Valdez, AK. Photo Credit: Copper Valley Electric*

## Anadromous Fish Habitat and Renewable Energy

Anadromous fishes provide a number of ecological functions and values, functioning as prey in freshwater food webs and as important sources of marine derived nutrients to freshwater and terrestrial habitats. Pacific salmon, as an example, are significant to commercial, recreational, and subsistence fishing, and hold significant cultural value.

In Alaska, climate change is impacting the livelihoods and cultures of local communities. The ability to reduce the state's carbon footprint is critical. Hydropower development provides a renewable energy alternative to diesel generation for many remote Alaskan communities. However, it may also affect the accessibility of habitat for anadromous fishes that support those communities. NOAA Fisheries reviews and provides technical expertise for many hydropower projects in

Alaska with the goal of protecting anadromous fishes and their habitat while supporting the responsible development of hydropower generation. Conserving and protecting diverse anadromous waters (riffles and pools, sediment composition, groundwater seeps, etc.) supports species resilience as climate change increase water temperatures or alter flow patterns. One example of successfully striking a balance between anadromous fish, their habitat and hydropower generation is the Allison Creek Hydropower Project in Valdez.

In 2016, Copper Valley Electric completed construction of this run-of-river hydropower facility on Allison Creek, which is habitat for coho and pink salmon. During licensing, HCD recommended run of river flow operations, minimum flows in the bypass, and screening to prevent false attraction at the tailrace to avoid adverse effects on salmon habitat. We also recommended monitoring of flow conditions and fish populations during operations. Our involvement was also instrumental in designing a monitoring plan. The Project is a win-win as demonstrated by 10 years of monitoring of the salmon in Allison Creek. Valdez now has 6.7 megawatts of renewable hydropower, allowing them to avoid burning 700,000 gallons of diesel annually, and the salmon runs from 2016 to 2021 were similarly robust to the salmon runs before the project was constructed.

### OTHER GOAL #1

#### **Dixon Glacier Hydropower Amendment and Bradley Lake Hydroelectric Project:**

The Bradley Lake Project (est. 1991) is the largest renewable energy project in Alaska. Alaska Energy Authority (AEA) proposed a license amendment to the Bradley Lake Project to capture water as the Dixon Glacier melts to support consistent power generation. Half of Dixon Glacier is located within Kenai National Wildlife Refuge and Kenai Wilderness. AEA held an initial meeting in February 2022 to describe design options. The glacial meltwater will be captured in a diversion basin and either piped one mile downhill to a new power station on Martin Stream, or five miles north to Bradley Lake reservoir. AEA anticipates generating an additional 55 megawatts of power from the glacier water for a ten percent increase in Alaska's hydropower capacity. Since the bypass reach is a narrow gorge that was under the glacier a few years ago, the effects to fish habitat will be downstream. We anticipate as much as seven miles of riverine habitat will be affected by the diversion. HCD provided study requests as part of the federal license amendment process to assess potential effects to salmon habitat for spawning, rearing, and migration. Our involvement influenced the studies that will be completed and supported collaboration among the state and federal resource agencies.



*Martin River valley, Kenai National Wildlife Refuge. Photo Credit: Sean Eagan*



## OTHER GOAL #1

**Robe Lake Ecosystem Restoration Project:** Seanbob Kelly and Erika Ammann (NOAA Restoration Center) met with state and federal resource agencies, the USACE, and Native Village of Tatitlek representatives to discuss the Robe Lake Ecosystem Restoration Project study process. This project is part of the USACE’s Section 206 Ecosystem Restoration program. The quantity and quality of Pacific salmon habitat at Robe Lake has decreased significantly since the 1950s when dikes were constructed to abate floods. The dikes reduced the inflow of water to Robe Lake, resulting in increased water temperatures, vegetative growth, and anoxic conditions during winter. The planning meeting provided an opportunity to define problems and identify objectives. HCD staff plans to remain involved in this restoration project.



**Alaska Regional Response Team ARRT:** Oil spills are a recognized potential stressor to marine life worldwide. Toxic components of oil negatively impact EFH and the fitness of marine animals. Seanbob Kelly participates in the NOAA Fisheries Oil Spill Response Team by coordinating with other Regional Divisions. During oil spill responses and drills, HCD provides information on EFH and habitat areas of particular concern (HAPC) in a report known as the resources at risk. The HCD team is present at the oil spill response and preparedness meetings. These meetings are well attended by the public, tribal governments, and state and federal agencies including the U.S. Coast Guard, the Environmental Protection Agency, and the Alaska Department of Environmental Conservation. During these meetings we review the latest reports from across the state, discuss our accomplishments including the new [Alaska Regional Contingency Plan](#), and learn how to incorporate Indigenous Knowledge into decision making. We also receive briefings from the Bureau of Safety and Environmental Enforcement and U.S. Coast Guard Sector in Anchorage about the development of Response Information for Offshore Oil Spills in our Area Contingency Plans.

# Goal #2

## Provide EFH conservation recommendations that maximize mission-critical benefits for Federally managed species and their habitats.

### Mendenhall Glacier Visitor Facility Improvements Project

The USFS proposed a large-scale project at the Mendenhall Glacier Visitor Center at Juneau. As proposed, the project would redirect Steep Creek, expand parking, and fill wetlands to create new trails along the lakeshore. New boat docks would be constructed and would allow motorized vessels on Mendenhall Lake to accommodate an expected increase of tourists and an expected decrease of glacier views. Molly Zaleski and Linda Shaw toured the Mendenhall Glacier Visitor Center with USFS staff and USACE representatives.

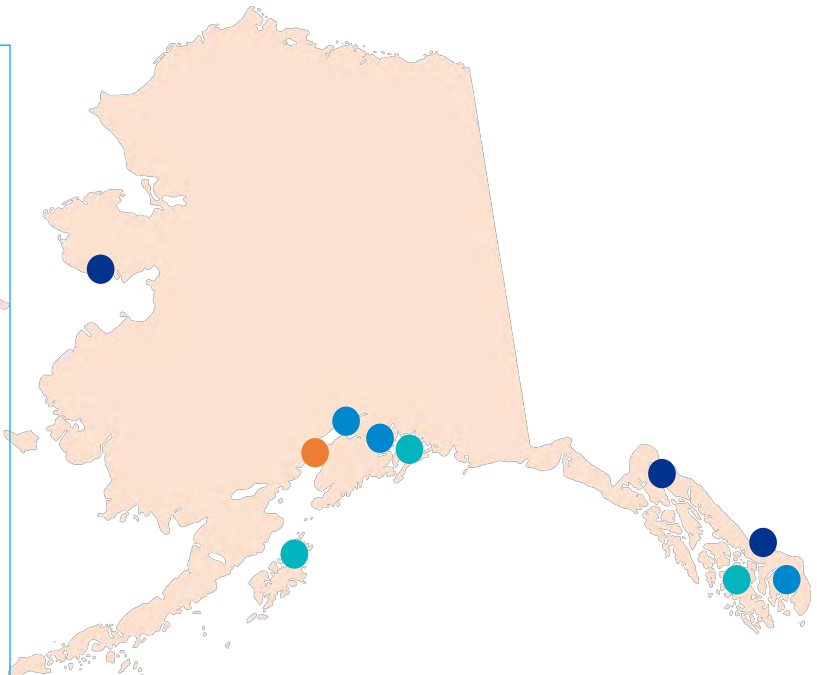


*Representatives from HCD, the USFS, and the USACE discuss possible changes to the Mendenhall Glacier Visitor Center and surrounding area (10/14/21). Photo Credit: Molly Zaleski*

HCD staff also reviewed the USFS draft EFH assessment and draft Environmental Impact Statement (EIS). Our comments highlighted data gaps pertinent to salmon EFH, outlined possible impacts to EFH from the proposed actions, and offered conservation recommendation (CRs). Our recommendations focused on the sockeye and coho salmon EFH in the area. We also recommended that the USFS consider potential adverse impacts of invasive vegetation species on aquatic and riparian habitats in the watershed. Our input was well received and appreciated for improving the clarity and transparency of the review process.

**OTHER GOAL #2: Projects by Location:** HCD engaged in early coordination and consultation on many proposed projects potentially impacting EFH in 2022. We provide notable accomplishments from our non-fishing effects consultations in this section.

**Transportation Corridors:** 1) Stefanie Coxe provided CRs for a proposed **Whittier Cruise Terminal** project. The purpose is to perform a geotechnical survey to support designs for a cruise ship docking facility. These CRs to protect salmon and submerged aquatic vegetation are a continuation of early coordination that started in July. 2) Seanbob Kelly met with PRD's **Port of Alaska Cargo Terminal** project team to ensure any CRs put forth or requirements will benefit our trust resources and not conflict with each other. Proposed construction may begin in 2025 or 2026 and last 5 to 7 years. EFH assessment is a long way out for the proposed project but early coordination ensures best outcomes. 3) Seanbob Kelly completed the review of the **Tongass Highway Pavement Rehabilitation Project** with a formal letter. The purpose is to enhance the safe movement of vehicles, bicycle, and pedestrian traffic by widening the highway south of Ketchikan, Alaska, in the Tongass Narrows. The project would fill 2.67 acres of EFH across approximately 4,000 linear feet of shoreline habitat currently impacted by the existing road. Proposed mitigation would restore fish access to an anadromous stream; thereby, restoring EFH.



**BOEM:** 1) Doug Limpinsel and Jill Seymour (Protected Resources Division or PRD) provided comments to NOAA Headquarters on the Bureau of Ocean Energy Management (BOEM), 2023-2028 National Outer Continental Shelf Oil and Gas Leasing Program report and the National Programmatic Draft EIS. They compiled comments submitted from regional subject matter experts from AKR and AFSC to better inform BOEM's national process. 2) In a separate exercise, Doug Limpinsel and Ellen Ward provided pre-scoping comments regarding the Cook Inlet Lease Sale 258. HCD recommended BOEM better represent their greenhouse gas emission's analysis. BOEM and HCD plan to discuss improving their understanding of the Cook Inlet marine ecology.

**Kelp and Oyster Aquaculture Farms:** Molly Zaleski provided CRs to Alaska Department of Natural Resources (ADNR) and the USACE for **15 proposed kelp, oyster, and/or multitrophic aquaculture farms**. Most CRs were provided informally during early coordination with ADNR or without needing an EFH assessment. Some formal letters focused on the larger footprint created by permitting multiple farms in a single bay. That concern was echoed by USFS. In most CRs, the [Alaska Aquaculture Permitting Portal](#) was highlighted as a useful tool for permit applicants. They are in the planning process for potential future farms, and we saw this as a useful way to be proactive and front-load the consultation process.

**Mines:** 1) **IPOP proposed to mine for gold in the Bonanza Channel of Safety Sound near Nome.** Total impacts from the five-year mining plan are dredging 195 acres and the disposal of approximately 4,827,161 cubic yards of material. The proposed mine included dredging and placing fill in wetlands and estuarine nearshore environments. HCD provided concerns and CRs based on best available science. In September, USACE denied the application for a permit. 2) The USFS issued its record of decision to raise **Kensington Mine** tailings dam by 36 feet to accommodate 10 more years of mine tailings storage. If this dam were to fail, a significantly larger area of fish habitat in Berners Bay will be covered in mine tailings compared to spillage at its current capacity. We advocated for a dry stack tailings pile similar to Green's Creek Mine. 3) **Transboundary Mining Interagency Working Group:** Molly Zaleski is the technical advisor on the proposed Eskay Creek Mine in British Columbia. The largest risks are two proposed tailings dams. If failure occurs, this would impact the Unuk River. HCD highlighted the downstream and transboundary impacts to EFH from mining operations in B.C.

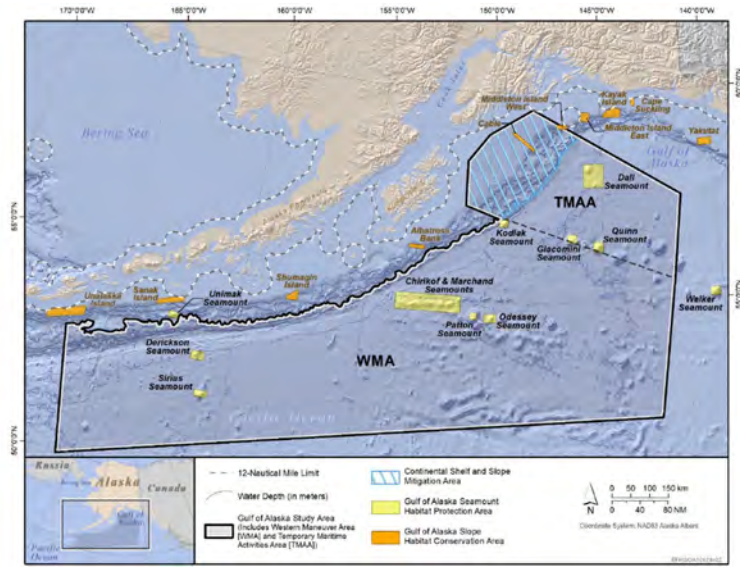


*Bonanza Channel at Safety Sound near Nome. Photo credit: The Nome Nugget*



OTHER GOAL #2: Department of Defense

**US Navy training activities in the Gulf of Alaska (GOA) 2023:** Charlene Felkley reviewed the GOA SEIS/OEIS for an upcoming United States Department of the Navy (U.S. Navy) training exercise, referred to as Northern Edge (April to October 2023). Early coordination with the U.S. Navy ensured that the MSA regulatory requirements were met and potential adverse impacts to EFH were minimized. The U.S. Navy provided extensive habitat-related information within the consultation analysis and new, is a large mitigation area (see map) that covers the continental shelf and slope out to 4,000 meters depth with the purpose of minimizing adverse impacts to salmon and their migration routes.



**Arctic Research Activities in the Beaufort and Chukchi Seas 2022-2025:** Charlene Felkley consulted on an Office of Naval Research project to be conducted September 2022 to 2025. The purpose of this project is to conduct Arctic Research Activities in the Beaufort and Chukchi Seas to test the feasibility of using a field of active acoustic sources as navigation aids to unmanned vehicles collecting oceanographic and ice data under ice-covered conditions. Activities in the Arctic include gliders, research vessel activities, moored and drifting sources, and on-ice measurement systems.

# Goal #3

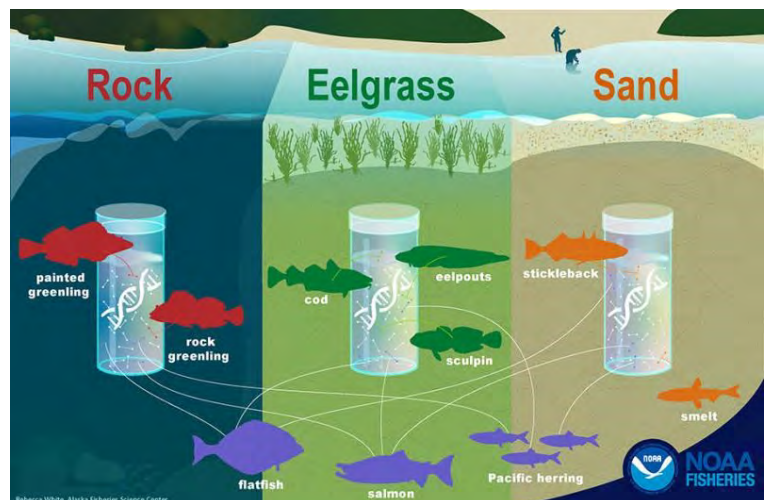
Use the best available science to conduct EFH reviews and consultations that support sustainable fisheries, healthy marine ecosystems, and resilient coastal communities.

## eDNA Pilot Projects

In 2022, HCD encouraged the use of environmental DNA (eDNA) and NOAA Fisheries' expertise in this area to support pilot projects applying this method in Alaska. Moreover, eDNA data can be used to ground truth our EFH maps in data-poor areas that depend on model predictions and lack survey or sampling information.

- ◇ The USACE was asked by the Village of Solomon to conduct baseline fish and wildlife surveys in the surrounding wetlands of Nome, Alaska. To enhance USACE's project, HCD proposed eDNA as a sampling method. In response to USACE interest in setting up a rural eDNA pilot project, HCD coordinated a team composed of AFSC scientists, USACE, and local stakeholder members to collect eDNA data for nearshore fish near Solomon and Akun. USACE has collected eDNA from two locations in rural Alaska, several times during the summer and fall field seasons. Results are expected in 2023. Results and methods of these projects will be a template for future nearshore eDNA research collaborations with the USACE in Alaska.
- ◇ HCD staff collaborated with the Chilkoot Indian Association's [regional monitoring project](#) where water samples were collected in the Chilkoot River for environmental DNA (eDNA) analysis to track eulachon run timing.

HCD published a [web story](#) to demonstrate how eDNA metabarcoding can be used to characterize nearshore fish communities in a high-latitude marine environment. These ecosystems are influenced by large tidal swings, strong currents, and significant freshwater input from large rivers, rain, and snowmelt.



All organisms shed DNA into the environment. Environmental DNA (eDNA) can be used to determine the identities of the fish species that are present at or near the time of sample collection. Photo Credit: NOAA Fisheries

### OTHER GOAL #3: Increasing Information Accessibility

**New HCD Letters Database:** Ten HCD staff finished entering over 1,200 letters from the last 22 years into our internal database. Staff can now extract and query letters in multiple ways including by topic, date, author, or state/federal tracking number. Special acknowledgement to Linda Shaw, an excellent letter writer, who has written more letters with EFH CRs than any other living person in Alaska.

**Nearshore Fish Atlas of Alaska Database:** The [Nearshore Fish Atlas of Alaska \(NFAA\) database](#) was updated in FY21 to include a 5-fold increase in data holdings, including additional gear types, locations, and surveys from many contributors. In June 2022, HCD and AFSC staff updated the NFAA database website with user function and accessibility improvements such as new and streamlined query tools and results export, ability to download the whole database, and user guide. Darcie Neff and Mandy Lindeberg (AFSC Auke Bay Labs) walked us through the new website to get nearshore species and habitat information to inform EFH consultations and other Ecosystem-based fisheries management (EBFM) information needs. The project to update the NFAA data holdings and website was funded by the Alaska EFH Research Plan.

**Alaska EFH Mapper Upgrade:** The [Alaska EFH Mapper website](#) that was launched in 2019 has received an upgrade. The work in 2022 by Information Services Division and HCD improved user function and accessibility. Upgrades will allow the new Alaska EFH maps to be installed following the 2023 EFH 5-year Review. HCD informed user-need improvements before project launch and during a beta testing phase. We look forward to the updated website launching in early 2023 and sharing this with our partner agencies!

**Fisheries Information System Proposal Funded:** Improving the management, security, and accessibility of HCD's spatial data assets, including nearshore fish habitat and EFH datasets, is a priority under our strategic divisional goals. HCD submitted a proposal to the Fisheries Information System FY23 request for proposals to work with a cross-divisional team within AKR and AFSC to 1) implement a data archival pathway for our spatial data assets with the National Centers for Environmental Information (NCEI), and 2) build a new and internally managed NMFS Alaska Nearshore Data Portal from existing and growing datasets - ShoreZone, Shore Station, and Nearshore Fish Atlas - and plan for future integration of new datasets. This work is supported in part by AKRO discretionary funding and work will begin in early 2023.

**Alaska Coastal Mapping Strategy:** The Alaska Mapping Executive Committee ([AMEC](#)) coordinates the modernization of critical geospatial data and mapping products for Alaska with participants from 15 Federal agencies. AMEC's Coastal Mapping Subcommittee has developed the [Alaska Coastal Mapping Strategy Implementation Plan 2020-2030](#). This plan outlines a 10-year strategy for mapping the coast of Alaska in support of the US economy, security, and environment. In 2022, the subcommittee included Ellen Ward and Jodi Pirtle.

# Goal #4

## Provide habitat expertise based on the best available science to improve habitat conservation and facilitate EBFM.

### Ecosystem-based Fishery Management (EBFM)

HCD coordinates and shares habitat information with EBFM activities as an ongoing element of our work.

Through these activities we have integrated applied habitat science in

EBFM to enhance NMFS mission effectiveness, including developing an on-ramp to integrate habitat information into stock assessments (e.g., Shotwell et al. 2022), and dynamic species distribution modeling methods to identify climate change effects on EFH and spatial stock structure with a case-study in the Bering Sea (e.g., Barnes et al. 2022). Additional work to develop and support direct communication pathways from habitat science conducted to management implemented is an ongoing priority for HCD and NMFS AKR.

Jodi Pirtle is on the NOAA Fisheries EBFM Working Group and AKR EBFM Team with regional office and AFSC staff. In 2021 the EBFM Working Group published a NOAA Technical [Memorandum](#) that identified ways to integrate Ecosystem Status Reports with achieving other EBFM milestones that improve connections with fishery management practices.

The NPFMC hosted the 7th national meeting of the Scientific Coordination Subcommittee (SCS7) in Sitka, Alaska. The meeting addressed challenging and timely fishery management issues and was well attended by SSC delegates and staff from all eight Regional Fishery Management Council SSCs, as well as NMFS Headquarters. Jodi attended and participated in work sessions over the three day meeting. The SCS7 focused efforts on developing recommendations for the following topics: How to incorporate ecosystem indicators into the stock assessment process, Developing information to support management of interacting species in consideration of EBFM, and How to assess and develop fishing level recommendations for species exhibiting distributional changes.



*Fishing for groundfish, Alaska. Photo Credit: Molly Zaleski*



**OTHER GOAL #4: Climate is a fundamental concern in assessing EFH. We have provided habitat expertise specifically in the area of climate change in several different ways this year.**

⇒ Cheryl Barnes, Jodi Pirtle and others investigated climate-informed SDMs in a Bering Sea groundfish case study. We developed and published SDMs with differing temporal scale and variability and compared skill in hindcasting and forecasting species distributions. Jen Marsh, Jodi Pirtle, and others have been developing SDMs and revised EFH maps for Arctic fish and crab species for the current 5-year Review. The Arctic species work examines interannual variability in the spatial distribution of species' EFH area and habitat-related vital rates as a first step to consider climate change effects on EFH. These advancements in habitat science inform good approaches in detecting habitat-related species distribution shifts in a changing ecosystem to support EFH conservation and EBFM.

⇒ Ellen Ward was an important part of climate change work in HCD this year, serving as an Agency Chapter Lead for NOAA on the Alaska chapter, helping to draft the fifth National Climate Assessment (NCA5). Ellen Ward collaborated with Greater Atlantic Regional Fisheries Office to review a training she had developed for the climate change portion of NOAA's new Mitigation Policy for Trust Resources. Ellen Ward also presented on the topic of mitigating climate change impacts on EFH in Alaska at the American Fisheries Society meeting. All of her efforts in this arena are applied at the national level through the National EFH Climate Policy.



**OTHER GOAL #4: Over the last year, the HCD and AFSC teams were engaged in Council Committees and presented current progress on habitat science to the NPFMC, their Groundfish Plan Teams, the Crab Plan Team, Ecosystem Committee, and the Scientific and Statistical Committee.**

**Ecosystem Committee Initiatives:** Gretchen Harrington was on the NPFMC's Ecosystem Committee and supported their FY22 focus areas including the Bering Sea Fishery Ecosystem Plan Team; the Local Knowledge, Traditional Knowledge, and Subsistence Taskforce; the Climate Change Task Force and other important ecosystem-related initiatives. The Committee developed recommendations for the Council to continue these initiatives, highlighting a need to be inclusive and receptive to individual perspectives while applying ecosystem/climate data to inform decisions.

**Fishing Effects Evaluation Launch:** Stock assessment authors and species experts evaluated results from the 2022 fishing effects model for groundfish and crab species with an FMP in the Gulf of Alaska, Bering Sea, and Aleutian Islands. This process focused on species with a greater than or equal to 10% reduction in their core EFH area and/or species below minimum stock size thresholds, which continued the SSC's 2017 Review approach. The process was presented to groundfish stock authors at the Fishing Effects Evaluation launch and to crab stock authors during the Crab Plan Team (CPT) meeting. Molly Zaleski, Jodi Pirtle, Gretchen Harrington, Sarah Rheinsmith (Council), and Scott Smeltz (Alaska Pacific University) played an important role in evaluating effects, answering questions and addressing concerns the stock authors and CPT had. Molly Zaleski and Scott Smeltz presented an evaluation of the fishing effects results to the CPT and the Joint Groundfish Team, receiving valuable feedback and preparing for the [2022 SSC meeting](#) to inform the Council and share habitat expertise.

## Essential Fish Habitat 5-year Review

At the [November 2021 meeting](#), Jodi Pirtle presented the iterative review process for EFH component 1 (descriptions and identification) and component 7 (prey of EFH species) with focus on the recently completed stock assessment author review of current and new information in development for these EFH components with EFH analyst responses.

Molly Zaleski, Gretchen Harrington, and AFSC team members Ned Laman, Jeremy Harris, and Jim Thorson supported the presentation and draft report of the stock assessment author review. Stock assessment authors provided helpful input to strengthen this work, in particular for the EFH component 1 new ensemble species distribution models and EFH maps. Their review furthered collaboration between stock assessment scientists and EFH analysts developing habitat science for species managed under an FMP.

Jodi Pirtle, Ned Laman (AFSC), and John Olson presented to the Ecosystem Committee meeting and to the SSC ([January 31 - February 4](#)). A team from HCD and AFSC have developed 224 new and revised EFH Level 1, 2, and 3 descriptions and maps for 211 species' life stages in three FMPs and the complete collection of new EFH component 1 information available for the 5-year Review was presented at these meetings (new EFH SDM [Discussion Paper](#)). The fishing effects evaluation was also updated since the 2017 EFH 5-year Review and a plan for addressing EFH component 2 Fishing Effects was presented at this meeting (new EFH fishing effects [Discussion Paper](#)).

The 2023 EFH 5-year Review process is ongoing with anticipated completion in 2023.



*Molly Zaleski presenting the stock author fishing effects evaluation results to the September Joint Groundfish Plan Teams meeting in Seattle, WA. Photo Credit: Gretchen Harrington.*



# Goal #5 Participate in partnerships within and outside of NOAA that advance habitat conservation.



*Invasive Green Crab. Photo Credit: Linda Shaw*

## Invasive Green Crab in Alaska

Linda Shaw, AKR Invasive Species Coordinator, and other HCD staff worked to prevent the spread of invasive green crab in Alaska through shared stewardship and perseverance. Green crab has implications to NOAA trust resources, including predation on juvenile salmon, competition with juvenile Dungeness crab, and destruction of eelgrass beds. British Columbia and three western states reported increased populations of this invasive species at a Pacific States Marine Fisheries Commission West Coast Green Crab Meeting in December 2021.

Prior to the crab's arrival in Alaska, Linda Shaw collaborated on several grant proposals to find funding for early detection efforts in southern Southeast Alaska. Shaw, along with AKR's graphic designer (Paul Irvin), and AKR's Administrative Assistant (Barb Lake) created a green crab identification outreach sign for posting at beaches in Alaska. The

team later worked with the Washington State University Extension Tribal Liaison and U.S. Department of Agriculture to customize the sign for the Metlakatla Indian Community (MIC) with local contact information. Alaska's MIC Department of Fish and Wildlife (DFW) provided baseline data in their 2021 report showing no green crab were caught by trapping. On July 19, 2022, the first evidence of the invasive green crab in Alaska was discovered by a team composed of folks from MIC-DFW, HCD, and Sealaska Heritage Institute intern Natalie Bennett during a carapace survey at Colby Creek Estuary on Annette Island. By December, the MIC-DFW had captured 750 live green crab in the estuary and outer shores of the island. MIC-DFW have continued collecting eDNA samples for early detection of invasive green crab elsewhere on the island, increased trapping efforts in the estuary and outreach with community members. We recognize and support these efforts and promote the diversity and inclusion goals of the AKR as these many collaborations and partnerships have resulted in information sharing and ideas for future efforts with plans to continue to work together on these ongoing invasion issues.

## OTHER GOAL #5

**Southeast Alaska Fish Habitat Partnership (SEAKFHP):** NOAA partners with SEAKFHP. Molly Zaleski and Erika Ammann regularly attend their meetings. Topics covered monthly range from funding opportunities, research updates, to new resources for coastal or freshwater fish habitat information. Examples of the resources that have been produced from this partnership include the updated [Conservation Action Plan](#) to celebrate accomplishments and prepare new goals, a new [wetland mapping tool](#), the [Seacoast Trust](#), stream restoration project updates ([video](#)), and a nod to the National Fish Habitat Partnership's 2021 Waters To Watch [list](#), which includes Alaska's Jordan Creek and Eklutna River.

**Oil Spill Response and Preparedness Coordination:** HCD participated in Arctic and Western Area Committee Meeting and Industry Day to discuss oil spill response and preparedness organization and contingency planning alongside the Coast Guard, Federal agencies, and industry. We also commented on the Arctic and Western, and Prince William Sound draft Area Contingency Plans. Participating in planning meetings is a good way to maintain our relationship with partners and allows our objectives to be built into projects.

### Abalone Working Group:

Sea Grant Fellow, Ashley Bolwerk, led a meeting in February, 2022, to form an abalone working group in Southeast Alaska. Several organizations joined to hear about the goal and share their interests. External



*Pinto abalone. Image Credit: NOAA Fisheries*

partners lead a discussion about efforts that used community engagement to advance outreach and education, monitoring and conservation of abalone. One method, abalone "condos", crab pots filled with concrete blocks, were found to be used by both juvenile abalone and rockfish. Ashley Bolwerk went to Hoonah and Prince of Wales Island to conduct community outreach and connect with tribal and community partners. This working group provides an opportunity to exchange ideas for the future of abalone.

**Department of Transportation (DOT) EFH Coordination:** Molly Zaleski and Sean Eagan met with the Alaska DOT to review EFH Assessment information needs and a draft DOT template intended to streamline the process and frontload anticipated EFH conservation recommendations with project managers.

# Goal #6 Improve our organizational excellence and cohesion by integrating the AKR Shared Values with our workplace interactions and products.

## HCD Awarded Team of the Year

HCD received the Alaska Region’s Team of the Year for our successful completion and continued dedication to the Team Development Program (TDP). Alaska Region Senior Leadership Team (SLT) sponsored HCD to pilot TDP in 2021 to embed the culture of the AKR Way in the way we work, build capacity around team effectiveness, and promote purposeful individual learning and growth. We engaged in TDP training and action-based learning and sustained our momentum in 2022 by integrating the learning in our day to day work with very encouraging results. Jodi Pirtle was instrumental in making this training happen. When training was complete, she created the HCD Team Development Toolbox, compiling all the training tools in one place for other Divisions to use. She then transferred the TDP to the organization with an SLT workshop, Management Team presentation, and OMD consultation.



Alaska Region’s Team of the Year award. Photo Credit: Gretchen Harrington

Over the past few years, NOAA Fisheries’ AKR has been committed to a Change Strategy that enables us to collectively transform how we think about our culture, shared values, work norms, and overall performance. As we strive to capitalize on our strengths, we also recognize the need to build this vision through team-based training and development that will foster better relationships, enhance team working skills, and produce more effective solutions to meeting organizational and divisional goals. The TDP is a 6-month, high-impact training program designed to provide team members new knowledge, skills, tools, insights, and experiences to work more effectively together to deliver enhanced results and mission-performance. The design of the TDP enabled opportunities for there to be a ‘Leader in every Chair’ - we are all responsible and accountable for co-creating the team that we want to be.

As team members, each of us has an integral role in co-creating our team’s future. By engaging in the TDP, we empowered staff to work together and produce high quality results to meet our HCD Goals and enhance mission-performance. Key outcomes of the TDP for HCD include:

### Tools to become a high functioning team:

- Empowering individuals to lead
- A greater sense of community and job satisfaction
- More efficient, innovative, and strategic communication in our work
- Continued learning and growth as individuals and as a team
- Being a team model and providing a pathway for others in NOAA

Since completing formal training in September 2021, we continue to integrate our learning in all that we do; innovating, adapting, and growing as individuals and a collective team; and celebrating our success! We look forward to other AKR teams to be inspired and adapt this training in ways that work for their path to furthering AKR’s organizational excellence.



Our shared values are essential and guiding principles for all the work we do. Image Credit: Paul Irvin, NOAA Fisheries

**OTHER GOAL #6: HCD and The AKR Strategic Plan**

**Strategic Planning and Collaboration:** The purpose of the AKR Strategic Plan is to identify important areas for improvement based on feedback. *Consultations* is an area that has been identified. Three objectives within the AKR Strategic Plan direct improvements in how we work together with those who rely on consultations to fulfill our mission.

*“PRD and HCD have created a great working group to improve processes. Improvements we are making will ripple through and enhance communication and relationships with action agencies.”*

*-Bonnie Easley-Appleyard, PRD*

HCD and PRD have created a steering committee to strive toward these three objectives. Accomplishments of this committee and staff include creating measures to track progress, creating the process to gather input from action agencies post-consultation,

increasing our cross-programmatic communications, increasing our cross-training opportunities, and improving coordination. How HCD and PRD collaborate, share information, and grow with our employees is critically important to reach our mission.

Jodi Pirtle and Gretchen Harrington are leading two objectives in a cross-divisional effort focused on EBFM and climate change. This work will enable NMFS AKR to more effectively meet EBFM priorities and become operationally adaptive and responsive to management needs regarding climate change and other global changes.

**It’s All in the Details:** From September 2021 to December 2022, Charlene Felkley completed the Strategic Planning Coordinator detail, an assignment that fosters learning culture through employee development. Assigned to the Regional Office and working alongside SLT, she developed a [new AKR 5-year strategic plan](#) that embeds AKR Change Strategy, aligning resources with our highest priorities. Charlene completed this detail by providing coordination with the strategic planning contractor, SLT, and many AKR personnel. She convened several teams to support development of Strategic Plan objectives, measures and initiatives; reported regularly on the project and progress through the region’s internal weekly report, Soundings, intranet page, Directorate meetings, region-wide Strategy Review Meetings and all-hand meetings; and created [the dashboard](#) to monitor and easily communicate progress of the Strategic Plan.

Charlene volunteered for this opportunity to grow her understanding of the AKR’s mission, policies, and the work we do, develop new skills, and assist in efforts to improve our Strategic Plan. She will bring these experiences and skills back to HCD, broadening the division as a whole.

# Publications, Presentations, and Outreach

## PUBLICATIONS

- Barnes, C.L., Essington, T.E., Pirtle, J.L., Rooper, C.N., Laman, E.A., Holsman, K.K., Aydin, K.Y., and Thorson, J.T.** 2022. Climate-informed models benefit hindcasting but present challenges when forecasting species–habitat associations. *Ecography*: e06189. <https://doi.org/10.1111/ecog.06189>.
- Merkle, B.G., Valdez-Ward, E., Shukla, P., and SR Bayer.** 2022. Sharing science through shared values, goals, and stories: An evidence-based approach to making science matter. *Human-Wildlife Interactions* 15(3), Article 27. DOI: <https://doi.org/10.26077/9wss-av78>
- W. Morrison, T. L. Rankin, S. A. Oakes, C. J. Harvey, S. Lucey, E. Keiley, M. Mackey, K. Abrams, and K. Osgood (editors).** 2022. Investigating and Improving Applications of Ecosystem Status Reports in U.S. Fisheries Management. Report from a 2021 Workshop organized by the National Marine Fisheries Service Ecosystem-Based Fisheries Management Working Group. U.S. Dept. of Commerce., NOAA. NOAA Technical Memorandum NMFS-OSF-11, 44 p.
- Lynch, A.J., Thompson, L.M., Morton, J.M., Beever, E.A., Clifford, M., Limpinsel, D., Magill, R.T., Magness, D.R., Melvin, T.A., Newman, R.A. and Porath, M.T.,** 2022. RAD adaptive management for transforming ecosystems. *BioScience*, 72(1), pp.45-56. <https://doi.org/10.1093/biosci/biab091>
- Shotwell, S.K., Pirtle, J.L., Watson, J.T., Deary, A.L., Doyle, M.J., Barbeaux, S.J., Dorn, M.W., Gibson, G.A., Goldstein, E.D., Hanselman, D.H. and Hermann, A.J.,** 2022. Synthesizing integrated ecosystem research to create informed stock-specific indicators for next generation stock assessments. *Deep Sea Research Part II: Topical Studies in Oceanography*, 198, p.105070. <https://doi.org/10.1016/j.dsr2.2022.105070>
- Lynch, A.J., Rahel, F.J., Limpinsel, D., Sethi, S.A., Engman, A.C., Lawrence, D.J., Mills, K.E., Morrison, W., Peterson, J.O. and Porath, M.T.,** 2022. Ecological and social strategies for managing fisheries using the Resist-Accept-Direct (RAD) framework. *Fisheries Management and Ecology*. <https://onlinelibrary.wiley.com/doi/pdf/10.1111/fme.12545>





Aerial view of streams in wetland with forests and mountains. Photo Credit: Alaska Shorezone

## PRESENTATIONS

- ◇ **American Fisheries Society Conference** – Ellen Ward – Mitigating Climate Change
- ◇ **NOAA Fisheries Symposium** - Sean Eagan & Alisha Falberg – Hydropower Policy and Legal
- ◇ **Southeast Alaska Fish Habitat Partnership** - Molly Zaleski – EFH recommendations
- ◇ **Joint Groundfish Plan Team** (Sept 2022) - Molly Zaleski – Fishing Effects (FE)
- ◇ **Crab Plan Team** (Jan 2022, Sept 2022) - Molly Zaleski – FE
- ◇ **Ecosystem Committee** (Jan 2022) - Jodi Pirtle - EFH Descriptions and Maps - Molly Zaleski - FE
- ◇ **Scientific and Statistical Committee** (Feb 2022) - Jodi Pirtle - EFH Descriptions and Maps - Molly Zaleski - FE
- ◇ **Denali Commission Funders Coordination Meeting** – Gretchen Harrington – EFH Consultation
- ◇ **Western Regional Panel on Aquatic Invasive Species Annual Meeting** - Linda Shaw - Invasive Green Crab Discovery and Response
- ◇ **Evidence of Change in Alaska’s Marine Ecosystems and Fisheries** (Feb 2022) - Doug Limpinsel - Non-fishing Effects
- ◇ **Joint Groundfish Plan Teams** (Nov 2021) - Jodi Pirtle - EFH Descriptions and Maps and EFH 5-year Review overview

## POSTERS

- ◇ **Mariculture Conference** – Ashley Bolwerk, Linda Shaw, & Molly Zaleski – EFH Recommendations for Kelp & Shellfish Farmers

## TRAININGS & WORKSHOPS

- ◇ **Culverts and Bridges Training** – Sean Eagan & Erika Ammann – Stream Crossings for Ecological Function
- ◇ **Federal Powers Act Training** – Sean Eagan – Anadromous Fish Passage
- ◇ **Alaska Invasive Species Partnership Workshop** - Linda Shaw & Taylor Stumpf MIC DFW - Invasive Green Crab Discovery and Response
- ◇ **Approaches to Adapting to Alaska’s Rapidly Warming Climate** - Doug Limpinsel - Non-fishing Effects

## Sean Eagan Parting Thoughts

Sean Eagan joined AKR HCD in 2015 as a hydrologist evaluating the effects of hydropower facilities and mining development on fisheries and habitat, leading the environmental review for several prominent actions in the region. Through his 31 years in Federal service, Sean has worked for the USFSA and NPS in places like Bryce Canyon, Yosemite, Lassen Volcanic National Park, and American Samoa. Trained in forestry and hydrology, Sean has been a tree climber, trail crew, bio technician, park interpreter, and staff supervisor. He’s protected prairie dogs, managed prescribed burns, and battled invasive starfish. Sean recently accepted a job at Glacier Bay National Park. We were grateful to have worked with him and his robust mixture of experience, technical skill, and energetic personality. Below are some parting thoughts.

**What are the important takeaways about hydropower and habitat that you'd like to share?** *Hydropower can help us mitigate climate change. With careful planning, effects on salmon can be greatly diminished at most locations. Tidal energy has amazing potential, and it would be great for NMFS to help advance the understanding of effects. Tackling this amazing source of energy will include accepting some risks concerning our fish and marine mammals. Also, good working relationships with the utilities allows us to protect anadromous fish. While utilities are tasked to provide reasonable cost energy to Alaskans, every person I worked with also cares about salmon. We should never imply that they don't care. Climate change is currently changing the intensity of storms and changing the norm. We need to remind utilities to design hydropower facilities for storms that will come and future conditions.*



**You've had a long and interesting career in Federal service. What is the most important thing you learned along the way?** *There are many federal and state agencies working to protect the resources. Fighting among agencies is counter productive. We need to avoid it.*

**What do you love about Alaska?** *I love all the wild lands where you can go all day without seeing anyone. There are enough adventures in Alaska for many, many lifetimes.*