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Identifying Essential Fish Habitat and Recognizing Non-Fishing Human Impacts

Doug Limpinsel

The recently completed Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska (Non-Fishing Impacts Report) provides a summary of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the language, provisions, and purpose supporting conservation of Essential Fish Habitat (EFH). This report emphasizes the growing importance of Ecosystem Based Fisheries Management (EBFM), while also recognizing climate change as the emerging anthropogenic threat influencing EFH and fisheries across Alaska. The report remains a reference for Federal Agencies proposing development actions. However, we encourage fellow fisheries practitioners, organizations, and the public to use it as a resource and provide suggestions to help us improve the report to better represent EFH and our mutual sustainable fisheries efforts in the future.

In 1996, the United States Congress recognized, "One of the greatest long-term threats to the viability of the commercial and recreational fisheries is the continuing loss of marine, estuarine, and other aquatic habitats. Habitat considerations should receive increased attention for the conservation and management of fishery resources of the United States." The MSA is the primary law governing marine fisheries management in the United States, including the protection of EFH. The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) published the Final Rule for the MSA's EFH provisions on January 17, 2002. That rule establishes the mandatory content of fishery management plans (FMP), described in nine components, to assist the eight Regional Fishery Management Councils and the U.S. Secretary of Commerce. Basic elements of the rule include the description and identification of EFH, the identification of adverse effects to EFH, and the identification of actions to conserve and enhance EFH. The rule also requires a complete review and Continued on next page

The President's Corner



AFS Alaska Chapter President Erik Schoen

Hello Alaska Chapter,

I hope you are enjoying some time on the water this summer doing field work, fishing, outreach, or other adventures. I find that good days in the field and float trips with my family are key to recharging my batteries and reminding myself why I work hard and volunteer my time in the Alaska fisheries profession. Some of my personal highlights this summer have been snorkeling in the Chena River with curious grayling and big, red king salmon torpedoes; squinting at squirmy aquatic invertebrates with elementary students; and catching rainbow trout, looking through their stomach contents (so many caddisflies!), and frying them up in butter with my kids and friends on a river trip. Those memories will keep me going this winter after the water turns solid again and I'm stuck behind my computer screen.

After you get some summer adventures under your belt, if you are looking for rewarding and impactful ways to get involved in the fisheries profession, meet new people, and broaden your network, please consider getting involved in the AFS Alaska Chapter. We have two committees in need of new leadership, including Awards and Fisheries and Environmental Education. The Diversity, Equity, and Inclusion Committee is also seeking a co-chair. These are low-*Continued on next page*

Essential Fish Habitat, continued

update of the nine EFH components at least once every five years. Of these nine EFH components, component 4 is non-fishing related activities that may adversely affect EFH, more commonly known as the Non-Fishing Impacts Report. This report does not address potential impacts from the act of fishing itself (commercial or recreational), which is addressed in component 2. More information on the FMPs and the 5-year review process can be found under <u>Alaska Essential Fish Habitat Reviews</u>.

The EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle. Fundamentally, ecosystem processes are the EFH attributes that support a variety of fish species through various life stages. The EFH descriptions are based on the best scientific information currently available and consider different types of information according to their scientific rigor.

Non-fishing anthropogenic impacts may be direct or indirect impacts to EFH; for example, degradation of water quality from pollution, temperature changes to water due to climate change, impacts to trophic dynamics and biodiversity from habitat modification, conversion or fragmentation, or the introduction of invasive species. The MSA requires NMFS to identify the various impacts and provide conservation recommendations to Federal agencies and designated project proponents where such actions may adversely affect EFH. Implementing conservation recommendations and other best management practices helps support the conservation of functional ecosystems and habitat attributes, which remain a foundation for Alaska's sustainable fisheries, while promoting environmentally sound development. As advances *Continued on page 4*

President's Corner, continued

to-moderate-commitment and high-impact positions, and the Chapter has experienced folks who can help you get up to speed and resources to support you. If you have questions, please contact me or another chapter officer, or Cheryl Barnes, the current DEI Committee chair at *deic@ afs-alaska.org*. You are also welcome to join any of our active committees, including Environmental Concerns, Financial Assets and Oversight, and Professional Development. The full list and more information are at *https://afs-alaska.org/about-us/ committees/*. And if you would like to start a new committee, the Chapter is here to support your vision.

Another great way to get involved is by joining the Planning Committee for the 2024 Annual Chapter Meeting. President Elect Donnie Arthur is the meeting chair, and he is seeking folks to help with everything from local arrangements to the meeting program, plenaries, 5K spawning run, field trips, socials, and more. This is a great way to get to know a group of colleagues from other organizations and towns and serve the fisheries profession in Alaska. Many hands make light work, and it's highly rewarding to attend a meeting you helped organize. Please contact Donnie at <u>presidentelect@afs-alaska.org</u> for more information or to volunteer.

And of course, Editor Bill Bechtol is always soliciting feature articles, shorter stories, and announcements for the quarterly Oncorhynchus newsletter. This is a great way to reach fishy folks around the state and beyond. Contact Bill at <u>bechtolresearch@hughes.net</u> with your idea for a story.

Take care, and enjoy the rest of the summer. Erik

Essential Fish Habitat , continued

in technology improve our ability to measure, monitor, and identify change in ecosystem processes and EFH attributes, so too does our understanding of the mechanics of change improve, increasing our ability to mitigate impacts to EFH and, ultimately, fish, the fishing industry, and the ecosystem.

Alaska encompasses arctic, subarctic, and temperate climate zones. Alaska's five Large Marine Ecosystems as defined by NOAA are the: (1) Gulf of Alaska, (2) Aleutian Islands, (3) Eastern Bering Sea, (4) Northern Bering Sea and Chukchi Sea, and (5) Beaufort Sea. The Northern Bering Sea, Chukchi Sea, and Beaufort Sea together are referred to as the Arctic. Seventeen coastal zones are identified across Alaska's shorelines and eight terrestrial ecoregions are defined above the high tide line to the interior. Within this vast geographic context, the Non-Fishing Impacts Report takes an ecosystem approach in evaluating adverse effects to EFH and providing conservation recommendations.

This recent iteration of the Non-Fishing Impacts Report, completed in May 2023, also better represents the principles of EBFM, being defined as geographically specific, adaptive accounting for ecosystem knowledge and uncertainties, considering multiple external influences, and striving to balance diverse societal objectives, with habitat science being a fundamental element. The goal of EBFM is to maintain healthy and productive ecosystems to support resilient fisheries and coastal communities. Implementation of EBFM considers all ecosystem processes when assessing the effects of a proposed action, such as species interactions, the effects of environmental changes, anthropogenic impacts, including climate change, and other stressors on EFH. The 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. An EBFM approach supports a more efficient and effective consideration of the full range of cumulative effects and tradeoffs across alternative and varied management strategies and human uses.

The Non-Fishing Impacts Report is largely a literature review addressing our current understanding of the ecosystem processes that support our fisheries, and the potentially harmful impacts to those processes from anthropogenic sources. The report is organized to provide foundational information for a topic (e.g., climate

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Essential Fish Habitat, continued

change), or an ecosystem (watersheds, estuaries and nearshore, and offshore), and to facilitate access of specific information to support environmentally sustainable development. Each chapter includes: Alaska specific metrics and the more commonly recognized EFH attributes such as physical, chemical, and biological properties; descriptions of potential sources of anthropogenic impacts; and conservation recommendations to mitigate those potential impacts.

Chapter 1 of the report presents the report's purpose, a brief history and overview of EFH and attributes. A summary of the EFH consultation process and tools to support EFH consultations is included. Chapter 1 also

provides an overview of the role of the Alaska Fisheries Science Center and North Pacific Fishery Management Council in the consultation process. Several publicly-accessible web-based tools are also highlighted. The NMFS Alaska Region launched the Alaska EFH Web Application, also known as the "AK EFH Mapper," in December 2018. The mapper is an ESRI ArcGIS online platform hosting the complete collection of Alaska EFH maps. For the coastal-nearshore marine environment, the <u>Shore Zone</u> mapping system has mapped more than 120,000 kilometers (74,565 miles) of shoreline in Alaska, Oregon, Washington, and British Columbia. Approximately 95 percent of Alaska's extensive coastline is imaged and mapped, and is available to "fly over" in the mapping link. There is also the Nearshore Fish Atlas of Alaska that catalogs the distribution, relative abundance, and habitat use of nearshore fishes in Alaska.

Chapter 2 presents a discussion identifying climate change as the emerging anthropogenic impact to EFH conservation, sustainable fisheries, and resilient coastal communities. Climate change currently has the ability to exacerbate all other anthropogenic impacts. Chapter 2 summarizes our current understanding of how greenhouse gas emissions have influenced the Arctic, in turn influencing the atmosphere, oceans, and ultimately EFH attributes supporting Alaska's fisheries. New to this discussion, we introduce conservation recommendations for large emission facilities



EFH consultations is included. Chapter 1 also Chuit wetland salmon habitat. Photo from Doug Limpinsel, NOAA.

associated with oil and gas development. Large emission facilities is the one area where reduction in emissions could result in a meaningful beneficial outcome for reducing greenhouse gas emissions and slowing climate change.

Chapters 3, 4, and 5 of the Non-Fishing Impacts Report address watersheds, estuaries and nearshore zones, and offshore zones, starting by highlighting the more commonly recognized physical, chemical, and biological processes that make each biome distinct.

Continued on next page



Bed of sea pens in shallow marine habitat. Photo from Doug Limpinsel, NOAA.

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Essential Fish Habitat, continued

Each chapter discusses ecosystem processes and EFH attributes that make each unique, introduces possible sources of anthropogenic impacts that could compromise EFH, and concludes by proposing a variety of conservation recommendations to mitigate those impacts.

An important new addition to the report is Appendix A, which provides a comprehensive list of the traditionally recognized sources of anthropogenic impacts. Of the nearly 450 potential sources of anthropogenic impacts identified on this table, it is important to understand that this is a list of sources identified nationally, many currently do not occur in Alaska because of the smaller human population, and Redbanded Rockfish and sea urchins. Photo from Doug Limpinsel, NOAA. a reduced agriculture and industry presence.

The report is a forward-looking attempt to recognize and implement measures to avoid and minimize anthropogenic impacts to EFH and fish. As different as each of these biomes discussed are, the presence and condition of water is the key feature that connects them all. The landscape influences the character of water and, similarly, water influences the characteristics of the landscape; both landscape and water characterize EFH. In the future we will update this report to reflect our understanding of the science representing EFH while attempting to apply new concepts to reduce impacts. As a means to improve the quality of the Non-fishing Impacts Report, we

Climate-Induced Human Migration Workshop

A changing climate can affect not only the availability of resources, but how people use the available resources, and whether people move to other areas due to changes in available resource and climate conditions. In April 2023, Alaska Sea Grant hosted the workshop People on the Move in a Changing Climate to bring together experts and stakeholders to discuss research needs, socioeconomic consequences, and building resilience and adaptation related to climateinduced human mobility with a focus on Alaska, the Pacific Northwest, and the greater international Pacific Region. One notable aspect was the participation of several Western Alaska community residents and leaders to sharing their experience



invite you to provide us constructive comments on how we could better represent the topics or suggest topics for future inclusion.

Doug Limpinsel was in the U.S. Merchant Marines, with education in fisheries and aquatic toxicology. He has worked in a variety of capacities across the Great Lakes and New England, for the U.S. Fish and Wildlife Service and at Woods Hole; and more recently in Alaska for the Alaska Department of Fish and Game, and the Alaska Fisheries Science Center.

He currently works at NOAA Fisheries in the Alaska Regional Office, Habitat Conservation Division, representing NOAA's federally managed fisheries in discussions involving Essential Fish Habitat in riverine, estuarine, and marine biomes.

with impacts from Typhoon Merbok in 2022. The workshop was funded by the National Science Foundation Coastlines and People Initiative. The workshop revolved around four segments: (1) Narratives from the Coast - featuring speakers from Southeast Alaska to the coast of Western Alaska; (2) Stories from island communities -featuring speakers from the Northern Mariana Islands, Guam, and Moloka'i; (3) Building and maintaining communities-featuring Northwest Coast, Hawai'i, and international speakers; and (4) Future coastal communities-featuring perspectives of community planners from Alaska's Mat-Su Borough, coastal Alaska, and Hawai'i.

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Alaskans Join Indigenous Aquaculture Gathering

In June, members of the Indigenous Aquaculture Collaborative Network, including people from Alaska Native tribes, traveled to Washington state for the 2023 Salish Summit. The Swinomish Indian Tribal Community hosted the four-day event during which participants worked together on construction of a clam garden at Kukutali Preserve. The Summit provided learning opportunities, celebrations, and conversations among participants from Alaska, Washington, Oregon, Hawai'i, British Columbia, Palau, and Guam.

Indigenous aquaculture practices have sustained Pacific Ocean peoples since time immemorial, with traditional technologies such as clam gardens supporting communities and contributing to biocultural ecosystems. Engaging in Indigenous aquaculture practices supports cultural revitalization, continuity of cultural practices, multigenerational knowledge exchange, language reclamation, and tribal self-determination. Sharing knowledge about Indigenous aquaculture across cultures and geographies, including at events such as the Salish Summit, can help to strengthen practices, relationships, and community resiliency for future generations.

Indigenous aquaculture also supports food sovereignty, where local producers and consumers of food control the policies and mechanisms of production and distribution. Food sovereignty prioritizes knowledge-sharing and working with nature to produce healthy, culturally appropriate, sustainable food that can be shared. Indigenous food sovereignty recognizes relationships and responsibilities that Indigenous peoples have with their environments. "Food sovereignty is one of my biggest passions in life, particularly with traditional foods," said AFS Alaska Chapter member Keenan Sanderson of the Ketchikan Indian Community, Alaska.

Clam gardens have been used for at least 4,000 years among Pacific Northwest tribes, British Columbia's First Nations, and Alaska Native tribes. By terracing areas of the intertidal zone and cultivating clam habitat, harvesters have enhanced the abundance and size of clams. Maintenance of a clam garden with the addition of shell hash can also create a buffer



Participants at the 2023 Salish Summit passed rocks to the intertidal area, extending a rock wall that is part of a larger clam garden. Photo by Karen Grosskreut, Alaska Sea Grant Fellow.

against coastal acidification, while increasing the amount of calcium carbonate available for shells. Additionally, the rock structure creates habitat that attracts a diverse community of marine organisms, increasing biological diversity.

The Swinomish Indian Tribal Community clam garden is located within Kukutali Preserve, the first tribal state park in the country, and with coownership and governance by Swinomish Indian Tribal Community and Washington state. The planned start of clam garden construction was delayed by the COVID-19 pandemic until August 2022. At the Summit, participants extended a garden wall by moving rocks during the month's lowest tide. Moderately sized rocks weighing five to 30 pounds were passed person-to-person from the upper beach to the exposed intertidal zone. Larger rocks were hauled by wagons or carried by groups using gear nets.

During the event, the Swinomish Indian Tribal Community hosted a clambake, preparing traditional foods such as cockles, mussels, Dungeness crab, butter clams, little neck clams, and Olympia oysters.

A future gathering for knowledge-sharing and celebration of Indigenous aquaculture is planned for Alaska in 2024. More information on different Indigenous technologies and sea gardens can be found at the <u>https://indigenousaquaculture.org/</u>.

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Diversity, Equity, and Inclusion Committee

Cheryl Barnes, DEIC Chair

The Diversity, Equity, and Inclusion Committee (DEIC) for the AFS Alaska Chapter is excited to announce that we have three new members and two new committee liaisons. We would like to thank Teresa Fish, Lilian Hart, Madeline Lee, Donnie Arthur, and Anna Medina for joining Cheryl Barnes, Sara Gilk-Baumer, Katie Russell, and Keenan Sanderson in work to increase accessibility, equity, and inclusion within the AK Chapter!

New Committee Members

Teresa Fish has over a decade of fisheriesrelated experience in Washington and Alaska. She completed her M.S. in Fisheries at Alaska Pacific University in 2021, where she examined the driving factors of Pacific Halibut maturity. Currently, Teresa works Teresa Fish.



as a commercial fisheries research biologist in Ketchikan, monitoring Sockeye Salmon escapement for the Alaska Department of Fish and Game. Teresa also sits on the Northern Boundary Technical Committee. In her free time, Teresa enjoys allwomen hunting trips, backcountry skiing, and prefers to bike rather than drive.

Lilian Hart is completing her M.S. in Fisheries at the University of Alaska Fairbanks. Her research focuses on statistical modeling to estimate juvenile salmon distributions and relative abundances in the Bering Sea. Lilian has served as Vice President on the AFS Student Subunit where she played an integral role in facilitating the UAF College of Fisheries and Ocean

Sciences student retreat. One of her professional goals is to apply western scientific methods to create more equitable outcomes in natural resources management. Lilian lives in Ogden, Utah, where she enjoys bike packing long distances with her husband and two dogs, Moose and Mud.



Lilian Hart

Madeline Lee saw a real need for DEI support within the student community during her time as President of the AFS Student Subunit, so she served as the inaugural Student Subunit Liaison to the DEIC. As President and DEI Student

Liaison, Madeline helped plan and implement a new student retreat program with mentorship as a major focus to build connections among remote students, particularly after a long period of isolation during



the COVID pandemic. Madeline Lee

Madeline will finish her M.S. in Fisheries this summer and plans to pack raft and backpack the Brooks Range following graduation.

New Committee Liaisons

Donnie Arthur serves as the Executive Committee Liaison to the DEIC, a role that

was designed to increase communication and collaboration between the two groups. As a lifelong Alaskan, Donnie is an avid fisherman, a hobby that led him to pursue a career in fisheries. Donnie currently works in the Genetics Division of the



Donnie Arthur

Alaska Department of Fish and Game and is the current President-Elect of the AFS Alaska Chapter Executive Committee. The DEIC will work closely with Donnie to help plan the 2024 Alaska Chapter meeting in Seward.

Anna Medina is our new Student Subunit Liaison, working to bridge student initiatives with the AFS Alaska Chapter. Anna is working toward an M.S. in Fisheries, researching Rainbow Smelt as part of the Beaufort Sea Anna Medina



Nearshore Fish Monitoring

Program. Anna is an advocate for greater diversity in her scientific communities and enjoys mentoring first generation college students.

To volunteer with the Diversity, Equity, and Inclusion Committee, please at <u>deic@afs-alaska.org</u>.

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Searching for European Green Crab

In 2022, European green crab was located in Alaska for the first time. European green crab is an invasive species in the United States, first appearing on the East Coast in 1817, but not found on the West Coast until 1989. Expansion of the species has since continued northward, to Washington in 1998, and British Columbia in 1999. European green crab was first identified in Alaska at Annette Island in July 2022 when biologists working with the Metlakatla Indian Community monitoring for invasive species found a carapace on a beach near the community of Metlakatla.

Adult European green crab may prey on juvenile Dungeness crab and other small native crabs, including shore, kelp, and rock crabs, as well as mussels, snails, oysters, and worms. European green crab also dig for clams, tearing up eelgrass, an important habitat for juvenile fish. This invasive species can potentially disrupt native species and ecosystems.

Following the initial detection, local groups, supporting agencies, and Tribes quickly began response efforts. Recognizing the need for increased European green crab monitoring in southern Southeast Alaska, Alaska Sea Grant, the Metlakatla Indian Community, NOAA, Alaska Department of Fish and Game, Southeast Alaska Tribal Ocean Research (SEATOR), and the Organized Village of Kasaan convened a two-day workshop in April 2023, for regional residents and agency employees that spend time on beaches where European green crab may be expanding. Thirty-three participants from 10 different Southeast Alaska communities attended, representing the U.S. Coast Guard, U.S. Forest Service, ecotourism operators, University of Alaska Fairbanks, University of Alaska Southeast,

An invasive European green crab trapped in Southeast Alaska in summer 2023. Photo by Ginny Eckert, Alaska Sea Grant.

and tribal organizations including the Central Council of the Tlingit and Haida Indian Tribes of Alaska.

The Metlakatla Indian Community has subsequently trapped around 800 crab, including egg-bearing females. Anyone can help keep an eye out for European green crab on their local beach. Walk along the wrack line (the high tide mark where debris accumulates), or even higher in the beach grass, and examine every crab carapace you see. European green crab can be identified by the number of spines on the leading edge of the shell between the eye and the outer spine. In contrast to crabs native to Alaska, the European green crab can be identified by having five prominent spines on each side, three rounded bumps between the eyes, and these crab are not always green. If you think you may have found European green crab, note your location, take a picture, and call the Alaska Department of Fish and Game invasive species hotline at 1-877-INVASIV.

Marine Debris Foundation Grant

The new Marine Debris Foundation announced its first call for proposals, focused on strengthening, enhancing, and improving domestic and international efforts that address the adverse impacts of marine debris on the economy, environment, and/or maritime safety. Any proposed project should fit into one or more of the following: marine debris/plastic pollution focal areas: reduction, prevention, removal, and/or assessment. Grants will be up to \$30,000 per award, with grant periods of 12 to 24 months, although multi-year grants will also be considered.

The application deadline is August 31, 2023, at 10:59 p.m. Alaska Time. Applicants will be notified by September 30, 2023, if they will move forward to the next phase of the process. For more information and the application form, go to the Foundation *grantmaking webpage* or email the Foundation at *grants@marinedebrisfoundation.org*.

2023 Tamamta Fellows

Tamamta is a Yup'ik and Sugpiaq word meaning "all of us." With funding from the National Science Foundation's Research Traineeship (NSF-NRT) and Navigating the New Arctic (NNA) programs, the Tamamta Program is working to transform our whole approach to education, research, and management through graduate education and research in fisheries and marine sciences. This program is motivated by the deep inequities that persist in the education and resource management systems in Alaska. While Alaska Natives make up nearly 20% of the state's population, less than 3% of students and less than 1% of faculty in our colleges are Alaska Native. There is a near complete absence of Alaska Native people in state or federal resource management bodies, and a near complete absence of Indigenous knowledge being taught or guiding management.

The Tamamta Program team continues to build on years of cross-cultural and cross-disciplinary work to address pressing questions of equity and sustainability of life and relations in Alaska. Tamamta Fellows will use a co-production of knowledge that bridges Indigenous and Western knowledge to explore key questions in our fisheries and marine and ocean systems. The Tamamta Program recently announced the following as the third cohort of Tamamta Fellows:

Craig Chythlook is Yup'ik and originally from the Bristol Bay region. Craig has spent his life fishing salmon in Bristol Bay. His current research is looking at what evaluation criteria are used to measure success, manage salmon, and how to incorporate Indigenous values and place-based knowledge into resource management decision making.

Hanna Hellen is Tlingit—Gaanaxteidee of the whale house. She lives in Anchorage and currently works as the Environmental Programs Manager for the St. Paul Island Ecosystem Conservation Office.

The kelp mariculture is expanding, with the logistics still being developed. A collaboration of the Prince William Sound Science Center (PWSSC), Prince William Sound kelp farmers, Royal Ocean Kelp Company, and Noble Ocean Farms is preparing for the next growing season by researching sugar kelp beds in Orca Inlet and Simpson Bay in Prince William Sound. The intent is to find large healthy blades with sori, or fertile Her research interests include marine mammal subsistence use and climate change impacts.

Justin Leon was born and raised in Atlanta, GA, but has lived in Alaska his entire adult life. He is multi-ethnic, including Quechua of Peru. Justin studied fisheries at the University of Alaska Fairbanks with a focus on Chinook Salmon in the Yukon and Kuskokwim rivers. He lives in Anchorage and is currently the Fisheries Biologist for the Kuskokwim River Inter-Tribal Fish Commission. Justin's research interests include co-management and work toward true equity in fisheries management.

Rachel Lekanoff is Unangax[^] and a member of the Qawalangin Tribe of Unalaska. Rachel grew up in Olympia, WA, before moving to Fairbanks to attend the University of Alaska Fairbanks and earn her M.S. in Oceanography. She currently works as the Fisheries Manager for the Qawalangin Tribe. Rachel's research interests include using genomics (especially environmental DNA) to better understand fisheries and the abundances and community structure of other marine organisms.

Chris Tran is Teochew Vietnamese from Seattle, WA. Chris currently lives in Anchorage and is the Natural Resource Specialist for the St. Paul Island Ecosystem Conservation Office. His research interests are remote sensing and social science methods to inform ecosystem-based management and climate change impacts.

Alex Jenkins is of Scottish, Welsh, and English lineage and, as the child of U.S. diplomats, she grew up in Virginia, Finland, Serbia, and Austria. Since moving to Lingit Aani (Juneau region in Tlingit), Alex has worked to support the subsistence harvest of herring eggs in Sitka and to promote Indigenous voices in fishery management. Her research efforts are on ways to promote natural resource management to be guided by Indigenous knowledge and stewardship practices.

The Search for Sugar Kelp

tissue that produce reproductive spores. The blades will be brought back to the lab where spore release is stimulated, resulting in young kelp are grown for 6–8 weeks. The young plants are then transferred to farm lines that will only grow the species of interest. This first season for the PWSSC Mariculture Hatchery will provide young kelp to farmers and conduct research on best practices to make the process more efficient.



AFS Alaska Chapter Student Representative, Becky Shaftel.

Student Subunit Happenings

Becky Shaftel, Student Subunit Representatives

New Student Representative

Hello Alaska Chapter members. My name is Becky Shaftel and I am the new AFS Alaska Chapter student representative. A big thanks to Jonah Bacon, our last student representative, who accomplished so much for our student members in the last year, including making sure that many students could attend the annual meeting in Fairbanks.

I am an aquatic ecologist at the University of Alaska Anchorage Alaska Center for Conservation Science. Our center includes aquatic ecologists, wildlife biologists, geographers, and vegetation ecologists, in addition to staff at the Kachemak Bay National Estuarine Research Reserve. Our aquatic ecology group conducts monitoring of freshwater ecosystems to understand biodiversity patterns and also document baseline or reference conditions that can be used to identify impacts from human stressors and climate change.

I started my Ph.D. in fall 2021 to study climate change impacts to AYK freshwater habitats and interactions with salmon. I am currently summarizing an analysis of gridded climate products that can be used to extend stream temperature and streamflow datasets so they can be

linked to time series of Chinook salmon productivity. I am also starting on a stream temperature model for the Yukon and Kuskokwim basins. If you have any continuous stream temperature data from those areas, please reach out!

My first AFS meeting was in Juneau in 2014. I also assisted with the Western Division meeting that we hosted in Anchorage in 2018 by driving a van full of meeting attendees down the Seward highway to see the wildlife in Portage and make many stops along the way. It was a great way to connect with other AFS members in a non-formal setting. I'm really excited to be working with the ExComm this year. Our next AFS Alaska Chapter meeting is tentatively planned for Seward so please get in touch (student@afs-alaska.org) if you have any ideas or questions about student participation.

Student Happenings

The Student Subunit for the University of Alaska elected new officers this past May for the upcoming 2023-24 academic year: Vice President—Garrett Dunne, Treasurer—Linnaea Doerner, and DEIC Liason—Anna Medina. *Continued on next page* **Congratulations to the many graduate students and undergraduates who completed their degrees this spring! Monica Brandhuber** (Ph.D. in Fisheries, Major Advisor: Shannon Atkinson) – "Endocrine Biomarkers to Improve Reproductive Monitoring in Female Polar Bears" **Thilo Klenz** (Ph.D. in Oceanography, Major Advisor: Harper Simmons) – "Lagrangian Surface Drifter Analyses from Observations and Numerical Modeling in the Subpolar North Atlantic"

Luke Henslee (M.S. in Fisheries, Major Advisor: Andy Seitz) – "Stock Composition and Coastal Migration Characteristics of Coho Salmon in Fisheries of Norton Sound, Alaska" Alavandar Beich (M.S. in Fisheries, Major Advisor, Magan

Alexander Reich (M.S. in Fisheries, Major Advisor: Megan McPhee) – "Phenotypic Divergence Between Hatchery Pink and Coho Salmon and Their Wild Counterparts"

Lindsey Stadler (M.S. in Marine Biology, Major Advisor: Katrin Iken) – "Dietary Resources Use of Nearshore Fishes in Estuaries with a Gradient of Glacier Cover"

Kathryn Langlois (B.A. in Fisheries, Concentration: Fisheries Business and Social Sciences)

Bethany Matala (B.S in Fisheries and Ocean Sciences, Concentration: Ocean Sciences)

Kyleigh McArthur (B.S. in Fisheries and Ocean Sciences, Concentration: Fisheries Science)

Student Subunit Happenings, continued

Congratulations to all! The Subunit is still looking for a President and Secretary.

Drop a message be a part of <u>student@afs-alaska.org</u> if you would like to join this great team and create

NPRB to Solicit Pre-proposals for Northern Bering Sea Integrated Ecosystem Research Program

The North Pacific Research Board (NPRB) anticipates issuing a solicitation for pre-proposals in October 2023 for an *Integrated Ecosystem Research Program* (IERP) that will support integrated research in the Bering and Chukchi Seas, centered in the *northern Bering Sea*. Topics of interest include how environmental conditions and processes in the northern Bering Sea influence species of commercial, ecological, and subsistence importance, and implications for state and federal fisheries management and communities depending on these resources.

Following an initial review, a subset of the pre-

more opportunities for student professionals in the fisheries sciences.

Stay tuned for updates on the Student Subunit meeting times.

proposals will be invited to submit full proposals in October 2024. Awards up to \$10,000 will be available to support the development of full proposals with Indigenous Co-Investigators, or Indigenous-led proposals can apply the funds to seek Western science Co-Investigators.

Final funding decisions will be announced in October 2025 and the research program will extend through September 2031. NPRB anticipates offering \$6.5 million and partners may offer additional funding to support research of mutual interest.

Environmental Concerns Corner

Investigative reporter Lois Parshley recently shed light on the intricate realities and conflicting views about the proposed Manh Choh Kinross Mine. This open-pit gold mine plans to leverage the public highway system for the round-theclock transport of material over 250 miles for processing. The article can be found at: <u>https:// alaskapublic.org/2023/07/26/a-large-gold-mine-youveprobably-never-heard-of-is-quietly-preparing-to-startproduction-in-interior-alaska-despite-critics-objections/</u>

As global demand for minerals and precious metals grows, Alaska is experiencing an influx of mining projects. Manh Choh has the potential to establish a pattern for future projects to use state highways and proceed through the permit process with limited public or fisheries community awareness, thereby potentially escalating risks to fish and fisheries, and even public health and safety.

Historically, as fisheries scientists, we've been involved in activities such as providing feedback on or crafting permits, monitoring active mines, initiating reclamation projects, or developing habitat restoration efforts. However, as mining operations in Alaska escalate, it prompts the question of our role in this shifting narrative, amid lawyers, politicians, investors, industry lobbyists, transportation specialists, and local landowners. Our role might hold increased importance, particularly in light of the recent Sackett vs. EPA ruling, which could have not only removed significant wetland protections under the Clean Water Act, but also potentially affected which projects are required to enter the NEPA permitting process, and the manner in which they do so.

To stay informed on Alaska's evolving mining landscape and other significant environmental issues affecting fish, consider subscribing to our newly launched environmental concerns listserv. Email <u>ecc@afs-alaska.org</u> with "Join ECC Listserv" in the subject line, and we'll handle your registration. This listserv aims to facilitate learning and discussion, thereby bolstering our ability to contribute valuable fisheries insights on various projects and issues around Alaska.

Keep an eye out in the near future for an invitation to join our new listserv! Meanwhile, ff you have *Continued on next page*

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Meetings and Events

American Fisheries Society Parent Society Annual Meeting

August 20–24, 2023. The 153rd annual meeting will be held in Grand Rapids, MI. For more information go to <u>https://afsannualmeeting.fisheries.org/</u>.



Cook Inlet Water Quality Summit



October 24–25, 2023. This meeting will be held in Anchorage, AK. More information is at <u>https://www.</u> *akwildlife.org/cook-inlet*.

Alaska Marine Science Symposium

January 29–February 2, 2024. This symposium will be held in Anchorage, AK. More information is at <u>https://www.alaskamarinescience.org</u>.



World Fisheries Congress



March 3–9, 2024. The 9th World Fisheries Congress will be held in Seattle, WA. More information is at <u>https://wfc2024.</u> <u>fisheries.org/</u>.

AFS Code of Conduct

The Ethics and Professional Conduct Committee (EPCC) of the American Fisheries Society has developed a code of conduct for our meetings and AFS-sponsored functions, whether virtual or in person. This brief document is available at <u>https://fisheries.org/about/governance/afs-meetings-code-of-conduct/</u>. Please read through this document to ensure that we are collectively working to build awareness of this policy to ensure that all AFS-related gatherings are a respectful and inclusive experience for everyone. If you have questions, reach out directly to the EPCC Chair Brian Missildine for support at <u>brian.missildine@dfw.wa.gov</u>.

ONCORHYNCHUS

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 Deadline for materials for the next issue of Oncorhynchus is Sept. 15.
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Environmental Concerns Corner, cont'd

an issue in your region or related to your fisheries work where the Chapter could be impactful, please reach out to Sue Mauger (*pastpresident@afs-alaska. org*) and Joel Markis (*jamarkis@alaska.edu*). As chairs of the Environmental Concerns Committee, we want to bring our Chapter into conversations where our expertise has the greatest value.

Fish of the Week!

Join us every Monday for our Fish of the Week podcast! We get to know all the fish — how they live in Alaska,



what habitats they use, what they eat, and where they go and why. Everything you need to know to appreciate and conserve these fish and be a successful angler.

We've got lots of fish stories.

The Alaska Chapter of the American Fisheries Society is a 501 (c)(3) tax exempt organization EIN 23-7368960.

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Feel free to contact the Executive Committee members.