



ONCORHYNCHUS

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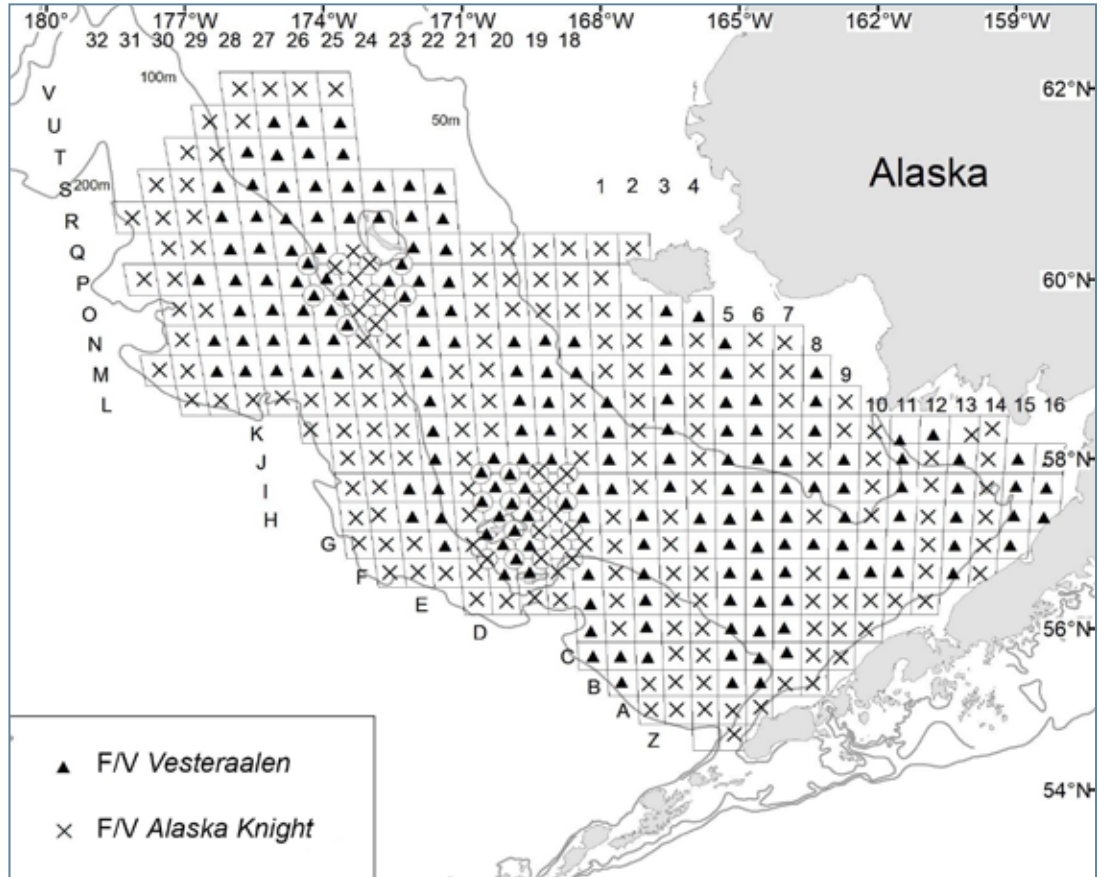
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The National Marine Fisheries Service Eastern Bering Sea standard bottom trawl area as surveyed by the F/V Alaska Knight and the F/V Vesteraalen from May 30 to July 29, 2022. Figure from L. Zacher, NMFS, per. com.

When a Crab Population is Overfished, What Happens Next?

Sarah Rheinsmith and Bill Bechtol

There are 10 Bering Sea and Aleutian Island (BSAI) crab stocks that are federally managed in Alaskan waters. The status of the BSAI king and Tanner crab fisheries has fluctuated in recent years. In the 2022 Stock Assessment and Fishery Evaluation (SAFE) Report for the King and Tanner Crab Fisheries of the Bering Sea and Aleutian Islands Regions, the Eastern Bering Sea (EBS) snow crab (also called opilio) stock remained in an overfished state. The stock was first declared overfished on October 19, 2021. For the first time in the history of the EBS snow crab fishery, the Alaska Department of Fish and Game (ADF&G) closed the directed fishery for the 2022-2023 season.

The process of mitigating an overfished stock requires an extensive iterative review process. The following is a review of the steps in declaring an overfished stock, the process of implementing a rebuilding plan, and tracking the rebuilding plan progress, using the EBS snow crab as an example.

The Magnuson-Stevens Fishery Conservation and Management Act, or Magnuson-Stevens Act (MSA), named after the bill's sponsors Senators Warren G. Magnuson of Washington State and Ted Stevens of Alaska, is the primary law governing marine fisheries management in United States federal waters. The MSA requires that a Fishery Management Plan (FMP) be prepared

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The President's Corner



AFS Alaska Chapter President Megan McPhee, with daughter Phoebe.

Fall always bowls me over. Maybe it's because everyone is back from the field and ready to have meetings, and the UAF academic year is underway, or maybe it's because the days are getting shorter, but I never feel like I have enough time. Hopefully your transition into fall is going better!

At the end of summer, I had the privilege of attending the annual meeting of the American Fisheries Society (combined with the meeting of the Western Division of the American Fisheries Society [WDAFS]) on behalf of the Alaska Chapter. The meeting was in Spokane, and it felt good to be back in my home drainage, the Columbia River watershed. It also felt good to be back to an in-person conference! I didn't see much evidence that people had lost their skills in public speaking, networking, and socializing, and it was great to see colleagues I hadn't seen in years.

The Alaska Chapter showed up well at the meeting—there were talks given by Alaskan agency biologists, university students, and faculty (and I am sure I'm forgetting other sectors). And our very own past Student Representative, Taylor Cubbage, not only assisted in meeting planning (after spending the prior year helping plan our chapter meeting), but she also won the John E. Skinner Memorial Travel award and the Best Student Presentation award. Congratulations, Taylor! The recognition is well deserved.

Continued on next page

Crab Population, continued

for any fishery that requires conservation and management. The FMP mandates that an annual SAFE report is conducted summarizing the current biological and economic status of fisheries, total allowable catch (TAC), and analytical information used for the management decisions. As part of the North Pacific Fishery Management Council (NPFMC, or Council) public review process, annual stock assessments are conducted by stock assessment authors, and reviewed by the BSAI Crab Plan Team (CPT), a group of academics, biologists, economists, and management experts to discuss the status of the 10 BSAI crab stocks. Annual stock assessments consider current estimates of biomass and size frequency data that are calculated based on the National Marine Fisheries Service (NMFS) trawl survey, total catch data from the directed fishery, bycatch data from the trawl fisheries, size frequency data for male-retained catch in the directed fishery, and male and female bycatch in the directed and non-target crab fisheries. Additional information on biomass estimates from the experimental surveys in 2009 and 2010 by the Bering Sea Fisheries Research Foundation were also incorporated into the snow crab assessment model. Note that NMFS surveys were not conducted in 2020 due to the coronavirus.

Ultimately, the stock assessment author recommends a preferred assessment model configuration that provides several biological reference points, or their proxies, including: maximum sustainable yield (MSY), minimum stock size threshold (MSST), overfishing level (OFL), and acceptable biological catch (ABC). Definitions of these and other reference points are provided at the end of this article. The assessment author also identifies:

- Whether the stock was overfished the previous fishing season (was the OFL exceeded)?
- Did overfishing occur (was F_{OFL} exceeded)?
- Mature male biomass projection to the time of mating (treated as February 15 for crab).

Following the CPT review of the stock assessment, formal CPT recommendations of model preference and specifications for the upcoming fishing season, OFL, and ABC are presented to the Scientific and Statistical Committee (SSC) for their review.

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President's Corner, continued

I attended a symposium that focused on AFS's role in influencing policy. The AFS parent society has a Policy Director who routinely talks with federal and state legislators about policy decisions affecting fish, and who frequently provides comments on proposed actions on behalf of the Society. A major policy issue affecting Pacific salmon, Bull Trout, Pacific Lamprey, and White Sturgeon right now is removal of the four lower Snake River dams. Members of AFS, in particular the WDAFS, are conflicted over how far the Society should go toward supporting a recommendation that the dams be removed. A recent scientific review co-authored by some members of the WDAFS concluded that recovery of Snake River salmon was not possible without dam removal ([Storch et al. 2022](#)). At the same time, some members of WDAFS work in agencies that prohibit them commenting on dam removal. As many of you have experienced, it's not always easy to know how much to advocate policy when one's professional identity is a scientist.

To me, one of the most salient comments in the symposium came from the Chief of Staff of Congressman Mike Simpson (R, Idaho), who recently put forth a policy plan to remove the four lower river dams while trying to help affected sectors cope with the economic consequences. He said that his office uses information and advice from various groups, but when they get information from advocacy organizations like

Trout Unlimited or the Wild Salmon Center, they expect "cherry-picked" data (in his words) and interpretation that is skewed toward advocating strongly for fish conservation, whereas they expect AFS to stick more closely to objective and comprehensive science information. I was surprised, but pleased, to know that a state legislative office knew enough about our organization to make that distinction—and I found his comments helpful for thinking about how far we can and should go down the advocacy route in our various capacities within AFS.

The AFS Alaska Chapter has from time to time commented on a proposed action that is clearly harmful to fish (e.g., Pebble Mine). In these cases, it is not hard to reach a position through the lens of protecting Alaska's fishes and fisheries. Unfortunately, with climate change and increasing pressures on Alaska's fish populations, I worry that we will see more policy issues that create conflict among various fish-connected sectors. While we can still assess issues with the "best available science," the human dimension gets a lot more complicated. How involved should the Alaska Chapter be in advocacy? I am interested to hear your thoughts—email me at president@afs-alaska.org. And you can also get involved by joining our Environmental Concerns Committee (contact Sue Mauger at pastpresident@afs-alaska.org). 🐟

Next AFS Alaska Chapter Meeting

We are excited to host the 2023 Annual Meeting in Fairbanks during March 27-31! Late March is one of the best times of year in the Interior, when the daylight is back, temperatures are mild, ice fishing and snow sports are prime, and the aurora is shimmering. We are planning an in-person event full of the socials, networking opportunities, and field trips that we all have been missing. More information will be posted on the AFS Alaska Chapter website at <https://afs-alaska.org/>.

If you have any questions or want to get involved with meeting planning, please contact Erik Schoen at presidentelect@afs-alaska.org. 🐟

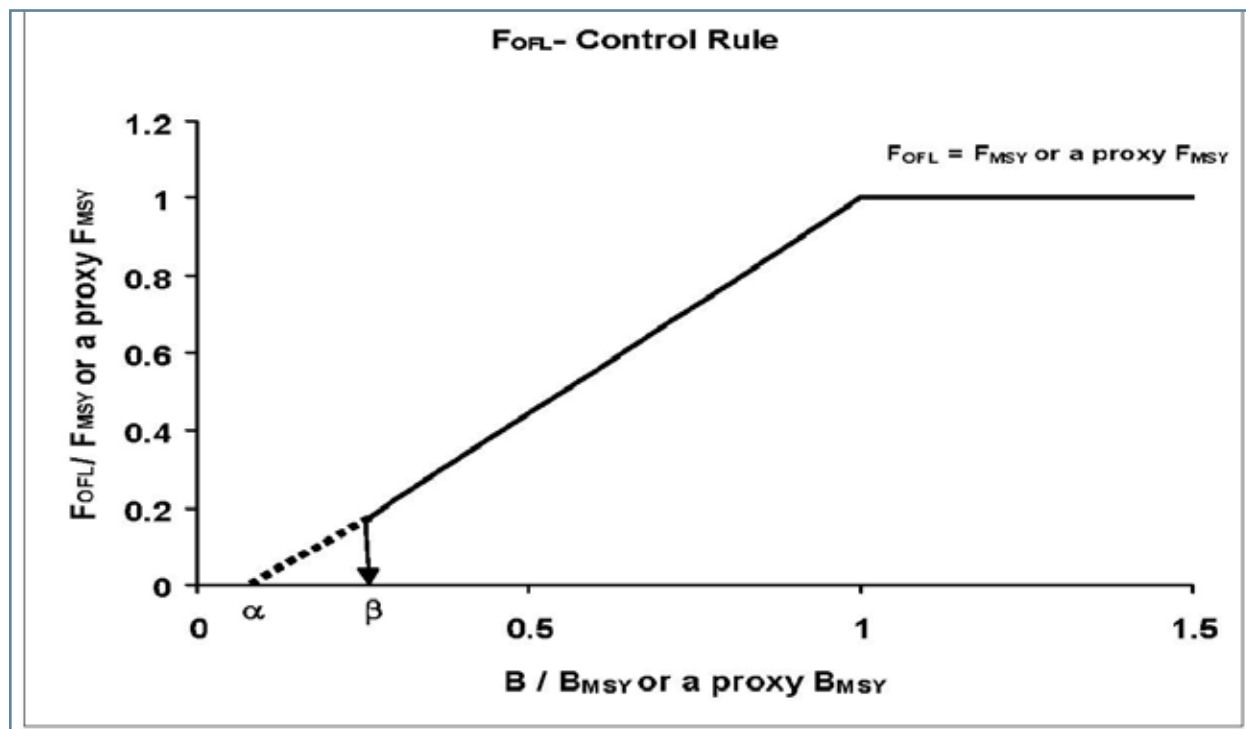
AFS Alaska Chapter Awards Nominations

The Alaska Chapter is currently soliciting nominations for the Meritorious Service Award (MSA), the Chapter Service Award (CSA), the Almost Darwin Award, and the Wally Noerenberg Award for Fishery Excellence.

We encourage all members to consider deserving individuals and to submit nominations for these awards.

You can find the nomination forms and more details about each award on our Chapter website: <https://afs-alaska.org/awards-scholarships/>. NOMINATIONS ARE DUE FEBRUARY 1, 2023. 🐟

Crab Population, continued



Example of overfishing control rule for many crab stocks. Directed fishing mortality is 0 below β . Figure from 2022 Crab SAFE.

Following SSC review, SSC recommendations are provided to the Council. The Council makes the final decision in adopting the proposed OFL, ABC, and fishing status updates for the upcoming fishing season. This assessment process occurs on an annual basis for 5 out of the 10 crab stocks, including EBS snow crab, Bristol Bay red king crab, Norton Sound red king crab, Aleutian Islands golden king crab, and EBS Tanner crab. The remaining stocks are on a biennial or triennial assessment cycle.

The FMP establishes a State/Federal cooperative management regime that defers management to the State of Alaska with Federal oversight. The FMP identifies three categories of management measures: (1) those fixed in the FMP and requiring an FMP amendment for changes; (2) those that are frameworked in the FMP which the State can change following criteria in the FMP; and (3) those that are set by the State. The Council plays a unique role in managing the crab fisheries; whereby, the Council establishes the harvest specifications by indicating the OFL and ABC for the upcoming fishing year. Under the State/Federal coordination, a State management plan determines whether a sufficient crab abundance exists to allow a fishery, and what the total allowable catch (TAC) will be.

On October 19, 2021, the EBS snow crab stock

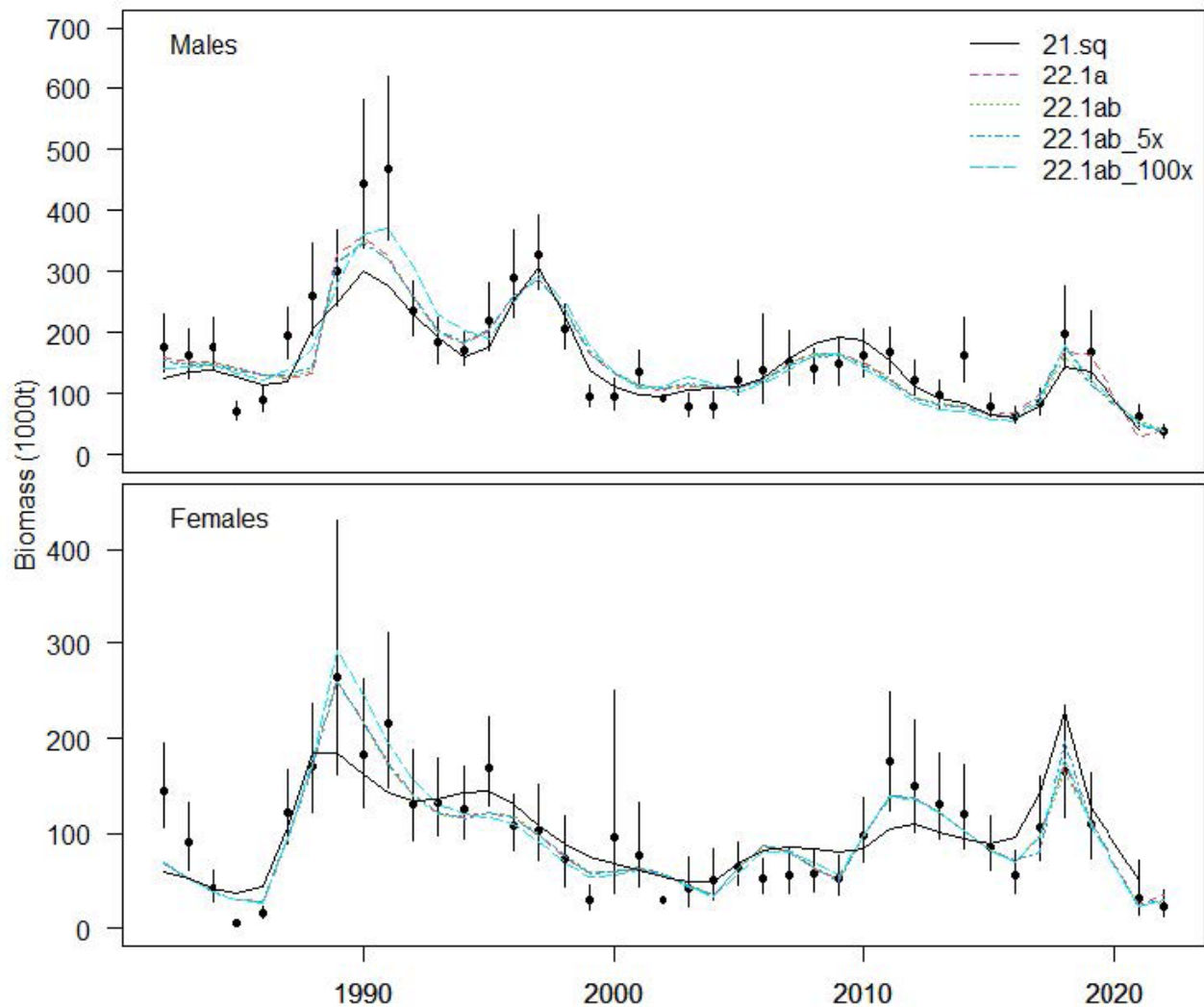
was declared overfished. Section 304(e)(3) of the MSA requires the Council and Secretary of Commerce (Secretary) develop and implement a rebuilding plan within two years of receiving notification from the Secretary that the stock is overfished, approaching an overfished condition, or has not made adequate progress towards rebuilding. In order to comply with provisions of the MSA, the EBS snow crab rebuilding plan must be implemented prior to the start of the 2023/2024 fishing season.

National Standard 1 (NS1) of the MSA states, "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

National Standard 8 (NS8) of the MSA states that, "Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities."

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Crab Population, continued



Example of (top) male and (bottom) female biomass estimates under (lines) different assessment model configurations compared to (solid circles) NMFS survey estimates with 95% CI bounds. Figure from C. Szuwalski, NMFS, per. com.

The Council is currently in the iterative review process to develop a rebuilding plan for EBS snow crab. Consistent with MSA, and NS1 guidelines, a plan would be established, to rebuild the stock in as short a time as possible (T_{target}), considering the status and biology of the overfished stock, the needs of fishing communities, recommendations by international organizations in which the United States participates, and the interaction of the overfished stock within the marine ecosystem. The fastest rebuilding time (T_{min}), is calculated based on no fishing mortality ($F=0$). Based on SSC recommended model-projections for EBS snow crab, the time with a greater than 50% probability of rebuilding to B_{MSY} at $F=0$ (T_{min}) is 6 years. Because $T_{\text{min}} < 10$ years, $T_{\text{max}} = 10$ years based on

NS1 guidelines. These rebuilding parameters were selected at the October 2022 SSC meeting.

The Council is scheduled to discuss the Initial Review Analysis for a rebuilding plan in December 2022, and take final action in February 2023. The rebuilding plan will be incorporated as an amendment to the FMP. Following final action, NMFS staff will work on implementing the rebuilding plan by the 2023/2024 fishing season.

Once the rebuilding plan is implemented, NS1 guidelines require the Secretary ensure that adequate progress is being made under a rebuilding plan. Throughout the rebuilding plan for EBS snow crab, assessment surveys and biological data collection would be continued and help to facilitate the determination of adequate

Crab Population, continued

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2018/19	63.0	123.1	12.5	12.5	15.4	29.7	23.8
2019/20	56.8	167.3	15.4	15.4	20.8	54.9	43.9
2020/21	76.7	26.7	20.4	20.4	26.2	95.4	71.6
2021/22	91.6	41.2	2.5	2.5	3.6	7.5	5.6
2022/23		55.0				10.3	7.7

Status and catch specifications (1,000 metric tons) for EBS snow crab in 2022. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and were only updated for total and retained catch. Table from C. Szuwalski, NMFS, per. com.

progress. Per MSA guidelines, the Council will receive updates on rebuilding on a biennial basis to ensure adequate progress is being made.

Many BSAI crab stocks are currently experiencing, or have experienced, declines in recent years. Rebuilding plans are already in place for Pribilof Island blue king crab and Saint Matthew blue king crab. In addition, female mature biomass in the Bristol Bay red king crab fishery has been too low in the past two years for ADF&G to open the fishery. However, the Bristol Bay stock has not been declared overfished. For the 2022/2023 season, both the EBS snow crab and the Bristol Bay red king crab fishery will remain closed. This is the first time in history that two of the dominant directed crab fisheries will not open. There are many factors contributing to the decline in BSAI crab stocks, in addition to several uncertainties surrounding the current ecosystem conditions. As shown above, the current MSA and national standard guidelines act as a rulebook to follow should a stock be declared overfished and require a rebuilding plan.

The following stock status definitions are contained in the FMP:

Acceptable biological catch (ABC)—a level of annual catch of a stock that accounts for the scientific uncertainty in the estimate of OFL and other specified scientific uncertainty, and is set to prevent, with over 50 percent probability, the OFL from being exceeded. The ABC is set below the OFL.

Total allowable catch (TAC)—the annual catch target for the directed fishery for a stock.

Maximum sustainable yield (MSY)—the largest long-term average catch or yield that can be taken from a stock under prevailing ecological and environmental conditions.

F_{MSY} control rule—the harvest strategy, expressed as a fishing mortality rate, which would be expected to result in a long-term average catch approximating MSY.

B_{MSY} —the biomass that results from fishing at constant F_{MSY} and is the minimum standard for a rebuilding target when a rebuilding plan is required.

Minimum stock size threshold (MSST)—one half the B_{MSY} stock size.

Overfished—determined by comparing annual biomass estimates to the MSST. For stocks where MSST (or proxies) are defined, if the biomass drops below MSST, the stock is considered overfished. For crab stocks, biomass for determining overfished status is estimated on February 15 of the completed fishing year and compared to the MSST from the most recent accepted assessment.

Overfishing Level (OFL)—calculated by applying abundance estimates to the F_{OFL} control rule.

Overfishing—any amount of catch in excess of the overfishing level (OFL).

Sarah Rheinsmith is a fishery analyst with the NPFMC, and serves as the Crab Plan Team coordinator. Prior to working for the NPFMC, she obtained her M.S. in Marine Biology from the University of North Carolina Wilmington where her research focused on nervous system development in Sockeye Salmon. After 25 years with the Alaska Department of Fish and Game, Bill Bechtol obtained a Ph.D. in Fisheries from the University of Alaska Fairbanks studying population dynamics in red king crab and now serves on the BSAI Crab Plan Team.

Oncorhynchus back issues at
<https://www.afs-alaska.org/newsletter>

Diversity, Equity, and Inclusion Committee

Are you interested in helping Alaskan fisheries professions become more diverse and inclusive? Want to promote equitable practices within the AFS Alaska Chapter? The Diversity, Equity, and Inclusion Committee (DEIC) is looking for dedicated individuals to help us advance our mission (see below). All career stages (undergraduate/graduate students, early career professionals, faculty, agency staff, retired members, etc.) are encouraged to participate. The DEIC activities include, but are not limited to: organizing annual workshops, facilitating affinity group meetings, leading mentorship activities, reviewing Chapter procedures and bylaws, participating in planning and governance meetings, and soliciting funds for DEIC programming. Visit <https://afs-alaska.org/about-us/committees/dei-committee/> for more information and contact deic@afs-alaska.org with any questions. Initial self-nominations are due by February 1, 2023.

The Diversity, Equity, and Inclusion (DEI) Travel Award is intended to increase participation among individuals who identify as part of underrepresented groups in fisheries or a related discipline (e.g., in terms of race, ethnicity, gender identity, sexual orientation, socioeconomic background, physical and/or mental abilities). Successful applicants will receive travel support to attend the annual meeting as well as a year-long AK-AFS membership. To apply, visit <https://afs-alaska.org/about-us/committees/dei-committee/>

Seeking Information on Atypical Coregonids

Have you caught, handled, or photographed any Coregoninae with atypical morphology, or individuals that looked like they might have been a result of hybridization? A team of fisheries researchers is collecting information on the occurrence of Coregoninae hybrids and ecophenotypic morphotypes. If you would be willing to share observations or photographs of such fish, please contact kfraley@wcs.org. We would be greatly appreciative of any information provided! 🐟

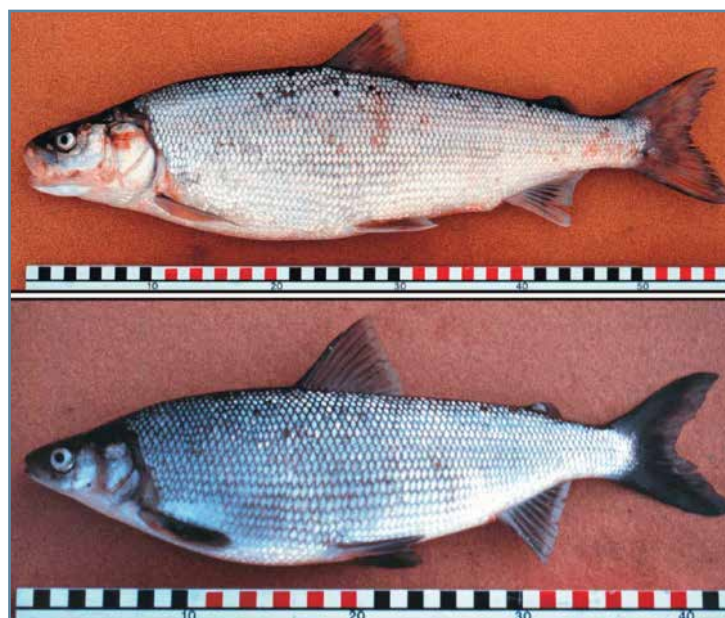
Examples of hybrid whitefish thought to be from cross breeding of Humpback Whitefish and Inconnu (top) and Humpback Whitefish and Least Cisco (bottom) from the Yukon River drainage, Scale bars are in cm (30 cm \cong 12 inches). Photo by R Brown.

(applications are due February 10, 2023). Questions or comments can be directed to deic@afs-alaska.org.

Mission Statement: The Diversity, Equity, and Inclusion Committee (DEIC) of the AFS Alaska Chapter aims to foster a professional community where everyone feels welcome, respected, and supported. We advocate for policies and procedures that promote diversity, equity, and inclusion in fisheries science and resource management. We also strive to remove systemic barriers to participation and serve as a resource to help recruit and retain individuals with underrepresented identities.

Help us get to know the AK Chapter membership! As we continue to work toward making our professional society more inclusive, we look to you to help direct our efforts. A major part of identifying areas of need is understanding the existing make-up of the AK Chapter.

If you haven't done so already, please take a moment to complete our inaugural demographic survey so that we can learn more about the AK Chapter membership. We plan to administer this survey each year so that we can track how the membership is impacted by various initiatives through time. Your anonymous and confidential responses will help us develop strategies to increase access to fisheries science, management, and education across the state. This is your last chance to become a data point for 2022! Questions and comments can be directed to deic@afs-alaska.org. 🐟



Environmental Concerns Corner

Pebble Mine

In September, the Alaska Chapter—with approval of the Executive Committee—joined the parent society in submitting comments on the proposed determination to restrict the use of certain waters in Alaska's Bristol Bay watershed as disposal sites for discharge of dredged or fill material in association with mining the Pebble deposit. In the letter (<https://fisheries.org/2022/09/afs-supports-epa-restrictions-on-pebble-mine/>) we encouraged the U.S. Environmental Protection Agency (EPA) to move quickly to finalize this process to ensure that these valuable resources are protected. We appreciate the collaboration with the parent society and the opportunity to voice our support for Bristol Bay's prolific, sustainable, all-wild salmon fisheries.

Roadless Rule

The Trump Administration proposed removing the 2001 Roadless Area Conservation Rule from the Tongass National Forest after going through a rulemaking process. The Alaska Chapter submitted comments opposing the plan to exempt the Tongass from the Roadless Rule in December 2019. In October 2020, the Trump Administration removed roadless protections from the Tongass. Shortly thereafter, the Biden Administration resolved to restore the Roadless Rule to the Tongass due to public outcry and pressure from local communities and Tribes. A comment period for restoring the 2001 Roadless Rule to the Tongass

Steven Berkeley Marine

Conservation Fellowship

This fellowship was created by AFS in 2007 to honor the memory of Steven Berkeley, a dedicated fisheries scientist. Berkeley was a long-time member of AFS and a member of the first Board of Directors of the Fisheries Conservation Foundation. This fellowship comprises a competitively-based \$10,000 award to a graduate student actively engaged in thesis research relevant to marine conservation; a focus on fisheries issues is not required. For information and application requirements, see mfs.fisheries.org. Send electronic applications and letters of recommendation to Lauren Maza at lmaza@fisheries.org. The application deadline is February 1, 2023. 🗨️

occurred throughout December 2021–January 2022. The Alaska Chapter submitted comments supporting reinstating the Roadless Rule. During the Southeast Alaska Sustainability Strategy press conference (September 6, 2022), the Secretary of Agriculture announced that he expected the rule to be restored by the end of the year.

If you have 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. 🗨️

John A. Knauss Marine Policy Fellowship

The Sea Grant John A. Knauss Marine Policy Fellowship Program is designed for graduate students with an interest in ocean, coastal, or Great Lakes resources and in national policy decisions affecting those resources. Up to 30–50 eligible graduate students from any discipline will receive a year of paid experience in Washington, D.C., working on ocean issues with U.S. Congressional offices or with an executive branch, such as the National Oceanic and Atmospheric Administration or National Science Foundation. Deadline: mid-February 2023 for fellowships that begin in February 2024. For more information visit <https://alaskaseagrant.org/education/awards-fellowships/knauss/>. 🗨️

NPRB Research Grants

The North Pacific Research Board is offering 2023 Graduate Student Research Awards. These awards support scientific and scholarly research to inform effective management and sustainable use of North Pacific marine resources. Awards will be \$26,000 each, with at least six students selected in May 2023. Funds may be used for graduate student stipend and standard benefits, tuition or required university fees, research-related travel, supplies, and laboratory analyses. Students must be enrolled in a graduate degree program at an accredited U.S. university or college at the time of submission. The application deadline is February 22, 2023. For more details on eligibility and proposal requirements, visit <https://nprb.org/graduate-research-awards/>. 🗨️

2022–2023 Alaska Sea Grant State Fellows

The University of Alaska Sea Grant program recently announced the 13 State Fellows selected for 2022–2023. This is the largest fellowship group in the program's history. These fellowships match soon-to-be, or recently finished, graduate students with hosts in Alaska-based state or federal agencies or nonprofits for a full year of paid on-the-job experience in marine science and policy positions. The 2022–2023 fellows include:

Benjamin Americus, with the Alaska Fisheries Development Foundation, will summarize a 12-year study on hatchery salmon straying, with results used to facilitate certification of Alaska salmon fisheries by Responsible Fisheries Management (RFM) and the Marine Stewardship Council (MSC).

Juliana Cornett will join the mariculture team at the NOAA Alaska Fisheries Science Center in Juneau as support for several mariculture projects, including a project monitoring the health of farmed oysters and the relationship among environmental conditions, saxitoxin levels, and harmful algal blooms.

James Currie, with the NOAA Fisheries Alaska Region Aquaculture Program in Juneau, combining data analysis, science communication, and stakeholder engagement, will help create a portfolio of suitable sites for aquaculture in Alaskan waters.

Karen Grosskreutz, working with the Indigenous Aquaculture Collaborative, will identify and increase awareness of sea gardens, such as clam gardens, in Alaska through literature review, site visits, and knowledge sharing.

Noelle Helder, in her second fellowship year with the Alaska Center for Energy and Power at the University of Alaska Fairbanks, uses tools such as drones, sonar, and satellite data to map Arctic coastal changes to support emerging renewable technologies including tidal and wave hydrokinetic energy.

Sean Kelly, working with Alaska Sea Grant's coastal community resilience specialist will help catalog resilience and climate adaptation plans among Alaska Native Tribal communities, exploring trends in how Tribes approach resilience and adaptation.

Clay McKean, with the North Pacific Fisheries

Management Council, will analyze fishery data and prepare biological, environmental, and regulatory impact analyses for use in fishery management plans.

Robin McKnight, working as mariculture development coordinator for the Alaska Fisheries Development Foundation, will focus on outreach and communication projects for the Alaska mariculture industry.

Jamie Musbach, continuing her fellowship with the National Marine Fisheries Service Protected Resources Division in Juneau, is focused on the recovery likelihood for Western Distinct Population Segment (WDPS) of Steller sea lions; education, outreach, and planning to reduce pinniped entanglement in fishing gear; and a review of mercury contamination in samples from the western and central Aleutian Islands during the past 20 years to inform how disease or contaminants may be limiting WDPS Steller sea lion recovery.

Drew Porter, with the NOAA Alaska Fisheries Science Center Recruitment, Energetics, and Coastal Assessment Program, is researching issues affecting Alaska's fisheries, and will also help develop novel analytical methods to monitor the impact of thiamine deficiency in fish.

Douglas Shaftel, with the Alaska Mariculture Alliance, will collaborate with public and private entities to refine regulations for shellfish and seaweed farms, and develop processes for mariculture grant administration.

Michelle Trifari, working for the NOAA National Marine Fisheries Service Protected Resources Division in Juneau, will address management needs associated with the recovery of the Western Distinct Population Segment of Steller sea lions, will assist with marine mammal stranding responses, outreach, and data collection, and will work with the Alaska Ocean Guardian School Program to conduct outreach and collaborate with students on stewardship projects.

Harmony Wayner will work with the NOAA Marine Debris Program on an Alaska marine debris strategic plan that combines multiple stakeholder efforts for cleanup of Alaska's extensive, mostly remote, coastline. 🐟

Student Subunit Happenings

Jonah Bacon, Student Subunit Representatives

This past summer saw many talented individuals graduate from the College of Fisheries and Ocean Sciences and the University of Alaska:

Let's all congratulate them on their accomplishment! Good luck in all your future pursuits.

- Taylor Cubbage** (M.S. in Fisheries)—“Intraspecific variation and the leaping ability of Northern Pike (*Esox lucius*): implications for invasion ecology and management”
- Carolyn Hamman** (M.S. in Fisheries)—“The influence of acclimation on the organismal and molecular thermotolerance parameters in two Arctic teleosts”
- Molly Payne** (M.S. in Fisheries)—“Predicting stream attractiveness to stray hatchery-origin Chum Salmon to aid in understanding salmon dispersal and informing hatchery management”
- Mary Spanos** (M.S. in Fisheries)—“Evaluating the viability of the use of two tag types on prespawm Arctic Lamprey”
- Amy Kirkham** (Ph.D. in Fisheries)—“Physiological regulation of annual life history events in adult female Weddell Seals”
- James Currie** (M.S. in Marine Biology)—“Assessing annual nearshore carbonate chemistry trends in Alaska’s marginal seas”
- James Schloemer** (M.S. in Marine Biology)—“Marine and not terrestrial resources support nearshore food webs across a gradient of glacial watersheds in the northern Gulf of Alaska”
- Josianne Haag** (M.S. in Oceanography)—“The impact of submarine groundwater discharge on nutrient dynamics in a sub-polar mudflat”
- Anthony Jaster** (B.A. in Fisheries with a concentration in Fisheries Business and Social Sciences)
- Roger Maldonado** (B.S. in Fisheries and Ocean Sciences with a concentration in Fisheries Science)
- McKenna Slivensky** (B.A. in Fisheries with a concentration in Fisheries Business and Social Sciences)

Plans for new year

The Student Subunit at UAF is getting geared up for another successful year. Plans are being put in place now for another successful in-person student retreat. One of the greatest challenges for our Subunit has been the large geographical disconnect between our membership. Last year, this disconnect was identified as an area we could address to increase cohesion amongst our Subunit and increase AFS involvement by students. In April 2022, 14 CFOS graduate and undergraduate students participated in our first-annual Student Retreat in Seward. The success of this first Retreat was immediately felt by students who participated and recognized by financial supporters. The Retreat is currently being planned by Student Subunit officers so look for more communication regarding when and where it will be this year and don't miss out on the fun!

The CFOS Student Mentorship Program, which the Subunit helps to support, is still on-going. The Mentorship Program pairs undergraduate,

graduate, PhD, and postdoctoral individuals one-on-one to help navigate complexities of research, school, and career pursuits. If you are interested in joining the Mentorship Program, either as a mentor or as a mentee, please contact me and I will be happy to connect you with the Mentorship Program facilitators.

The Student Subunit is also looking into beginning a collaborative research project. In past years, the Student Subunit has been involved in research projects. You may recall the Alaska Blackfish population dynamics project ([Fralely et al. 2018](#)) and the Burbot toxicity project ([Walther et al. 2022](#)) that the Subunit completed in past years. The Subunit is looking at beginning a data analysis/modeling-centric project partnering with ADF&G. If you are interested in being involved in this project, please contact Subunit President Garrett Dunne (gdunne@alaska.edu).

The 2023 Alaska Chapter Annual Meeting is currently in the planning phase. The Student Subunit will be running a silent auction again

Continued on next page

Student Subunit Happenings, continued



AFS Alaska Chapter Student Representative, Jonah Bacon.

this year to support the Student Travel Fund. We are excited to bring back this component again as a hybrid in-person/virtual event! Students—look for communication from me this winter to help with the silent auction event.

The Annual Meeting will also be looking for student participation in helping to execute the meeting. In the past, the Student Subunit has been very involved in helping the meetings run smoothly. We are excited to once again be helping

Hutton Junior Fisheries Biology Program

The Hutton Junior Fisheries Biology Program is an 8-week, paid summer internship and mentoring program for high school students sponsored by the American Fisheries Society (AFS). The program targets high school juniors and seniors interested in pursuing the disciplines of fisheries science, marine biology, and STEM related fields. The principal goal of the Hutton Program is to stimulate interest in careers in fisheries science and management among groups underrepresented in the fisheries professions, including minorities and women. Selected students, known as “Hutton Scholars,” are mentored by fisheries professionals to enjoy an 8-week hands-on fisheries science summer experience in a marine and/or freshwater setting. Scholars receive a \$4,000 scholarship award.

The Hutton program depends extensively on mentors to support Hutton Scholars. Mentors and their organizations not only have the opportunity to impart a positive effect on the life of a high school student, but also receive assistance with important summer projects and may even discover a potential

in this capacity. Students—look for communication from me regarding helping out at the Annual Meeting.

Every spring, the Subunit hosts a Student Symposium. During the symposium, students have the opportunity to present their research, regardless of where they’re at in their research timeline, to the Alaska AFS community. Students receive feedback from their colleagues and volunteer judges. This year, the symposium will be prior to the AFS Alaska Chapter Annual Meeting, allowing students to receive feedback prior to the larger chapter meeting. The Student Symposium Planning Committee is recruiting two new students, ideally one from Fairbanks and one from Juneau, to help plan this year’s and next year’s symposia. The Planning Committee is a two-year appointment, so it is ideal for a graduate or undergraduate student with a planned graduation date of Spring 2024 or later. The Symposium Planning Committee is a great opportunity to become more involved with the AFS Alaska Chapter and the Student Subunit. Please contact Will Samuel (wtsamuel@alaska.edu) or Matt Cheng (lhcheng@alaska.edu) if you are interested in joining the Planning Committee. 🐟

future employee! The American Fisheries Society simplifies the mentor’s involvement by Scholarship and Grant Funding Opportunities providing guidance and administrative support. Mentor applicants are strongly encouraged to apply as soon as possible and to recruit students, by visiting classes and communicating with science teachers and guidance counselors in local high schools. If paired with a Hutton Scholar: (1) internships should be eight weeks long starting after May 31 and ending before August 31; (2) selected mentors must meet in person with their student match by the end of May before the internship officially begins; and (3) all schedules, projects, trips and co-mentors must be identified and discussed with both your Hutton Scholar as well as the AFS Educational Program Coordinator before the internship start date.

For more information on how students apply for an internship, or information on serving as a mentor, please visit <http://hutton.fisheries.org>. The application deadline for this summer scholarship or to serve as a mentor is February 14, 2023. 🐟

Meetings and Events

Alaska Marine Science Symposium



January 23–27, 2023. This conference will be a hybrid event. More information will be posted at <https://www.alaskamarinescience.org>.

Alaska Forum on the Environment

February 6–10, 2023. This will be a hybrid event. More information is available at <https://akforum.org/alaska-forum-on-the-environment/>.



American Fisheries Society Alaska Chapter Annual Meeting

March 27–31, 2023. The 49th annual meeting of the AFS Alaska Chapter will be in Juneau, AK. More information will be posted at <https://afs-alaska.org>.



American Fisheries Society Western Division Annual Meeting

May 7–11, 2023. The next AFS Western Division meeting will be in Boise, ID. More information will be posted at <https://wdafs.org/meetings/annual-meeting/>.



Amazon Smile

The AFS Alaska Chapter is enrolled as a charitable organization in AmazonSmile. Anyone who shops online at Amazon can support the Chapter financially, at no additional cost! Simply shop through [AmazonSmile](#) and the AmazonSmile Foundation donates 0.5% of the purchase price of eligible purchases to the Alaska Chapter. This provides an ongoing contribution for supplemental income that can be used to support Chapter projects.

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 <https://fisheries.org/about/governance/afs-meetings-code-of-conduct/>. 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 brian.missildine@dfw.wa.gov.



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.](#)

ONCORHYNCHUS

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