ONCORHYNCHUS

Newsletter of the Alaska Chapter, American Fisheries Society

Vol. XXXX Winter 2020 No. 1

In this issue:

Golden king crab being dumped from pot hauled in the Aleutian Islands. Photo from Vicki Vanek.

Assessing and Managing Aleutian Islands Golden King Crab Based on Fishery-Dependent Data

Shareef Siddeek, Christopher Siddon, Ben Daly, John Hilsinger, and Vicki Vanek

Aleutian Islands golden king crab (*Lithodes aequispinus*), or brown king crab, sustain a stable and lucrative fishery; retained catch during 1981/82 to 2018/19 fishing seasons ranged from 599.2 to 6,685.6 metric tons (mt; 1.3 to 14.7 million lb) at 2018 exvessel values of $7.9 to $87.8 million. This fishery recently became the largest Alaska king crab fishery with a 2,964.7 mt (6.5 million lb) catch in 2018/19, surpassing the Bristol Bay red king crab catch of 1,954.1 mt (4.3 million lb). Golden king crab occur from the Sea of Japan to the northern Bering Sea, around the Aleutian Islands, the Pribilof and Shumagin islands, Shelikof Strait, Prince William Sound, and Southeast Alaska, and as far south as northern British Columbia. Golden king crab occupy high-relief habitats such as inter-island passes, various sea mounts, and the continental slope, but are typically harvested at depths of 183–503 m (100–275 fathoms) using rectangular crab pots ranging in size from 1.7 to 2.1 m (5.5 to 7.0 ft) across. Golden king crab average 1.6–3.8 kg (4.0–8.0 lb). Pots are longlined, with each "string" having 30 to 40 pots, each approximately 200 m apart, and on average 35 strings per vessel. Following *crab rationalization* in 2005/06, the number of operating vessels dramatically declined to 2 or 3 per region, east and west of longitude 174°W. Genetic studies to date have shown no clear separation of sub-stocks within the Aleutian Islands.

The stock boundary extends 370 km (200 nautical miles) from the shore in the U.S. Exclusive Economic Zone (EEZ), with co-management by the North Pacific Fishery Management Council (NPFMC) and the State of Alaska. This is the only uninterrupted fishery of the federally managed crab stocks in Alaska. Before the 1996/97 fishing season, the fishery was managed under a 3-S

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The President's Corner

Joel Markis, AFS Alaska Chapter President.

Greetings fisheries folks! We are in a new year and I hope everyone was able to enjoy the holidays while spending time with family and friends, reflecting on the previous year, and looking forward to the upcoming year with hope and promise.

Since our last newsletter publication, the Executive Committee (ExComm) met in person for our third annual ExComm retreat. We held the retreat in Anchorage over three days the weekend before Thanksgiving. This gathering featured fruitful thought and discussion on our Chapter, Alaskan fisheries, and how to better serve our membership and the fisheries community as a whole. While at our retreat I proposed a Plan of Work for the upcoming year. This plan is focused on four primary categories starting with hosting a successful annual Chapter meeting in Fairbanks this spring. We are well on our way to this endeavor with meeting planning in full swing. President-Elect Stephanie Quinn-Davidson has been working tirelessly to facilitate an engaging and productive gathering of fisheries professionals with this year's theme being Northern Fisheries on the Frontlines of Change. More detailed meeting information is in this issue and also at *https://units.fisheries.org/ak-mtg/*.

The second initiative in the Plan of Work focuses on financial sustainability. In the coming year, the ExComm and the Financial Assets Oversight Committee will work to implement the budget we have developed, to streamline our budgeting process, and to

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Golden King Crab, continued

system (i.e., restrictions on size, sex [male-only], and season), and a maximum harvest level that has subsequently been specified as a Guideline Harvest Level (GHL) or a Total Allowable Catch (TAC). The fishery was restructured in 1996/97 to replace the Adak and Dutch Harbor areas with the Aleutian Islands Registration Area O, and golden king crab in the areas east and west of longitude 174ºW were managed as two separate stocks. Hereafter, stock segments east and west of longitude 174ºW are respectively referred to as EAG and WAG. Beginning in 2005/06, the Aleutian Islands golden king crab fishery was prosecuted under the Crab Rationalization Program that consolidated the crab fleet and allocated individual harvest quotas. A community development quota (CDQ) fishery for golden king crab in the EAG and the Adak Community Allocation fishery for golden king crab in the WAG were included as part of crab rationalization, with allocations for 10% of the TAC.

Despite the significant contribution to Alaska crab harvests, biological and survey information have been lacking for a comprehensive model-based stock assessment. Lack of age data inhibits the development of an age-based stock assessment model. Nevertheless, fishery-dependent data on historical catch, effort, size composition, male maturity (based on male chela height), and onboard observer sampling, as well as mark-recapture data, informed development of a male-only length-based stock assessment model that was accepted by the NPFMC in 2017 for management reference point determination (i.e., overfishing level [OFL]; acceptable biological catch [ABC]; and mature male biomass [MMB] for status determination).

The Alaska Fisheries Science Center Kodiak Lab, Alaska Department of Fish and Game (ADF&G), and fishing industry (Aleutian King Crab Research Foundation) worked together to address data gaps and initiate efforts to reduce bycatch of non-legal crab. A significant outcome of this industry and agency collaboration has been initiation of an annual, fishery-independent pot survey, which started in 2015 for the EAG and was extended to the WAG in 2018. The assessment uses survey

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President's Corner, continued

finalize the Chapter Financial Sustainability Plan. We bring in most of our revenue through our Chapter's annual meetings, and we believe there is additional opportunity to increase revenue through fundraising and charitable giving which could strengthen our scholarship, travel, and memorial funds that greatly benefit many of the student and non-student members and our Chapter.

The third initiative focuses on member engagement. Chapter membership has steadily declined over the past decade with greatly reduced participation in annual meetings, especially from state, federal, and tribal agencies. Much of this results from tightened budgets, but we need to highlight the value of our society and Chapter and encourage participation from these and other under-represented sectors. One example of our efforts is an open letter being drafted to agency commissioners and directors arguing the importance of participation, not only at our annual meetings but in our professional society as a whole. Much of this will focus on the benefits of participation, whether it be sharing of ideas and research, networking and professional development opportunities, or through the promotion of sustainable management practices, all of which agencies and agency personnel benefit greatly from. I believe with these and other efforts put forth by all of our members, we can increase participation and continue to strengthen the fisheries profession.

The final initiative focuses on Electronic Communication. During my tenure on the ExComm, you may have noticed a transition to a new updated website, cleaner and more aesthetic Chapter email correspondence through Mailchimp, and an increased presence on social media. This is a trend we hope to continue, enhancing our engagement and the ease of communication with our Chapter membership.

Given the many things discussed at our Chapter retreat, it was a highly successful event. The work done during those few days will guide the ExComm in this next year as we focus on serving our membership better and maintaining high standards for the fisheries profession while ensuring conservation of Alaska's fisheries.

This will be my last newsletter post as Chapter President and I would like to say it has been an honor representing our membership and working to better our profession. I have grown considerably during my time on the ExComm and I look forward to continuing to support the Chapter in the Past-President role. Thank you all for the hard work you do to better Alaska's fisheries and fisheries resources.

Sincerely, Joel

AFS Alaska Chapter Awards

Please, recognize your cohorts, or someone or an organization that you know or work with. The Alaska Chapter of the American Fisheries Society provides a variety of awards to recognize individuals or organizations for achievements important to maintaining high standards in the fisheries profession and ensuring conservation of Alaska's fisheries. A short list of awards includes:

Meritorious Service Award – for individual outstanding contribution in any area of Alaska fisheries.

Chapter Service Award – outstanding service to the AFS Alaska Chapter.

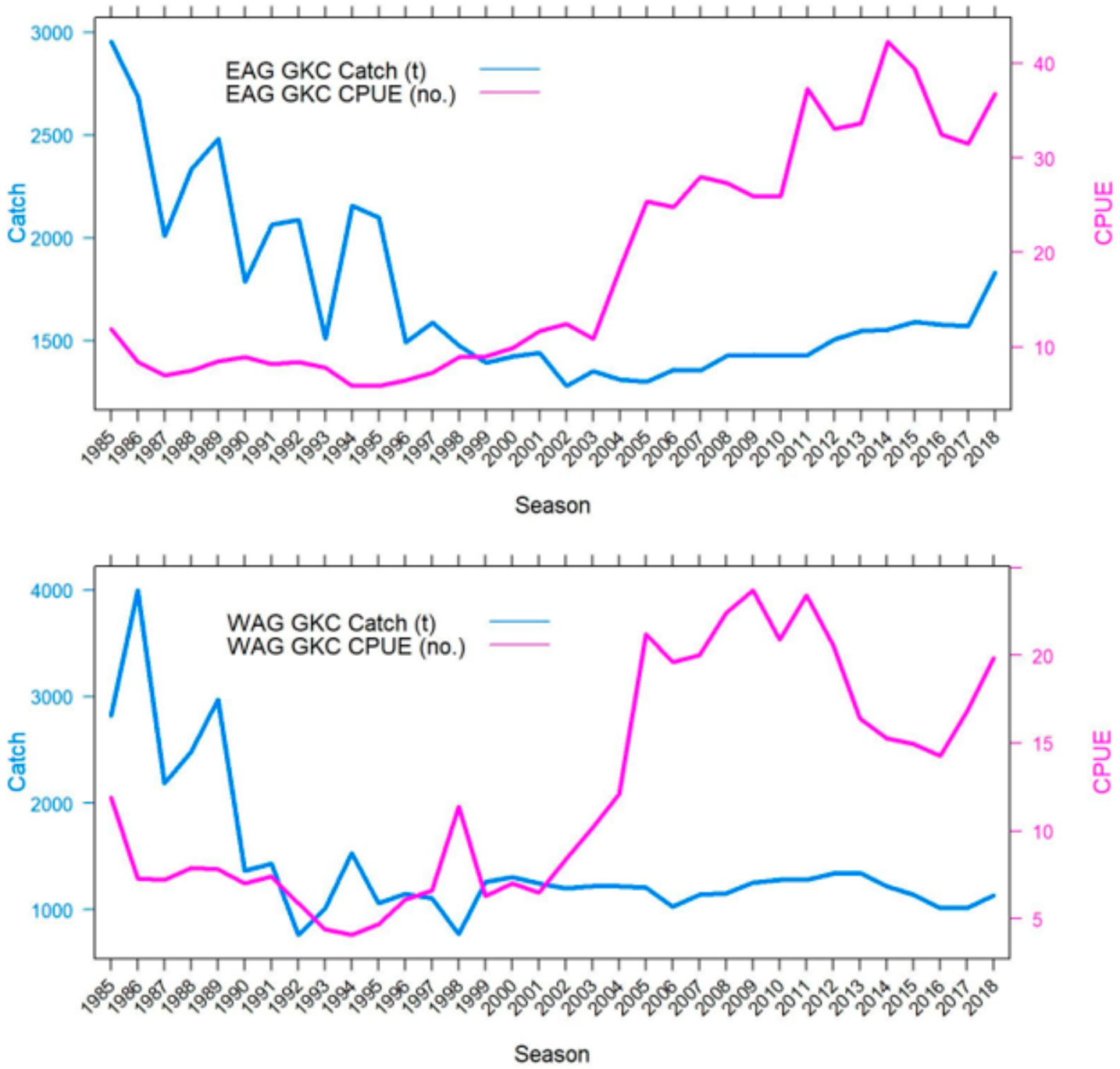
Cultural Diversity Travel Award/Scholarship – a monetary award for an Alaska Native or other minority person to cover travel expenses to attend the 2020 Alaska AFS Annual Meeting, March 23-26, 2020 in Fairbanks, Alaska

Almost Darwin Award – recognizes the most humorous and outrageous fisheries faux pas of any fisheries professional within the last calendar year.

Wally Noerenberg Award for Fishery Excellence – bestowed as a special honor on individuals who have made great and outstanding contributions to Alaska fisheries.

A full listing of awards, including award specifications and nomination forms, may be found at *https://afs-alaska.org/awards-scholarships/* or by contacting Jeff Falke (*pastpresident@afs-alaska.org*).

Golden King Crab, continued



Annual golden king crab catch (metric tons) and CPUE (crab per pot lift) in the eastern (EAG) and western (WAG) Aleutian Islands golden king crab management areas. *Figures from Shareef Siddeek.*

catch-per-unit- effort (CPUE) indices to strengthen the validity of biomass estimates generated by fishery-dependent data.

State regulations include season, sex, minimum landing size, and observer coverage. Currently, effective regulations are: 1) August 1 to April 30 fishing season; 2) male-only fishery; 3) minimum legal-size limit of 152-mm (6.0-in) carapace width (CW), including spines; and 4) onboard observers on catcher vessels when at least 50% of the retained catch is captured in each of the three trimesters of the fishing season. Onboard observers are always required on catcher-processor vessels throughout the fishing season. Observer data are critical to the model-based stock assessment. The minimum size

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Golden King Crab, continued

was intended to allow at least one annual molt increment larger than the 50% maturity length for males.

Field and lab observations of increased reproductive activity (females molting/oviposition and observations of grasping pairs) during spring and summer are associated with shifts in distribution to shallower depths (<150 m), suggesting a seasonal component to reproductive activity despite an asynchronous reproductive cycle. Apart from the mating season, males and females are largely spatially segregated, but inhabit similar depths. Unlike other king crab, larval development of the golden king crab is lecithotrophic (i.e., larvae can successfully develop into juveniles without feeding). Crustaceans need to molt into a new carapace (outer shell) to grow. Golden king crab have an extended molting period and the inter-molt period can exceed one year. We used data on tagged male crab release-recapture sizes by time at large to estimate the molt probability and annual growth increment in the stock assessment model. The annual mean growth increment of >90 mm carapace length (CL) male golden king crab was estimated to be 14.4-mm (0.6-in) CL.

Biological sampling of golden king crab. Photo from Vicki Vanek.

A size-structured assessment model based on fisheries-only data was initially used for stock assessment and management separately for the EAG and WAG. The underlying population dynamics model is male-only and length-based. This model combines commercial retained catch (1981/82 to 2018/19), total catch (1990/91 to 2018/19), groundfish fishery discarded catch (1989/90 to 2018/19), standardized observer CPUE for legal crab (1995/96 to 2018/19), standardized fishery CPUE (1985 to 1998/99), and tagging data (from 1991, 1997, 2000, 2003, and 2006 releases). Tagging data were used to calculate the annual growth transition matrix within the stock assessment model. The stock assessment model was fitted with *AD Model Builder*. As male golden king crab mature, the ratio of chela (claw) height to CL increases, so chela height and CL data were used outside the model to determine a knife-edged length of 50% maturity.

The assessment model goal is to estimate the MMB time series for stock status determination, then estimate OFL and ABC reference points based on the MMB. The OFL and ABC estimates for the 2019/20 fishing season were 3,418 and 2,564 mt (7.5 and 5.7 million lb) for EAG; and 1,831 and 1,373 mt (4.0 and 3.0 million lb) for WAG, respectively, with both stock components currently above Maximum Sustainable Yield (*https://www.npfmc.org/fishery-management-plan-team/bsai-crab-plan-team/*).

While low sampling intensity and opportunistic observer sampling raise questions about the reliability of observer data for stock assessment, we found that observer CPUE trends were similar to total fishery CPUE trends. However, fishery-independent surveys involving a collaboration between the fishing industry and ADF&G were initiated in 2015 to reduce this potential bias. For the surveys, industry participants placed strings in randomly selected sampling grids 3.7 x 3.7 km (2 x 2 nautical miles) during the first month of

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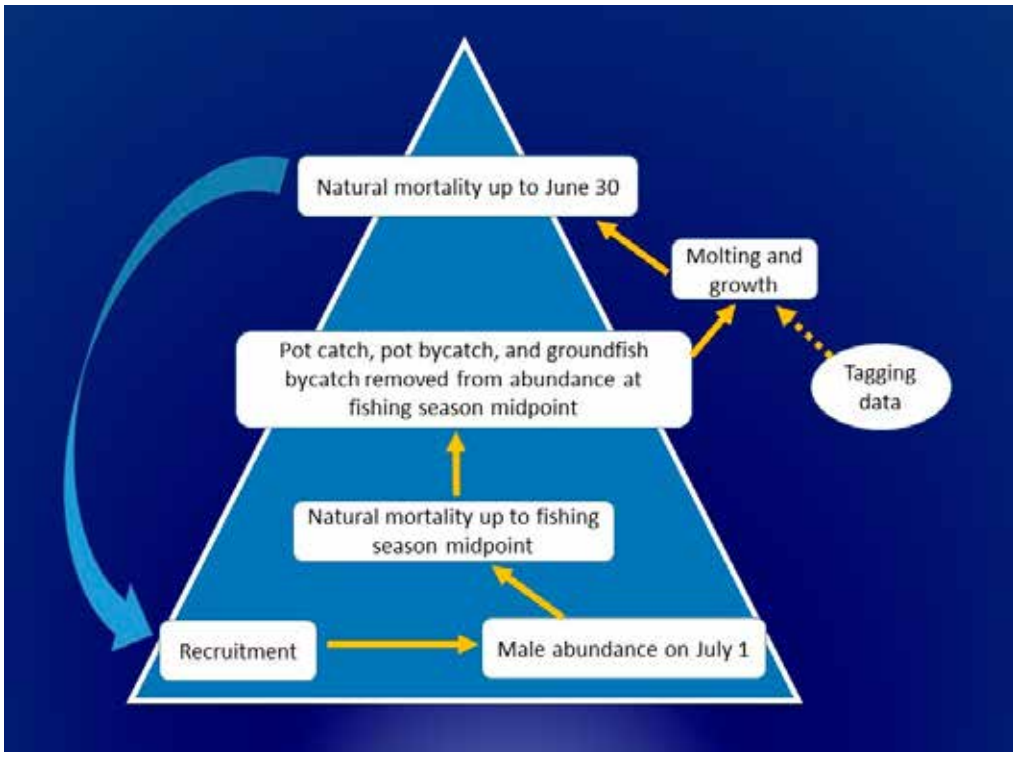
Golden King Crab, continued

each fishing season. Onboard ADF&G observers collected fishery and biological data for stock assessment and special studies. The sampling protocol ensured data collection from a target number of pots from separate strings. Since this two-stage sampling scheme differs from normal observer sampling, a random effect model was proposed by the Crab Plan Team (CPT; a technical body for the NPFMC) to analyze data for CPUE estimation. This CPUE data is being incorporated into an assessment model to refine the biomass estimates.



Conceptual length-based model for golden king crab in the Aleutian Islands Management Area. *Figure from Shareef Siddeek.*

In terms of process, NOAA, NPFMC, and ADF&G jointly manage the golden king crab fishery under the federal Fishery Management Plan (FMP) for Bering Sea/Aleutian Islands King and Tanner Crabs, with in-season management deferred to ADF&G. The CPT reviews the annual stock assessment of Aleutian Islands golden king crab in May and recommends the OFL and ABC for the Science and Statistical Committee (SSC) and NPFMC to review and approve. The CPT also prepares an annual stock assessment and fishery evaluation (*SAFE*) report for the golden king crab fishery. Once the OFL and ABC have been approved, ADF&G sets the annual TAC that will not exceed the ABC and confirms the fishery opening. A new harvest strategy based on model-based annual mature male abundance was developed in consultation with stakeholders. A sloping harvest control rule, in which the harvest rate is set to zero at low stock abundances and increases at larger stock sizes, was examined by stochastic simulations. This harvest strategy was approved by the Alaska Board of Fisheries in March 2019 and first implemented for the 2019/20 fishing season. Under this harvest strategy, the maximum harvest rate is 15% in the EAG and 20% in the WAG.

Shareef Siddeek, a biometrician with ADF&G in Juneau, has a Ph.D. in fish population dynamics; Christopher Siddon, a fishery scientist with ADF&G in Juneau, has a Ph.D. in fish ecology; Ben Daly, an ADF&G research coordinator in Kodiak, has a Ph.D. in shellfish aquaculture; John Hilsinger is a retired ADF&G Director of Commercial Fisheries and has an M.S. in fishery biology; and Vicki Vanek, a research biologist at ADF&G in Kodiak, has a D.V.M.

500 Women Scientists

The organization 500 Women Scientists, formed in 2016 to connect women scientists who support an inclusive society and science, has members across the US and in over 100 countries globally. Members pledge to build an inclusive scientific community dedicated to training a more diverse group of future leaders in science and to use the language of science to bridge divides and enhance global diplomacy. Local efforts occur through chapters, often termed pods, with an individual pod deciding its goals. Possibilities include advocacy, activism, science outreach, mentoring, or just fostering a space to get to know other women scientists. The organizer of the *Alaska Pod* is Emily Lescak (elescak@alaska.edu).

AFS Alaska Chapter Annual Meeting

The 2020 annual meeting of the AFS Alaska Chapter is rapidly approaching. This meeting will occur March 23–26 in Fairbanks, AK, at the Westmark Fairbanks. The opening social will be in the evening of March 23 and the concluding banquet the evening of March 26. Under the theme Northern Fisheries on the Frontlines of Change, preliminary abstracts for oral or poster presentations are due February 19, 2020. Additional meeting information, including symposia descriptions, instructions on abstract submission, and registration details can be found at *https://units.fisheries.org/ak-mtg/*. For questions or suggestions, contact Program Committee Chair, Stephanie Quinn-Davidson, *presidentelect@afs-alaska.org*.

Room blocks have been set aside at the Westmark Fairbanks (*https://www.westmarkhotels.com/destinations/fairbanks-hotel/*; 800-544-0970). Room rates through March 1 with the Group Code fisheries03222020 are $119 plus 7% tax and including breakfast.

You may register at *https://units.fisheries.org/ak-mtg/2019-registration/*. Early bird registration occurs until February 23, after which fees increase. Meeting attendees can also register (at the late/higher rate) on-site during the meeting. A registration reminder email will be sent once registration opens.

The program will include high-quality and diverse symposia that reflect the meeting theme and address current and future issues in the conservation and management of aquatic resources. These sessions will address our mission to improve conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries and aquatic science and promoting development of fisheries professionals. Abstracts for oral or poster presentations may be submitted through February 19, 2020, at *https://www.surveymonkey.com/r/39KXJ7N*. Contact Stephanie Quinn-Davidson, (*presidentelect@afs-alaska.org*) or Peter Westley (*pwestley@alaska.edu*) for more information.

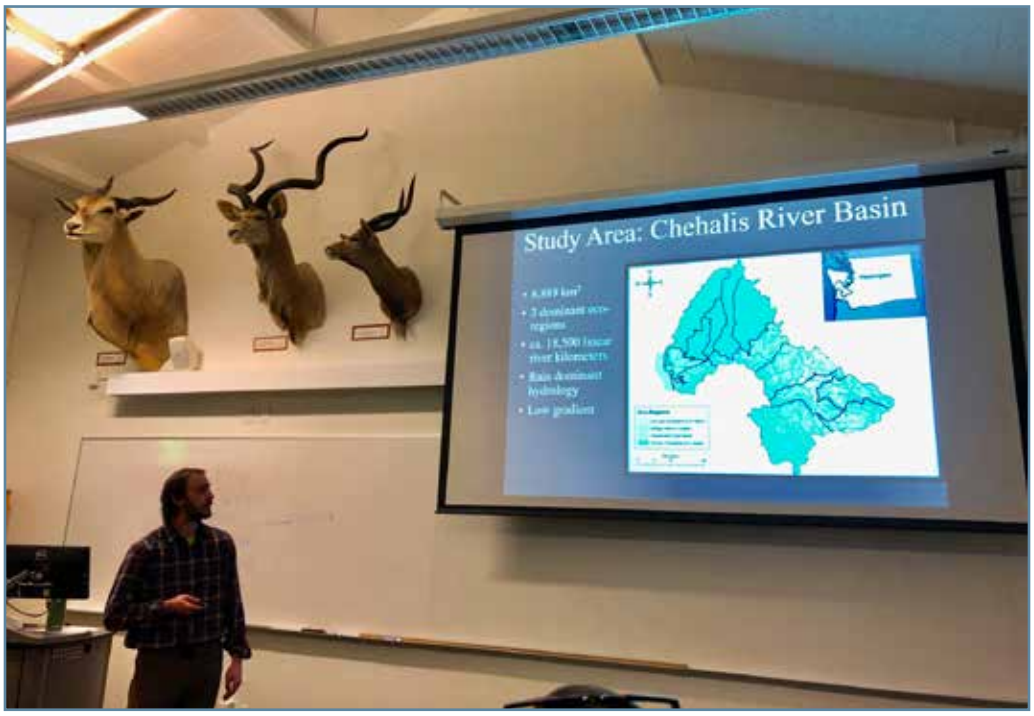
Saxitoxin Found in Clams of the Bering Strait and Chucki Sea

As an indication that ocean warming is expanding northward, high concentrations of the toxic algae *Alexandrium catenella* have been detected in waters off western and northern Alaska. *A. catenella* is an algae that can produce a biological toxin called saxitoxin. The saxitoxin can cause Paralytic Shellfish Poisoning (PSP) in humans and marine mammals, blocking nerve functions and resulting in difficulty breathing and paralysis. During August 2018 and 2019, researchers aboard the U.S. Coast Guard icebreaker *Healy* reported a "bloom event" due to high concentrations of *A. catenella* algae (~1,500–8,000 cells per liter) in the seawater just north of the Bering Strait and in the Chukchi Sea, with lower concentrations (~1,000 cells per liter) observed ~60 miles northwest of Utqiaġvik. During the bloom events, samples of filter-feeding marine organisms, including clams, worms, and zooplankton (krill and copepods), were collected. Moderate levels (below the regulatory limit) of saxitoxin were detected in the clams, worms, krill, and copepods at all locations. However, during August 2019, clams at two offshore locations (70 miles north of Saint Lawrence Island and 50 miles north of Cape Lisburne) had high saxitoxin concentrations unsafe for human consumption and above the seafood safety regulatory limits. Saxitoxins are a recognized human health hazard in the Gulf of Alaska, eastern Aleutian Islands, and other areas of the coastal U.S. People can develop PSP after eating clams, crabs, and other seafood contaminated with high levels of saxitoxin. This recent detection of algal biotoxins in marine mammals from western and northern Alaska has raised concerns regarding potential health effects to important marine wildlife, and food-safety concerns among coastal communities. Algal toxins cannot be detected by sight, smell, or taste, and no amount of cleaning, freezing, or cooking will remove the toxins. There were no PSP symptoms reported after eating traditional seafoods in Bering Strait or Chukchi Sea coastal communities during August 2018 or 2019. However, people are encouraged to remain vigilant and immediately alert local healthcare providers if feeling sick after eating seafood in the Bering Strait/Chukchi Sea region. For more information on the study and its findings, go to *https://seagrant.uaf.edu/bookstore/pubs/MAB-75.html*.

Student Subunit Happenings

Donnie Arthur, Student Subunit Representative

This year, fisheries students from across Alaska have endured a frigid winter with temperatures diving well-below zero at all campus locations throughout the state. Regardless of the cold, these students have rung in the New Year focused and determined. The spring semester represents a highly productive time for our fisheries students, and they have a great foundation to build from based on their fall achievements.



Eric Walther presenting at the AFS Western Division Student Colloquium in Arcata, CA. Photo from Donnie Arthur.

During November 7–10, two AFS Alaska Chapter students attended the AFS Western Division Student Colloquium in Arcata, CA. The colloquium offered a unique experience to present research in a student-only environment, and to network with students from all over the Western U.S. At the colloquium, the students attended a stress management workshop and participated in field trips to habitat restoration sites, a campus hatchery, and even a nearby beach to pull Dungeness crab pots. The visits to the restoration sites provided the students with eye-opening opportunities to appreciate the incredible salmon habitat that we are so fortunate to have here in Alaska. The attending students gained connections and experiences that they will carry with them for the rest of their fisheries careers. As the Alaska Chapter Student Representative, I hope to see continued support and participation for this event.

The Fairbanks-based Student Subunit continues to make progress on their research project to investigate contamination in Tanana River Burbot. The students recently received a grant of $600 from the Associated Students of the University of Alaska Fairbanks. This additional funding will allow the group to explore the accumulation of contaminates in Burbot at an ecological level through stable isotope analysis. The student group intends to present its findings at the AFS Alaska Chapter Annual Meeting during March 23–26 in Fairbanks. Additionally, Kevin Fraley (past president, 2015–16), Eric Walther (current president), Heather Fraley, and myself (past president, 2018–19) published an *article in Fisheries* (November 2019) that raises awareness of per- and polyfluroalkyl substances (PFAS) exposure in the Fairbanks area and highlights the research being conducted by the AFS Student Subunit.

At the end of last semester, Fairbanks-based students participated in a Science Technology, Engineering, and Mathematics (STEM) program outreach event at the Museum of the North, operating a station intended to share fisheries science with homeschooled students. The event was a huge success, and the visiting students, ages 8–15, were thrilled about the fish-related activities. The Fairbanks-based graduate students led a rockfish dissection, presented preserved fish specimens from the museum's collection, and Olivia Edwards (Student Subunit Social Media Coordinator) let the young students use a PIT tag reader on tagged Chinook salmon fry. The event

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Student Subunit Happenings, continued

was so well-received that the student subunit has been requested to host a similar event in February 2020 for another group of young students interested in STEM.

Tissue samples collected as part of a research project by the Fairbanks-based Student Subunit to investigate contamination in Tanana River Burbot. Photo from Donnie Arthur.

There are many major events to look forward to this spring, including the Alaska Chapter Annual Meeting in March, which will originate from Fairbanks but include students from other campuses. The students will play an important role in organizing the meeting, with students from all campuses already fundraising and soliciting donations for the silent and live auctions that help fund student travel. Leading up to the meeting, students will also be working rigorously on their own presentations and posters. Following the Annual Meeting, the AFS Student Symposium will take place April 3, 2020. The Symposium will be hosted by Juneau-based Jesse Gordon and Lia Domke, as well as two Fairbanks-based students that are still to be determined. The Student Symposium will showcase all the great research being conducted by fisheries students in Alaska, and we encourage all AFS Alaska Chapter members to participate!

I look forward to seeing everyone at the Annual Meeting in March. In the meantime, stay warm and enjoy the growing daylight! As always, you can contact me at dearthur@alaska.edu.

Record Low Level of Bering Sea Ice in 2018

In 2018, sea ice in the Bering Sea declined to the lowest levels in recorded history, profoundly affecting northwest Alaska residents who depend on marine resources for food, cash and culture, according to a new peer-reviewed study. The interdisciplinary study used remote sensing, climate modeling, government and academic studies, local observations, and media and public reports to examine Arctic sea ice extent dating back to 1850 and compared it to the period January to April 2018.

The researchers found that the maximum daily Bering Sea ice in 2018 was the lowest on record, and impacts were widespread and included unprecedented weather events, marine wildlife die-offs, and sightings of animals outside of their normal ranges. Ecological changes included the first documented mass strandings of ice-associated seals, a redistribution of thermally sensitive fish, and a multispecies die-off of seabirds due to starvation. More than 50 reports of unusual events related to weather and marine wildlife were collected by the Local Environmental Observer Network.

The researchers attribute the record-low sea ice to human-caused climate change, the symptoms of which include a warmer ocean, later arrival of sea ice, and more frequent storms than in the pre-industrial era. Lead author Rick Thoman of the UAF Alaska Center for Climate Assessment and Policy suggests these conditions could be typical in less than 20 years. The study may be found at http://ametsoc.net/eee/2018/10_Thoman0175.pdf.

UAF Alum Sean Brennan Passes

Sean Brennan, UAF Ph.D. graduate and University of Washington postdoc, was killed January 2020 in a skiing accident in Utah. Sean's initial undergraduate work at the University of Utah sparked his academic journey to understand the biological programming and intelligence of migratory species. Brennan's Ph.D. research used strontium isotope analysis to understand the origins of Chinook Salmon returning to the Nushugak River in Western Alaska. Sean subsequently worked in a postdoc research position with Dr. Daniel Schindler, exploring salmon productivity changes under shifting watershed habitat dynamics. In addition to a broad range of family, friends, and colleagues, Sean is survived by his wife, Britt, and his three children, Behr, Ruby, and Evy.

Scholarship and Grant Funding Opportunities

Hutton Junior Fisheries Biology Program

The Hutton Junior Fisheries Biology Program is a paid summer internship and mentoring program for 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. 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 future employee! The American Fisheries Society simplifies the mentor's involvement by Scholarship and Grant Funding Opportunities providing guidance and administrative support. 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 16, 2020.

John A. Knauss Marine Policy Fellowship

This fellowship is designed for graduate students with an interest in ocean, coastal, or Great Lakes resources and in national policy decisions affecting those resources. Eligible graduate students from any discipline 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. The application deadline is February 21, 2020, for fellowships that begin in February 2021. For more information visit *https://alaskaseagrant.org/education/awards-fellowships/knauss/*.

Emmeline Moore Prize

The AFS Emmeline Moore Prize recognizes an individual who demonstrates strong commitment and exemplary service to ensuring equal opportunity access to higher education in fisheries and/or professional development in the broad range of fisheries science disciplines. Qualified nominees must exhibit clear evidence of service and commitment to diversity initiatives, including a strong research or fisheries management leadership background, public understanding of diversity issues, technical and popular writing, and inspirational leadership. Candidates should also have exhibited principles that lead to greater involvement of under-represented groups in fisheries science, education, research, or management. Award nominees must be AFS members. Nominations are due April 1, 2020, and may be submitted at *https://fisheries.org/about/awards-recognition/call-for-award-nominations/emmeline-moore-prize/*. If you have any questions, please reach out one of the co-chairs of this award: Maggie Chan at *maggie.chan@noaa.gov* or Chante Davis at *davis.chanted@gmail.com*.

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Deadline for materials for the next issue of *Oncorhynchus* is March 10.

Randy Brown Awarded Honorary Ph.D.

Randy Brown, U.S. Fish and Wildlife Service (USFWS) biologist and AFS Alaska Chapter Historian, was recently recognized by the University of Alaska Fairbanks with an honorary Doctor of Science degree due to his significant and lasting contributions to the state and nation, particularly for forwarding understanding of Alaska's fish resources. Brown grew up in New Mexico, but as after high school moved to Alaska. As a young man, Brown lived a remote subsistence lifestyle near Eagle, Alaska. After moving to Fairbanks with his wife, Karen Kallen-Brown, and their family, Brown studied at UAF and earned a B.S in biology and an M.S. in fisheries. While working at the USFWS Fairbanks Fisheries Office, Randy established himself as a preeminent fisheries biologist in Alaska, documenting his work with 21 peer-reviewed journal publications and numerous agency reports. Throughout his career, Randy has served as a mentor to UAF students, a valuable contact for researchers, and a facilitator of dozens of projects on federal lands. His projects have greatly increased information about many Alaska fish species, providing for both resource conservation and user harvest opportunities.

Randy Brown, AFS Alaska Chapter Historian.

Southeast Alaska Fish Habitat Partnership

In 2019, the Southeast Alaska Fish Habitat Partnership, (SEAKFHP, https://seakfhp.org/) and our partners hosted three important statewide science-based information sharing events. The first was a live stream event sharing the latest on ocean acidification in Alaska including current and future conditions and species response, see it again at: https://aoos.org/alaska-ocean-acidification-network/. The next was a workshop on eDNA sampling efforts taking place across Alaska. This event brought over 70 participants together across the state using webinar technology to share information and discuss eDNA activities

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During the AWRA Alaska Chapter meeting in Juneau, Alaska this past September, Aaron Jacobs of the National Weather Service shares information on recent drought conditions in Southeast Alaska. Photo from Debbie Hart, SEAKFHP.

Meetings and Events

Northeast Pacific Pink and Chum Workshop

March 3–6, 2020. This workshop will be held in Bend, OR. More information will be available at *http://orafs.org/* or contact Kathleen Neely at *PinkandChumWorkshop@gmail.com*.

American Fisheries Society Alaska Chapter

March 23–26, 2020. The 46th annual meeting of the AFS Alaska Chapter will be in Fairbanks, AK. More information will be posted at *https://afs-alaska.org/*.

American Fisheries Society Western Division

April 12–16, 2020. This meeting will be held in Vancouver, BC. More information will be posted at *https://wdafs.org/*.

12th International Conference on Climate Change: Impacts & Responses

This conference will be held in Venice, Italy. More information is at *https://on-climate.com/2020-conference/program*.

21st Western Groundfish

April 27–May 1, 2020. This conference will be held in Juneau, AK. For more information, contact Pat Malecha at *pat.malecha@noaa.gov*.

150th Meeting of the American Fisheries Society

August 30–September 3, 2020. This meeting will be in Columbus, Ohio. For more information, go to *https://afsannualmeeting.fisheries.org/*.

Southeast Alaska Fish Habitat Partnership, continued

addressing salmon detection, presence of invasive species (like elodea and Northern Pike), and updates on technological advances in the science of eDNA extraction and testing. You can find meeting resources and presentations on our website at: *https://seakfhp.org/edna-in-alaska-1-day-workshop-april-1-2019/*. Additionally, SEAKFHP helped to sponsor this year's American Water Resources Association Alaska Chapter meeting bringing together researchers and natural resource managers to discuss weather and water extremes (including drought currently occurring in Southeast Alaska), water rights and reservations, fish habitat, hazards such as glacier dammed lake floods and avalanches, permafrost hydrology, and water quality. You can find the meeting materials and presentations on our website: *https://seakfhp.org/resources/2019-awra-alaska-chapter-meeting-resource-archive/*.

NPRB 2020 Photo Contest

The North Pacific Research Board conducts a photo contest featuring beautiful images of sea life, seascapes, coastal scenes and marine research within the waters of the North Pacific Ocean including the Gulf of Alaska, Prince William Sound, Bering Sea/Aleutian Islands, Bering Strait or Chukchi/Beaufort Seas. The submission deadline is March 9, 2020. Professionals, amateurs, adult, and youth are all encouraged to apply. The NPRB awards total up to $3,300 in cash prizes to the top finalists in adult and youth categories. For details, go to *https://www.nprb.org/nprb/annual-photo-contest/*.

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