Center News

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Local Data, National Debate Over Chinooks

On a sunny day this August, two fish swam up a small tributary on Joint Base Elmendorf-Richardson (JBER). They traveled through the VAKI Riverwatcher, a piece of monitoring equipment the size of a mini-fridge that records 10,000 or more fish per season. But these two were unique. On that late-summer Wednesday, a male and female Chinook salmon swam past the Riverwatcher camera, becoming two critical data points in a growing management debate.

Chinook (*Oncorhynchus tshawytscha*), also called kings, are Alaska's state fish and can grow to 100 pounds. But populations have been reducing since 2007, according to the Alaska Department of Fish & Game (ADF&G). That's forced the state to restrict commercial fisheries and subsistence harvests. ***Continued on page 2***

A national review is underway for Gulf of Alaska Chinooks.

Students Across the Country Find Research Opportunities at AERC

AERC welcomed its first cohort of Scientific Leadership Award (SLA) fellows this school year, connecting students with research opportunities in the North. Several appeared in the Summer 2024 newsletter. Meet a few more SLA fellows below:

Vielma with an ice core in Utqiaġvik last June

Name: Irwing Vielma

Institution: Le Moyne College (New York)

Project: Evaluating dual-use infrastructure benefits and challenges at the Port of Nome

Impact: Irwing is researching infrastructure at the Port of Nome. Under guidance from Dr. Martha Grabowski, he's quantifying the project's benefits and challenges including construction, equipment, housing, and utilities. His work will assist with reports and presentations in the community and contribute to his graduate school capstone. Irwing graduated in May 2024 with a bachelor's in computer science, spent the summer in Alaska through his SLA fellowship, and will earn a master's degree in information systems from Le Moyne this spring. He completed the Arctic Summer Internship Program in Anchorage and Utqiaġvik through his SLA Fellowship. ***Continued on page 2***

About the Applied Environmental Research Center

UAA AERC provides public and private organizations with University of Alaska environmental expertise and research capabilities for optimal land management and conservation efforts. The Center provides the best research, data, and analytical tools for public land use and overall resource management.

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Chinook Debate *Continued from page 1*

Chinooks are relatively rare on Otter Creek. In 2024, AERC observed several thousand sockeye passing through the VAKI Riverwatcher but only a few hundred Chinook transits. The actual number of Chinooks visiting Otter Lake is likely even lower, since one fish can transit back and forth multiple times through the Riverwatcher.

Low numbers are concerning to some conservation groups, in particular the Wild Fish Conservancy. In January 2024, the Washington-based nonprofit submitted a 67-page document requesting the federal government protect Gulf of Alaska Chinooks under the Endangered Species Act. That triggered a strong reaction in Alaska, with sport fishers and state agencies both condemning the effort to restrict the fishery any further.

AERC Research Technician Sam Franklin checks the VAKI Riverwatcher on Otter Creek.

NOAA Fisheries responded in May 2024, pointing out "numerous factual errors … incomplete references, and unsupported assertions" but ultimately deciding the species deserved further review. AERC data could now factor into the federal government's management decisions.

This isn't the first time AERC data has affected management at Otter Lake. In 2022, Center research contributed to the ADF&G's Anadromous Waters Catalog. The catalog lists all Alaska waterways that are important to anadromous species, which live in both freshwater and saltwater. Thanks in part to AERC data, Otter Creek Chinooks are now listed on the state's Anadromous Fish Act.

If the Chinooks are protected under the Endangered Species Act, that could increase scrutiny on the fishing industry, as well as construction and transportation projects that could disrupt habitat. That's obviously good for fish, but agencies are wary of the increased oversight. ADF&G has implemented conservation efforts to benefit Chinooks since 2007. In May 2024, ADF&G Commissioner Doug Vincent-Lang said he was "deeply disappointed" by NOAA's decision to continue researching the issue.

NOAA is now completing a year-long study to determine if Gulf of Alaska Chinooks warrant special protection as an endangered sub-population, reinforcing the importance of AERC's ongoing, long-term surveying.

More DHS-Supported Students Pursue Research at AERC

Meet a few more of the excellent SLA fellows working with AERC during the 2024-2025 academic year. ***Continued from page 1***

Name: James Wood

Institution: University of New Hampshire

Project: Prediction of Movement of Spilled Oil under Ice

Impact: James was another of the dozen students who participated in the 2024 Arctic Summer Internship Program. The experience in Alaska bookended his undergraduate career (he flew North just days after graduating) and provided a launchpad for graduate school. James is now back in New Hampshire and continuing his environmental engineering research with Dr. Nancy Kinner and the UNH Coastal Response Research Center. For his SLA Fellowship, James is studying the movement of oil under ice by running lab experiments with a recirculating flume. He's specifically focused on oil behavior in under-ice cavities. His research will aid in decision-making in the event of oil spills in the Arctic.

Name: Brynn Amatulli

Institution: University at Buffalo

Project: Adapting, assessing, and mitigating risks to a complex future in the Arctic

Impact: Brynn's Arctic research brought her to Utqiaġvik this summer, where she joined other college students for the Arctic Summer Internship Program offered by ADAC-ARCTIC at UAA. The summer program introduces students to the complexity of security and research in the North through a combination of networking, fieldwork, and seminars. Now, Brynn is back in Buffalo working with Drs. Jun Zhuang and Kyle Hunt as they model stakeholder relationships and security concerns at the developing Port of Nome. Brynn's fellowship provides her with professional connections and career experience in STEM, while also contributing to solving complex problems in Arctic security.

Staff Spotlight: Jacob Hart

Before Alaska, Jacob Hart's forestry career was far from cities and close to the woods (example: he relocated to Anchorage from Eminence, Missouri, pop. 515.) But now, as a research technician with AERC, he can live in the state's biggest city and still be in the forest within minutes.

Jacob graduated in 2020 from the University of Missouri, where he received a bachelor's of science in forestry and took classes in ecology, silviculture, and natural resource management. He landed a job with the Missouri Department of Conservation after school and helped manage public conservation areas across the state, from the northern plains to its southern Ozarks. The full-time forestry work prepared him for his current role at UAA.

Jacob joined AERC in April 2022, trading Missouri's oaks and hickories for Alaska's spruce and birch. He arrived just in time for summer fieldwork on Joint Base Elmendorf-Richardson (JBER), the Air Force and Army installation just north of Anchorage.

JBER is largely wooded, with 38,000 acres of forest. The Arbor Day Foundation has named JBER a Tree City USA for the past 29 years—one of the longest streaks in Alaska—on account of its well-managed urban forests. Jacob quickly took the lead on four simultaneous forestry projects on base. Research technicians cleared trees killed by spruce bark beetle to corral the infestation. They inventoried the urban forest, ensuring troublesome trees were removed before damaging buildings or injuring residents. Staff also planted more than 7,000 spruce and birch in certain areas, while removing trees from others to provide preferential moose habitat. Jacob assisted on all those projects and more.

As an AERC research technician, he also gets to work on the Center's entire portfolio of environmental projects. Chainsaw season starts on July 15, per wildlife regulations on JBER, which allows Jacob time to help AERC's fish projects and wetland research in the spring. He also contributes to administrative records management over the winter, when the city is too frozen for fieldwork. That's one big difference up here, he said. Winter is the ideal fieldwork season in Missouri because the heat, humidity, and ticks finally take a break. Those aren't concerns in Alaska.

He's enjoyed the opportunity to work in a completely different ecosystem, as well as witness the growth at AERC. When Jacob started, there were just six technicians on staff. The team has nearly doubled since then. Each new person adds a different piece to their research work, he noted.

Hart carries a chainsaw through a frosty forestry project near Anchorage.

He's also enjoyed the variety. In its first 10 years, AERC completed projects across the Pacific in archaeology, engineering, ecology, biology, communication, and cultural resources.

"I think it's pretty awesome that you can sit behind a desk on Monday, take a canoe survey on Tuesday, walk through the woods on Wednesday, run a chainsaw on Thursday, and have a snow day on Friday," he said.

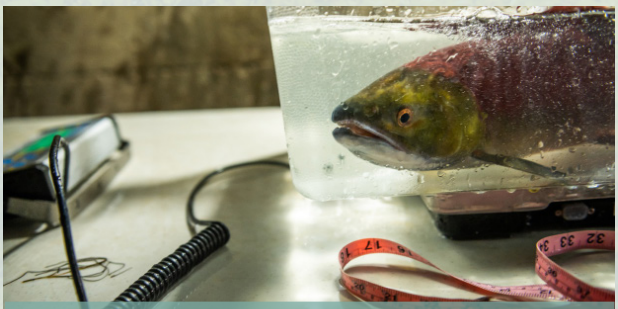
Jacob is now a senior research technician at AERC. Thanks to the Center's connections and contracts, he's had the chance to expand his professional experience far beyond forestry.

Inside IACUC

Continued from page 4

Elsewhere on base, AERC staff use sonar to count passing fish on Eagle River and install a gate and camera on Otter Lake to track incoming swimmers. IACUC re-approved the projects in 2024, greenlighting the research through 2027.

Stecyk sees obvious value in AERC's ongoing salmon research. The U.S. military requires monitoring data, which means AERC projects have stable support. The Sixmile research has been running for 21 years and counting. "By having a long-term dataset with multiple parameters like temperature, water levels, and fish numbers, you can start to make predictions of what may or may not happen in the future," Stecyk said. That affects populations up and down the food chain, like endangered Cook Inlet belugas that feed on JBER's spawning salmon. "Understanding fluctuations in the food source may help predict fluctuations in whale populations," Stecyk said.



A salmon awaits measurement on Sixmile Creek.

IACUC is important, but Jonathan's job is more than just paperwork and policies. He's also researching the air-breathing Alaska blackfish to understand what helps it survive under the ice. He's also working with UAA Chemistry Professor Patrick Tomco to examine the effects of 6PPD-quinone, a chemical in car tires that's toxic to salmon. Like every animal research project at UAA, he submitted his proposals to IACUC first.

Message from the Director

We're spotlighting salmon this issue, with two stories that demonstrate the real-world impact of our work. Our salmon story on page 1 shows the national value of our data. We also discuss the important ethics that guide our fish work on page 4 below.

This issue also includes a range of research spotlights which show the breadth and depth of our work. Jacob Hart joined us in 2022 to lead our forestry efforts. He's now a key part of all our active projects at AERC. Read about his road to Anchorage on page 3. I'm also happy to introduce our Scientific Leadership Award (SLA) recipients. AERC is hosting 10 top-tier SLA fellows from across the country, supporting them in their interdisciplinary Arctic research with funding from the Department of Homeland Security, Science & Technology Directorate, Office of University Programs. Meet a few more fellows on pages 1 and 2.

As always, I'm grateful to lead this dynamic research team. The sunlight is slowly returning to Anchorage and we're gearing up for another summer of active, engaged, and effective environmental research across the Pacific.

Do you have a project that would benefit from our team's expertise? I encourage you to get in touch. Learn more about our work by visiting *uaa.alaska.edu/aerc*.

I look forward to many new collaborations in the new year.

Warm regards,

Jeff Libby, UAA AERC Director

Inside IACUC with Dr. Stecyk

Every summer, AERC research technicians fan out to count salmon. But before staff grab their waders, every AERC employee must complete federally required training to ensure those thousands of fish are considered with care. That's where Dr. Jonathan Stecyk comes in.

Jonathan is a UAA biology professor with several leadership roles. He chairs the Graduate Advisory Council, which guides UAA graduate programs and policies. He also chairs the Vivarium Users and Managers Committee, which directs UAA's live animal research facility. And as of January, he *also* chairs the Institutional Animal Care and Use Committee, or IACUC.

IACUC is a university group tasked with managing animal research. The committee ensures faculty and students follow national policies on animal welfare, with an emphasis on empathy. Before any UAA affiliate can work with animals, all team members must complete IACUC training and submit a research application to the committee.

IACUC reviews each application for the three Rs: replacement, refinement and reduction. In other words, is there a *replacement* that doesn't involve animals? Is the study *refined* to minimize disruption to animals? And can the study *reduce* the number of animals needed? IACUC reviews each proposal to make sure researchers follows guidelines and obtain the proper permits. "There's a lot of checks and balances," Jonathan said.

The committee intersects with several academic departments. The biology department keeps them busy, of course. But the psychology department runs trials with rats, Mat-Su College offers a veterinary degree, and even ecology classes that simply observe birds are required to report their activities.

AERC submits IACUC proposals for three different salmon studies on Joint Base Elmendorf-Richardson. On Sixmile Creek, for example, AERC technicians install a weir under a two-lane bridge to manually count, measure, and release the salmon swimming upriver. ***Continued on page 3***

AERC staff net, measure, and release live salmon on Sixmile Creek.

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