

Center News

UAA Applied Environmental Research Center • Issue 1 • Summer 2023



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Message from the Director

Greetings and welcome to the summer edition of the Applied Environmental Research Center (AERC) newsletter! With immense enthusiasm, I present to you some of our 2023 achievements and milestones that have shaped the past year of our Center's operations within the University of Alaska Anchorage (UAA) Business Enterprise Institute. **Continued on page 2**



AERC receives \$1M grant

The University of Alaska Anchorage (UAA) is thrilled to announce the successful awarding of funding to establish the Alaska Program for Arctic Research, Training and Education (PARTE). In July 2023, UAA, AERC, and the Arctic Domain Awareness Center (ADAC) were collaboratively awarded approximately \$1 million. Funding was secured from the Department of Homeland Security (DHS), Science and Technology Directorate, Office of University Programs. PARTE aims to support a range of students by involving them in research projects of mutual interest to both Alaska and DHS through its Scientific Leadership Award program.

All Eyes on Invasives

When wildflowers emerge in Anchorage, it's not always a good thing. Several colorful buds are invasive species, like bird vetch (*Vicia cracca*) or the vivid blooms of orange hawkweed (*Hieracium aurantiacum*). Both species are considered noxious weeds in the state and outcompete Alaska plants for resources. They're among a dozen plants that AERC researchers spray, yank, lop, chop, and bag each summer as part of an ongoing remediation project on Joint Base Elmendorf-Richardson (JBER).

Since its inception, AERC has tracked and removed invasive plants throughout the Pacific. From 2016 to 2018, AERC traveled to Wake Island to remove invasive shrubs threatening the island's historic military sites. **Continued on page 3**



Arctic Summer Internship Program participants in Utqiagvik, June 2023

The program supports and develops research capabilities and education opportunities. Undergraduate and graduate students will receive support while pursuing studies relating to environmental challenges, advanced data analysis and visualization, communications, infrastructure resilience, and maritime and port security, as well as other key areas of Arctic importance. **Continued on page 2**

About the Applied Environmental Research Center

The 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.

Website: uaa.alaska.edu/aerc • **Email:** uaa_aerc@alaska.edu



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Message from the Director

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Since our establishment in January 2014, AERC has remained steadfast in its mission to advance environmental research and contribute enduringly to our communities. Guided by unwavering dedication and relentless commitment, we have achieved substantial success, securing millions of dollars in grants and contracts while executing numerous impactful environmental projects. Our endeavors have traversed diverse landscapes, from the captivating shores of Oahu to the serene beaches of Okinawa, and even Alaska's pristine Arctic terrain.

I am thrilled to unveil this newsletter as a platform to illuminate the Center and the team's triumphs, share our ongoing progress, and underscore the pivotal partnerships that have fueled our journey towards excellence.

Strengthening Collaborations: Among our many remarkable accomplishments, our ongoing partnerships with esteemed entities such as the US Department of Defense, US Army Corps of Engineers, and most recently the US Department of Homeland Security stand as testament to our collaborative spirit. These alliances enable us to synergize our collective expertise and resources, effectively addressing demanding environmental challenges and discovering sustainable solutions.

Furthermore, I am delighted to announce the establishment of a Cooperative Agreement with the National Park Service. This strategic collaboration marks a significant step in expanding our growth avenues and expanding our proficiency. Together, the team is committed to making substantial contributions to the preservation and enrichment of our natural



AERC welcomed ten participants this summer, including Dan Fenton (pictured), a UAA senior majoring in anthropology.

treasures, aligned with the mission of the UAA AERC to "collect, analyze, and apply environmental, natural, and cultural resource data for the optimal management of public lands."

Honoring Our Summer Researchers: As field work transitions into the fall, I want to extend my gratitude to the ten exceptional individuals who joined our research team in 2023. These seasonal participants, primarily undergraduate students from UAA and University of Mississippi, embarked on a journey of career exploration and immersive learning alongside our dedicated full-time research personnel. These participants actively

contributed to environmental projects on military lands in Alaska and Hawaii, gaining invaluable experiences that will shape their future careers in environmental conservation and leadership. Since its inception, AERC has hired more than 50 undergraduate and graduate students providing them with stipends, tuition, and immersion in hands-on research.

Championing Safety and Excellence: Safety has consistently been our cornerstone. As we prepare for the fall season, I am deeply grateful for our valued partners at the US Forest Service for their support and collaboration in conducting the 2023 Wildland Fire Chainsaw Safety course. Their expertise and assistance have been instrumental in ensuring the safety of our team members and the success of our initiatives.

At AERC, our commitment to upholding the highest standards of professionalism, ethics, and accountability remains resolute. We understand that these principles are not only crucial for the well-being of our team but also for maintaining the integrity of our projects and the quality of our customer deliverables. With this steadfast dedication, we continue to strive for excellence in every facet of our work.



AERC staff at Wildland Fire Chainsaw Safety, conducted by the US Forest Service.

Stay Connected: I extend a cordial invitation for you to join us on a journey with the UAA AERC. Your unwavering support and enduring interest hold immeasurable value, and I am enthusiastic about sharing our trajectory with you and further expanding our valuable partnerships.

In closing, I extend our heartfelt appreciation for your role in UAA and the AERC community. Together, we possess the potential to make an indelible impact on our environment, collectively shaping a future characterized by sustainability and promise.

Thank you for being an integral part of our shared mission.

Warm regards,

Jeff Libby

Director, UAA Applied Environmental Research Center

AERC receives \$1M grant

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UAA was honored and grateful to receive a joint letter of support for this endeavor submitted to DHS Secretary Alejandro Mayorkas by US Senators Lisa Murkowski and Dan Sullivan, and US Representative Mary Sattler Peltola.

PARTE represents an exciting opportunity to advance Arctic research and education. UAA, alongside AERC and ADAC, is honored to embark on this journey of knowledge creation and student empowerment.

Participant Profile: Leila Bond

Each summer, AERC expands its ranks by welcoming a crew of seasonal participants. Joining AERC as a participant is especially appealing for university students, who frequently gain their first paid experience in the field performing applied research activities. That includes Leila Bond, a UAA senior from Girdwood, who joined AERC as a participant in May 2023.



Participants assist the full-time research staff during the busy summer, collecting data in the field and analyzing results back on campus. Many of AERC's full-time staff started as participants themselves and joined the UAA AERC through its unique registered apprenticeship program for research technicians. The apprenticeship program is the first of its kind approved by the US Department of Labor. The program provides a pathway for undergraduate and graduate students to work for the UAA AERC and transition into a full-time position as a research technician after successfully completing two years.

This summer, Bond participated in three AERC salmon projects. Each involves a different set of tools and techniques, and a different waterway on Joint Base Elmendorf-Richardson (JBER). On Sixmile Creek, AERC researchers measure and

weigh salmon to gauge the population's health. The results affect management for Cook Inlet's endangered population of beluga whales, which rely on the salmon. At Otter Creek, Bond helps keep monitoring equipment operational, checking on the status of solar panels and the battery bank that power the project's high-definition camera equipment. And at Eagle River, AERC staff make sure the salmon-tracking sonar equipment is properly angled as river levels vary throughout the summer. The variety of projects demonstrate the range of research in Alaska, from measuring the length of a flopping fish, taking genetic samples, and identifying key characteristics of certain species through underwater camera footage.

"One of the main things I like about it is the range of work I'm doing," Bond said of her summer role.

In addition to the three salmon projects, she assisted on forestry work removing beetle-killed spruce trees from key habitat areas on the installation, which benefits wildfire mitigation and habitat restoration. She also participated in AERC's bat project, where researchers track JBER's population of little brown bats to identify their range, maternity roosts, and hibernacula.

Bond plans to continue working with AERC through October, when the salmon projects end for the year. Meanwhile, she'll wrap up her final UAA courses and look for a full-time position in a related field. She graduates this December with a bachelor's degree in natural sciences and a concentration in environmental science. Thanks to AERC's range of projects, she'll have experience to include on her résumé and a solid base of paid ecology work to help launch her career in environmental conservation.

All Eyes on Invasives

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Staff also recently wrapped up a six-year remediation project at Bellows Air Force Station on Oahu where AERC helped replace invasive ironwood with local plants to stabilize the sand dunes. Based on its years of experience and record of success, AERC received JBER's invasive species management contract in 2019.

The current AERC project builds off JBER's management plan for invasive species. The base uses a ranking system that considers a species's possible impact, current distribution, ability to disperse, and the feasibility of control. A plant's maximum score is 100 points, and anything above a 70 warrants attention. Currently, AERC technicians actively treat 14 high-priority species on JBER. While in the field, they also look for signs of 28 additional invasive plants that are established elsewhere in Alaska and Canada but haven't appeared on JBER. Yet.

In 2022, AERC surveyed approximately 1,847 acres in five Training Areas and locations and removed 18.77 acres of bird vetch and white sweetclover (*Melilotus albus*). They returned to

areas they'd treated in 2021 and found 6.59 acres were still free of invasive species, demonstrating the success of their efforts.

Each species has its own ideal treatment plan, based on the plant's life cycle. Certain species are better to remediate in early June, while others warrant attention in mid-September. AERC uses GIS maps to identify patches of invasive species, and uses a flexible schedule so that teams can pivot if military priorities interfere. In addition, full-time staff start the summer with a training class from the Alaska Department of Environmental Conservation to earn or renew their state certificate in pesticide application.

While AERC staff remove plants every summer, 2023 was a major treatment year. The past several seasons prioritized surveying over remediation. This summer, teams acted on the updated GIS maps to apply chemical

treatments, improve natural habitat, and eradicate invasives in as many areas as possible. For wildflower fans, there are still plenty of plants to celebrate. By removing unwanted invaders, AERC is restoring Alaska's habitat and making room for a more natural color palette.



Bird vetch (*Vicia cracca*), classified as a noxious weed by the State of Alaska

Researchers Practice Swiftwater Rescue on Eagle River

Much of AERC's environmental work revolves around rivers, from tracking salmon to counting eagles. To keep researchers safe in the field, AERC requires that research staff complete a swiftwater rescue class at the start of each summer. On a fittingly rainy Tuesday in June, AERC staff traveled to Eagle River campground for a training class with T.J. Miller, chair of UAA's Department of Health, Physical Education, and Recreation.

Miller's in-house training started with introductions and instructions under the picnic shelter. There, AERC staff practiced drills and familiarized themselves with safety equipment as rain pattered on the metal roof. Miller brought several brightly colored



AERC participants practice tossing rescue lines to each other on Eagle River.

river-based projects. This summer, for example, researchers are continuing to track salmon on three JBER waterways. JBER biologists work with the Alaska Department of Fish and Game and US Fish and Wildlife Service on fisheries and other environmental and wildlife research activities. The UAA AERC has contracted with the US Army Corps of Engineers to conduct multiple salmon projects on JBER since 2017. The results inform the productivity of the local fishery. In turn, that provides valuable information for wildlife managers tracking the diet of Cook Inlet's endangered beluga whale population.

River research in Alaska often includes the combination of cold water, extreme weather, and remote access. The swiftwater rescue course is another way to mitigate risk during the summer fieldwork season, and it's one of several safety courses required by AERC. Thanks to Miller, research staff were trained and ready for a safe and successful summer season.



AERC participants tossing and reeling in rescue lines.

throw ropes to practice with. These multi-meter ropes can be tossed from the riverbank into the rapids, providing a literal lifeline if someone gets swept away. It's a required piece of safety gear for AERC research teams working near rivers.

After a morning of instruction, the group moved down to the riverbank. Miller was the first to hop into the chilly waters as AERC research technicians and participants practiced throwing rescue lines to their certified instructor. By the end of the day, all participants took a turn jumping into Eagle River (some more reluctantly than others), riding the rapids, catching a safety line from a teammate, and swimming safely back to shore.

The safety class allows AERC staff to work on a variety of



Instructor T.J. Miller leads the safety course.

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