

# Center News

UAA Applied Environmental Research Center • Issue 4 • Summer 2024



Updated 02/2025

## DHS-Supported Students Pursue Research at AERC

UAA AERC welcomed its first cohort of Scientific Leadership Award (SLA) fellows this summer, connecting students across the country with research opportunities in the North.

The SLA fellowships are supported by the Department of Homeland Security (DHS) Science & Technology Directorate (S&T) Office of University Programs. In 2023, DHS awarded nearly \$9 million to eight universities. In its announcement, DHS said it selected the universities, including UAA, for “excellence in research, innovative ideas, leadership, and their commitment to advance the DHS mission.” Participating fellows at UAA join research projects that “creatively engage in research relevant to the complex challenges DHS faces,” according to the statement. UAA is hosting ten students in this initial cohort.



*Victoria Villagomez, left, completing DHS-funded research in Utqiagvik.*

**Continued on page 2**

## AERC Adds Local Wetland Restoration Project

The researchers at AERC added another project to the portfolio, leveraging the Center’s environmental expertise and extending its long-standing relationship with Joint Base Elmendorf-Richardson (JBER).

As of this summer, AERC researchers are now managing wetlands and floodplains on the Southcentral Alaska military installation. The new project is currently in its initial phase, pinpointing possible wetlands across JBER using aerial maps, then sending research technicians to confirm the conditions on the ground. **Continued on page 3**



*Arctic Summer Internship Program students visit the wetlands on JBER.*

## 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.

**Website:** [uaa.alaska.edu/aerc](http://uaa.alaska.edu/aerc) • **Email:** [uaa\\_aerc@alaska.edu](mailto:uaa_aerc@alaska.edu)



UNIVERSITY of ALASKA ANCHORAGE™

Page 1



# DHS-Supported Students Pursue Research at AERC

*Continued from page 1. Meet a few students who received a highly competitive SLA fellowship to research with AERC.*

## Marco Wall, Stanly Community College (North Carolina)

Project: Telecommunication Infrastructure in the Arctic

Marco, a cybersecurity student, is working with Dr. Suryadip Chakraborty and a research team based at Johnson C. Smith University in North Carolina. The project team is researching communication infrastructure in the Arctic to protect assets from cyber-attacks and data weaknesses. That directly aligns with Marco's individual interests. He plans to graduate from Stanly in 2025 and attend a four-year school, eventually obtaining a master's degree in cybersecurity and a career with a government agency. The SLA fellowship is helping this father of three move closer to reaching his academic goals.



## Victoria Villagomez, University of Texas at El Paso

Project: Detecting Events in a Phenocam Time Series of Tundra Vegetation

Victoria first joined UAA in 2023 through the Arctic Summer Internship Program offered by ADAC-ARCTIC. She returned to Alaska this summer as an SLA Fellow. An environmental sciences student, Victoria is assisting Dr. Craig Tweedie with Arctic phenology research. Phenology is the study of timing in natural processes, like the migration of birds or – in Victoria's case – the growing season of plants. By using HSV color modeling to visualize plant growth across the tundra, Victoria's research will illuminate the shifting patterns of plant growth in the Arctic. That data can help officials understand land patterns and prepare for large-scale land changes like coastal erosion.



## Walt Weidman, University of Alaska Anchorage

Project: Precipitating Change and Coastal Erosion

Walt, profiled in the Spring 2024 AERC newsletter, is a US Air Force veteran pursuing a mechanical engineering degree at UAA. His SLA fellowship supports his work on AERC's Precipitating Change program, which tailors erosion education for individual schools in Alaska. The project is led by the Concord Consortium, a nationwide nonprofit focused on STEM education. Walt is working with early-career Professor Skyler Kern of the UAA mechanical engineering department to merge Alaska Native knowledge and western science education so students can approach the environmental STEM lessons through their own cultural understanding.



## Spotlight: Greg Russo

*Continued from page 4*

This was Greg's fourth summer with AERC staff. The projects are important, he said, and while the seasonal staff changes each year, the teamwork is always excellent.

"JBERR has a responsibility to address the environmental impact it generates, and AERC is there to assist in this call," he said of working at the Center. "If you love biology and science, and have a goal to make a positive environmental impact in the long run while being a part of something that is bigger than yourself, then AERC is the obvious answer."



AERC staff by the fish weir on Eagle River.

## Sara Berg, University of New Hampshire

Project: Commercial-off-the-Shelf Acoustic Sensor Validation Testing for Oil Spills

Sara arrived in Anchorage shortly after graduating with honors from the University of New Hampshire (UNH), where she received a degree in environmental engineering this May. She participated in this summer's Arctic Summer Internship Program as part of her SLA Fellowship, and is now back in New Hampshire pursuing a master's degree. For her SLA Fellowship, Sara is assisting Dr. Nancy Kinner and the UNH Coastal Response Research Center with ongoing oil spill studies. Specifically, Sara is helping test the precision and accuracy of commercial-off-the-shelf (COTS) acoustic sensors in detecting oil slick thickness. That involves testing different oil types, detecting oil under ice, and measuring oil density at different temperatures. These findings will help the US Coast Guard determine the potential of installing sensors on remotely operated vehicles to measure slick thicknesses during oil spills.





## Staff Spotlight: Alta Franklin



After joining AERC in Alaska, Research Professional Alta Franklin is now a key part of the Center's Hawaii efforts. It's a different environment and a different project, but the same goal: bringing University of Alaska expertise to public lands across the Pacific.

Alta graduated from University of Alaska Fairbanks with a degree in fisheries and ocean sciences (plus a concentration in ocean science and a minor in marine science). One of her first fieldwork jobs involved mitigating spruce bark beetle infestations on Joint Base Elmendorf-Richardson (JBER). It was a seasonal role, and she often found herself working alongside AERC researchers on base. When AERC took on JBER's urban forestry contract, Alta applied to join the team. "I was able to bring that [forestry] knowledge over when I got a job with UAA," she said. AERC let Alta apply her fisheries background, too. She led AERC's salmon study on Sixmile Creek and helped with data management on two other JBER-based salmon projects.

"I really enjoy our fisheries projects," she said. The data has a real impact on setting fishing regulations and helps state and federal partners better manage the watershed. It's important work, and it's ever-changing as environments shift, she said.

Now, Alta is helping lead the Hawaii team. She's currently working on wetland restoration at Bellows Air Force Station, a 437-acre site on Oahu's windward coast. The project is reclaiming the landscape from invasive plant species, preserving a natural ecosystem that several endangered bird species rely on.

The change in scenery has provided opportunities to boost her problem-solving, planning, and communication, she said. Every day is different at Bellows. Some days she's removing thickets of pickleweed, others she's planting in the mud. Battling back weeds "is proving to be quite the Herculean task," she joked, but the experience has boosted her botanical skills.

The team cultivates lush beds of tropical plants at their greenhouse tables, and coordinates with local nurseries to acquire slower-growing species. The AERC team selects plants adapted to the environment – robust enough to thrive in brackish water, with shallow roots to penetrate the mud and sturdy stalks to withstand the tides.

For an Alaskan researcher, it's especially appealing to have a longer field season. In Anchorage, AERC ends fieldwork once the snow falls. That's not a concern on Oahu. Fieldwork spans all 12 months at Bellows. The new environment has provided new challenges, but new opportunities for growth. Trained in Fairbanks and based in Hawaii, she's now ready for any project in the AERC portfolio.



*Franklin collecting invasive weeds on Bellows Air Force Station.*

## New JBER Wetland Project

*Continued from page 1*

The project brings AERC researchers together with the U.S. Army Corps of Engineers to survey priority wetlands within a tenth of an acre. Research technicians inventory the plant communities at predetermined transects – including the coverage of saplings, shrubs, herbs, and trees – plus take soil samples and record hydrologic processes.

Technicians combine the aerial and physical data to establish the types and locations of wetland habitat and update JBER's existing maps for land managers. Those datasets provide a valuable tool to guide management decisions on the military base and maintain wetland functions during mission activities.

AERC is well situated to address the wetlands concerns thanks to a decade of partnerships with JBER land managers. The installation covers 79,000 acres just north of downtown Anchorage, and only two miles from the AERC office. Over the past decade, AERC researchers have spread across JBER's forests, wetlands, and waterways to complete more than a dozen projects, including eagle monitoring, architectural surveys, plant inventories, and gravel pit reclamation. This new wetland

project joins a roster of several ongoing AERC projects on JBER, including salmon surveys and cultural resource management.

That deep experience on JBER makes it easy to adopt each new local project. Many of the data management and mapping techniques utilized during past projects on JBER are directly applicable to the wetlands and floodplains monitoring program. While the wetlands project may be new, it's just the latest link in the chain AERC has built with JBER over the past decade.



*AERC staff collect wetland data on JBER.*



## Message from the Director

Another summer has zipped by and, with it, another fieldwork season. Our fisheries team has been busy in Anchorage,



we're continuing our records management project on campus, and I'm proud to announce that our Hawaii contract was renewed for another year.

We also welcomed dozens of students to our projects this summer. We boosted our ranks with seasonal participants for fieldwork season, many of

them STEM students from UAA. We also connected students from several states with Alaska research projects thanks to the support of Scientific Leadership Awards from the Department of Homeland Security. Read more on pages 1 and 2.

We also have a few staff spotlights to celebrate, including Greg Russo, a welding instructor at UAA, profiled below. Greg and I connected when I served as associate dean of the UAA Community & Technical College. Over the years, we've relied on Greg's students to assist with our site-specific project needs. Greg is an excellent collaborator, and a bridge to UAA students seeking hands-on apprenticeships.

On that note, we're hiring! If you're reading this and want to join our team, I strongly encourage you to apply. As we continue to expand our projects around the Pacific, we need an expanded team to staff our projects. As an example, we just launched another new program monitoring wetlands and floodplains in Anchorage. Read more on page 1. Did I mention it's been a busy season?

Warm regards,

Jeff Libby, UAA AERC Director

## Staff Spotlight: Greg Russo



Every summer, AERC welcomes a new crew of summer participants to the team. Many are UAA students. But some, like Greg Russo, are UAA faculty.

During the school year, Greg is an assistant professor and department chair for UAA's Welding & Nondestructive Testing division. During the summers, he

joins AERC's fieldwork team on Joint Base Elmendorf-Richardson (JBER) and assists the full-time staff with their research goals. His welding expertise has permanently boosted the Center's salmon research and provided real-world learning opportunities for his welding students.

Greg arrived in Anchorage after a career building US Navy ships in places like New Orleans and Mobile. Naval architecture was extremely physical and mentally demanding, he said, but "some of the best work experiences of my life."

He's no longer working in the swampy Southeast, but he hasn't escaped the mosquitoes. As an AERC participant, Greg spends the summer outdoors assisting on projects like fish, forestry, invasive species remediation, and erosion control. While AERC's full-time staff design the projects, "I'm there with them felling

trees, humping gear while dodging roots, chest deep in water," he said, all while maintaining professionalism.

Even when he's not physically in the field, his handiwork is. The Eagle River fish weir – which tracks salmon movement via sonar – is a product of Greg's welding students. The project design required both durability and portability, strong enough to protect the sonar from rocks and debris while manageable enough to move as the river height changes. The weir is a vital part of the project, and used every day of the summer by AERC's field team.

"It was a privilege," he said of the weir design. It required his students to understand the science of welding, and the strength, hardness, and ductility of metals submerged in a rushing river.

*Continued on page 2*



**AERC Research Technician John Naumann adjusts the fish weir in Eagle River. Russo and his welding students built the weir specifically for AERC.**

## Acknowledgment of Financial Support and Disclaimer

This work is partially supported by the US Army Corps of Engineers, National Science Foundation, Department of Defense, and Department of Homeland Security. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of any of these sponsors.

*The University of Alaska is an Equal Opportunity/Equal Access Employer and Educational Institution. The University is committed to a policy of non-discrimination against individuals on the basis of any legally protected status.*

