

# 2024 Annual Report



The Alaska Coastal Rainforest Center is a research center at the University of Alaska Southeast. Our mission is to build partnerships and catalyze collaborative ecological, economic, and social research in the north Pacific coastal temperate rainforest to support vibrant and resilient communities and ecosystems.



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## The year in review



## Highlights

Jason Fellman was appointed as the new Director of ACRC, bringing a wealth of experience to the organization.

We welcomed Karen Krosskreutz, a PhD Candidate from UAF working on the Kelp Values project, Casey Rall, our new grants and budget analyst, and Brennen McCulloch, our new science communications specialist to the ACRC team.

Former ACRC Postdoctoral Fellow Megan Behnke achieved a significant career milestone by becoming an Assistant Professor of Chemistry at the University of Alaska Southeast.

Our researchers presented findings at 10 conferences, showcasing our work throughout Alaska, across the continental United States, and internationally in Canada, Japan, and Iceland.

We published 15 research papers in reputable scientific journals, contributing to the body of knowledge in coastal margin ecosystem ecology and climate change research.

We fostered partnerships with 28 academic, governmental, and tribal entities, furthering interdisciplinary collaboration to enhance research.

We secured 16 active research grants, totaling over \$4 million, to support our ongoing projects and initiatives.

Our research grants provided support for several volunteers, five UAS undergraduate students, and two high school interns through the Sealaska Heritage Institute, developing the next generation of researchers.

## Featured Project Grants and Agreements

Fellman & Hood – EPSCoR Phase 5 – Fire and Ice: Navigating variability in boreal wildfire regimes and subarctic coastal ecosystems (NSF) – \$20 million; UAS, UAA, UAF

Fellman – Investigating the influence of watershed variability on biogeochemistry and meta-food web dynamics in Southeast Alaskan streams (USFS) – \$90K

Fellman – People Like Forests and Fish (USFS) – \$84K

Fellman – From Forest to Ocean (USDA) – \$82K

Fellman & Hood – Riverine biogeochemical export from high-latitude catchments: The role of glaciers and extreme hydrologic events (NSF) – \$199K

Fellman – Hosting Alaska’s Climate Adaptation Science Center (USGS) – \$11.5K

Harley – Prevention of Paralytic Shellfish Poisoning in Subsistence Shellfish Harvest Communities of Southeast Alaska (University of Alabama) – \$64K

Harley – BLaST Phase II (NIH) – \$38K

Hood – How do snow avalanches impact landscape characteristics and mountain goat populations in southeast Alaska? (USGS Climate Center) – \$464K

Hood – Mountain Goats and Avalanche Relationships in Coastal Alaska (Sitka Gear) – \$10K

Powell – Arctic Cruise Tourism: Navigating Nature, Commerce and Culture in Northern Communities (NSF) – \$106K

Powell – Belmont Forum Collaborative Research: AWERRS Arctic Wetlands Ecosystems – Resilience through Restoration and Stewardship (NSF) – \$65K

## People Directly Supported in FY24

Jason Fellman, Director, ACRC

Elizabeth Bruch, intern, ACRC

Emily Whitney, research professional, ACRC

Corban Stearns, intern, ACRC

Thomas Thornton, faculty, UAS

Finn Finnegan, intern, ACRC

John Harley, faculty, UAS

Cameron Mauldin, intern, ACRC

Eran Hood, faculty, UAS

Naomi Boyles-Muehleck, intern, ACRC

Jim Powell, research professional, ACRC

Mia Bramente, Sealaska Heritage Intern, ACRC

Casey Rall, Grants & Budget Analyst, ACRC

Brennen McCulloch, Comms Specialist, ACRC

Lindsey McCulloch, PhD Student, UAF

# Partners



Fisheries and Oceans Canada



# Presentations

Fellman, Harley – Alaska Marine Science Symposium, Anchorage, AK

Fellman – American Society for Mass Spectrometry Annual Meeting, Anaheim, CA

Fellman, Hood – American Geophysical Union Fall Meeting, San Francisco, CA

McCulloch – Society for Freshwater Science Annual Meeting, Philadelphia, PA

Harley – International Conference on Harmful Algae, Hiroshima, Japan

Powell – Evening at Egan, Juneau, AK

Powell – Arctic Circle Assembly, Reykjavik, Iceland

Powell – Arctic Congress Cruise Impact Panel, Victoria, CA

Thornton – Kodiak Archipelago Leadership Initiative, Kodiak, AK

Whitney – Olympic Experimental State Forest Science Conference, Forks, WA



# Publications

**Behnke MI, Fellman JB, D'Amore DV**, Gomez SM, Spencer RGM. 2023. From canopy to consumer: what makes and modifies terrestrial DOM in a temperate forest. *Biogeochemistry* 164:185-205. <https://doi.org/10.1007/s10533-022-00906-y>

**Behnke MI, Fellman JB, D'Amore DV**, Spencer RGM. 2023. Trees in the stream: Determining patterns of terrestrial dissolved organic matter contributions to the northeast Pacific coastal temperate rainforest. *Journal of Geophysical Research: Biogeosciences* 128, e2022JG007027. <https://doi.org/10.1029/2022JG007027>

**Behnke MI, Fellman JB, Nagorski S**, Spencer RGM, **Hood E**. 2023. The role of glacier erosion in riverine particulate organic carbon export. *Global Biogeochemical Cycles* 37, e2023GB007721. <https://doi.org/10.1029/2023GB007721>

**Dunkle MR, Bellmore JR, Fellman JB**, Caudill CC. 2024. Glaciers, snow, and rain: water source influences invertebrate community structure and secondary production across a hydrologically diverse subarctic landscape. *Limnology and Oceanography* 69:232-245. <https://doi.org/10.1002/lno.12451>

**Fitzgerald K, JR Bellmore, Fellman JB**, Cheng MLH, **Delbecq CE**, Falke JA. 2023. Stream hydrology and a pulse subsidy shape patterns of fish foraging. *Journal of Animal Ecology*. 92:2386-2398. <https://doi.org/10.1111/1365-2656.1401>

**Harley JR**, Biles FE, Brooks MK, **Fellman JB, Hood E, D'Amore DV**. 2023. Riverine dissolved inorganic carbon export from the Southeast Alaskan drainage basin with implications for coastal ocean processes. 2023. *Journal of Geophysical Research: Biogeosciences* 128, e2023JG007609. <https://doi.org/10.1029/2023JG007609>

**Harley JR**, Grinnell MH, Hebert K, Cleary J, Thompson M, Rooper CN (2024) Forecasted changes to the Toming of Pacific herring *Clupea pallasii* spawn in a warming ocean. *Mar Ecol Prog Ser* 740:95-108. <https://doi.org/10.3354/meps14630>

**Harley, J. R.**, Biles, F. E., Brooks, M. K., **Fellman, J., Hood, E., & D'Amore, D. V.** (2023). Riverine dissolved inorganic carbon export from the Southeast Alaskan Drainage Basin with implications for coastal ocean processes. *Journal of Geophysical Research: Biogeosciences*, 128, e2023JG007609. <https://doi.org/10.1029/2023JG007609>

**Harley, J.**, Castellini, J. M., & O'Hara, T. (2024). *Ecotoxicology*. In *Physiology of Marine Mammals* (pp. 295-320). CRC Press.

Kurek MR, Wickland KP, Nichols NA, McKenna AM, Anderson SM, Dornblaser MA, Koupaei-Abyazani N, Poulin BA, Bansal S, **Fellman JB**, Druschel GK, Desai A, Bernhardt ES, Spencer RGM. 2024. Linking dissolved organic matter composition to landscape properties in wetlands across the United States of America. *Global Biogeochemical Cycles* 38: e2023GB007917. <https://doi.org/10.1029/2023GB007917>

McNicol G, **Hood E**, Butman DE, Tank SE, Giesbrecht IJW, Floyd W, **D'Amore DV, Fellman JB**, Cebulski A, Lally A, McSorley H, Gonzalez Arriola SG. 2023. Small, coastal temperate rainforest watersheds dominate dissolved organic carbon transport to the northeast Pacific

Peitzsch, E. H., **Hood, E., Harley, J. R.**, Stahle, D. K., Kichas, N. E., & Wolken, G. J. (2023). Tree-ring derived avalanche frequency and climate associations in a high-latitude, maritime climate. *Journal of Geophysical Research: Earth Surface*, 128, e2023JF007154. <https://doi.org/10.1029/2023JF007154>

Peitzsch, E.H., **E. Hood, J.R. Harley**, D.K. Stahle, N.E. Zeibig-Kichas, and G.J. Wolken (2023) Dendrochronological avalanche frequency and climate associations in a high-latitude, maritime climate. *Journal of Geophysical Research: Earth Surface*, 112, e2023JF007154. <https://doi.org/10.1029/2023JF007154>

Roland, H. B., Kohlhoff, J., Lanphier, K., Hoysala, S., Kennedy, E. G., **Harley, J.**, et al. (2024). Perceived challenges to tribally led shellfish toxin testing in Southeast Alaska: Findings from key informant interviews. *GeoHealth*, 8, e2023GH000988. <https://doi.org/10.1029/2023GH000988>

White, K.S., **E. Hood**, G. Wolken, E. Peitzsch, Y. Buhler, K.W. Jones, and C.T. Darimont. (2024) Snow avalanches are a primary climate-linked driver of mountain ungulate populations. *Communications Biology*, 7: 423. <https://doi.org/10.1038/s42003-204-06073-0>