
# WyACT Team Directory
# March 2024



UNIVERSITY OF WYOMING

EPSCoR Wyoming

NSF

## Project Leadership

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|---|---|
| Dr. Brent E. Ewers | Principal Investigator |
| Dr. Bart Geerts | Co- Principal Investigator |
| Dr. Corrine (Corrie) Noel Knapp | Co- Principal Investigator |
| Dr. Sarah Konrad | Project Deputy Director |
| Dr. Bryan Shuman | Co- Principal Investigator |
| Dr. David G. Williams | Co- Principal Investigator |
| Dr. Melissa Bukovsky | Co- Principal Investigator |

## Research Questions

1. What climate-related risks threaten interacting and heterogeneous hydrological, ecological, and social systems at regional scales in coming decades?
2. How do individuals, communities and organizations best respond to climate-induced risks (including mitigation, adaptation, and transformation)?
3. How can the process of knowledge co-production build trust and adaptive capacity for key stakeholders and communities?
4. How might societal responses interact with biophysical processes and feedbacks to alter future risks and vulnerabilities?

# WyACT research organization and disciplinary teams

## Research Question 1

**What climate-related risks threaten interacting and heterogeneous hydrological, ecological, and social systems at regional scales in the coming decades?**

## I. Regional Climate Modeling

Evaluating regional climate models and datasets for Wyoming and contributing to the development of the Wyoming Climate Change Online Portal, with plans to further develop the portal, examine probabilities of extreme weather events, perform climate impact and scenario simulations, and engage in paleoclimate research to improve data-model comparisons.

### Team leader

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| **Bart Geerts** – Professor, Atmospheric Sciences, College of Engineering & Physical Sciences | *WyACT Co-PI developing a benchmark 1 km climate simulation to examine terrain effects on precipitation, snowpack. Part of the Climate Modeling team using CMIP6-informed regional climate model output for public use and to drive WyACT hydrological, ecological, aquatic, and socio-economic models.* |

### Faculty & staff

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|---|---|
| **Stefan Rahimi**<br>UW Derecho Professor of Atmospheric Sciences, College of Engineering & Physical Sciences | *Leading the regional climate modeling wing of WyACT. Collaborating with faculty, students, research, and end-users in policymaking to quantify the risks and potential impacts of climate change on disadvantaged communities, local and regional economies, water resources, and electricity generation.* |
| **Bryan Shuman**<br>Professor, Paleohydrology, Paleoclimatology, Paleoecology Department of Geology & Geophysics | *A Co-PI working to provide Wyoming communities with information needed to understand potential future climate impacts that will affect them. Roles include working with communities, organizations, and individuals to consider potential future scenarios and evaluating climate and watershed models by testing their ability to simulate climate changes and impacts in past millennia.* |
| **Fabian Nippgen**<br>Associate Professor, Watershed Hydrology, Ecosystem Science and Management, College of Agriculture and Natural Resources | *Exploring how physical watershed characteristics and climatic variability influence various metrics of watershed hydrologic response in natural and anthropogenically altered landscapes.* |

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| **Shannon Albeke**<br>Senior Research Scientist, WyGISC; GIST Faculty | *Spearheading the development of custom web applications using the University of Wyoming's cyberinfrastructure, enabling efficient data exchange and visualization for WyACT colleagues, stakeholders, and the public in our digitally interconnected world.* |
| **Tony Bergantino** – Director, Wyoming State Climate Office and Water Resources Data System | *Working on data display and retrieval interfaces through the analysis of drought, evapotranspiration, consumptive use, water resource management, water quality, climate, snow hydrology, and geographic information systems* |

### Postdoctoral Scholar

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| **Pramod Adhikari**<br>Regional Climate Modeling Postdoctoral Researcher WyACT-Climate Science, Department of Atmospheric Sciences | *Collecting and validating climate model data for the Interior Western United States (focusing on Wyoming) to run standard RCMs for climate change impact studies* |

### Graduate Student

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| **Kaitlin Smith**<br>Master's Student, Research Assistant with Bart Geerts, Department of Atmospheric Science | *Working on verifying historical CONUS404 runs using observations, data assimilation products, and other model outputs, with a particular focus on mountain Snow Water Equivalent (SWE) and precipitation patterns which will help determine how viable CONUS404 data are for driving future climate and hydrologic predictions.* |

### Undergraduate Student

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| **Kinsale Day**<br>Research Aide with Bart Geerts, Atmospheric Sciences, Science Initiative | *Partnering with Dr. Bart Geerts to analyze how different climate models perform in Wyoming's mountain ranges to assess their impact on precipitation and snow-water equivalent in the context of a warming climate.* |

## II. Aquatic Ecology and Modeling

Exploring the effects of climate change on lakes, reservoirs, and rivers through monitoring and field data collection. We aim to understand and model how changing temperature and precipitation regimes will affect aquatic productivity and food webs.

### Team leader

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| **Annika Walters**<br>Associate Professor, Zoology & Physiology,<br>College of Agriculture, Life Sciences, and Natural Resources | *Contributing to our understanding of the mechanistic drivers of climate change in aquatic ecosystems and the implications for fish. Current projects are currently focused on alpine lakes in the Wind River Range and cutthroat trout in the Upper Snake River watershed.* |

## Faculty & Staff

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|---|---|
| **William Fetzer**<br>Assistant Professor, Department of Zoology & Physiology | *Working to develop a foundational understanding of ecosystem dynamics, assessing the socio-economic value of freshwater ecosystems, and developing "potential futures" to illustrate feedbacks between socio-ecological systems, with a focus on large lakes and reservoirs and their connection to environmental conditions and fish populations.* |
| **Sarah Collins**<br>Assistant Professor, Department of Zoology & Physiology | *Interested in understanding how climate change influences freshwater ecology, including spatial and temporal patterns in productivity and nutrient dynamics.* |
| **Kevin Gauthier**<br>Senior Aquatic Research Technician | *Working to establish a baseline understanding of water quantity and quality and ecosystem-level productivity in lakes, reservoirs, and streams of Wyoming that will support efforts to predict potential changes to these valuable ecosystems in the face of human-induced change.* |

## Graduate Students

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|---|---|
| **Meredith Journey**<br>PhD Student, Research Assistant with Annika Walters, Department of Zoology & Physiology | *Investigating the resilience of alpine lakes to stressors of climate change in the Wind River Range, specifically changes in the timing and duration of snow-free periods and the potential role of elevation buffering in zooplankton and trout communities.* |
| **Tristan Blechinger**<br>Master's Student, Research Assistant with William Fetzer, Department of Zoology & Physiology | *Focusing on changing fisheries habitat in WY reservoirs and how aquatic food webs are responding to these changes using stable isotopes to understand how species are interacting and which pathways are most important.* |
| **Sean Bertalot**<br>Master's Student in the Collins Lab of Aquatic Ecology, Research Assistant with Sarah Collins, Department of Zoology & Physiology | *Leveraging high-frequency sensors and satellite remote sensing in Jackson Lake, aiming to fill historical data gaps on the spatial variability of cyanobacteria in eutrophic urban lake aquatic systems, enabling more accurate forecasting of future ecosystem shifts amidst anthropogenic climate change.* |
| **Jeff Baldock**<br>PhD Candidate, Research Assistant with Annika Walters, Wyoming Cooperative Fish and Wildlife Research Unity, Program in Ecology and Department of Zoology and Physiology | *Working with WyACT to understand the influence of historical natural flow, temperature, and Jackson Lake dam management on Yellowstone cutthroat trout in the Snake River to project future abundance and inform conservation planning.* |

## III. Teacher-Researcher Knowledge Exchange (TRKE) & Climate Observations

A cross-disciplinary professional development program designed for K-12 educators, place-based informal educators, community organizations, and university scientists to come together and co-produce the ways they will exchange pedagogical and scientific expertise for mutual benefit.

### Team leader

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|---|---|
| **Martha Inouye**<br>Research Scientist, Professional Development Specialist,<br>Science and Math Teaching Center | *Utilizing WyACT data in K-12 education settings to enhance instruction to foster dialogue between scientists, researchers, and K-12 educators, while co-coordinating the Teacher-Researcher Knowledge Exchange as a Senior Personnel on the project.* |

### Faculty & Staff

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|---|---|
| **Tony Bergantino**<br>Director, Wyoming State Climate Office and Water Resources Data System | *Working on data display and retrieval interfaces through the analysis of drought, evapotranspiration, consumptive use, water resource management, water quality, climate, snow hydrology, and geographic information systems* |
| **Bart Geerts**<br>Professor, Atmospheric Sciences, College of Engineering & Physical Sciences | *WyACT Co-PI, focusing on integrating TRKE instruments into the real-time weather and climate data network.* |
| **Ginger Paige**<br>Professor, Water Resources, Ecosystem Science and Management,<br>College of Agriculture and Natural Resources | *Establishing long-term hydrologic instrumentation and datasets, development of water quality training programs to collect credible data, and direct collaboration with stakeholders and decision makers.* |
| **Clare Gunshenan**<br>Outreach Science Educator, Science and Math Teaching Center | *Involved with the team facilitating annual cohorts in the Teacher Researcher Knowledge Exchange (TRKE), which will bring teachers, researchers, and non-formal educators together to exchange their expertise.* |

## IV. Data Science

Focusing on providing cyberinfrastructure and associated software applications aimed at facilitating data storage, sharing and visualizations amongst project personnel and our external partners, using a wide array of technologies to meet the diverse needs of the WyACT Team.

### Team leader

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|---|---|
| **Shannon Albeke**<br>Senior Research Scientist, WyGISC; GIST Faculty | *The lead for the Data Science Team, spearheading the development of custom web applications using the University of Wyoming's cyberinfrastructure, enabling efficient data exchange and visualization for WyACT colleagues, stakeholders, and the public in our digitally interconnected world.* |

### Faculty & Staff

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|---|---|
| **Samantha Ewers**<br>Geospatial Specialist for WyGISC | *Specializing in managing the project's data storage, sharing, and visualization needs, with expertise in overseeing both relational structured databases and graph databases.* |
| **Nicholas Case**<br>Geospatial Developer for WyGISC | *Primarily involved in developing geospatial dashboards for essential data visualization, establishing secure data repositories, and assisting in managing project data to ensure smooth data-related operations.* |
| **Luke Todd**<br>Geospatial Analyst for WyGISC | *Working on compiling data provided by various outside entities such as USGS stream gages, SNOTEL, etc. for displaying current climate conditions in WyACT's Data Repository.* |
| **Shawn Lanning**<br>Geospatial Scientist for WyGISC | *Managing the project's data storage, sharing, and visualization needs, and collaborating with others to establish, maintain, and improve cyberinfrastructure capabilities.* |

## V. Economics and Agricultural Economics

Focusing on methodological development, natural capital valuation, and integration of economics into the WyACT integrated modeling framework. The team plans to continue evaluating the non-consumptive value of Snake River cutthroat trout and model how recreational use of water bodies in Wyoming changes in response to environmental quality and climate perturbations in collaboration with other teams and agencies.

### Team leader

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| **David Finnoff**<br>Professor,<br>Department of Economics | *Working to conduct research that will help inform natural resource policy in response to the anticipated effects of future climate scenarios.* |

## Faculty & Staff

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|---|---|
| **Kristi Hansen**<br>Associate Professor,<br>Department of Agriculture and Applied Economics | *Playing a dual role on the WyACT project, conducting interdisciplinary research on water usage responses in Wyoming and the Western region, while also function as an Extension specialist collaborating with communities on issues of water scarcity and responses to weather and climate variations.* |
| **Nino Abashidze** | |

## Graduate Students

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|---|---|
| **Chandler Hubbard**<br>PhD Student, Research Assistant with Todd L. Cherry,<br>Department of Economics | *Aiming to integrate behavioral insights into models addressing climate change impacts, using experiments to estimate responses and constructing dynamic models to assess the impact of various factors on the landscape, while also fostering interdisciplinary collaborations for a comprehensive exploration of data sources.* |

## Close Collaborators

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| **Todd Cherry**<br>Professor,<br>Department of Economics | *Working to enhance environmental and social change modeling by integrating behavioral insights through experimental methods to improve the accuracy of scenarios for both environmental and policy changes.* |
| **Patrick Hofstedt**<br>Graduate Research Assistant with Kristi Hansen,<br>MSc in Agricultural and Applied Economics | *Conducting a survey of anglers who have bought fishing licenses in Teton County to gauge the impact of climate change on the local angling industry, aiming to contribute to the preparedness of the outdoor recreation sector for future climate effects with plans to expand the study to other fishing destinations throughout Wyoming.* |
| **Peyton Loss**<br>Master's Student, Agricultural and Applied Economics<br>Graduate Research Assistant with Kristi Hansen | *Expanding research experience by developing baseline economic response functions specific to the agricultural, industrial, and recreational sectors of northwestern Wyoming.* |
| **William Fetzer**<br>Assistant Professor,<br>Zoology & Physiology,<br>College of Agriculture, Life Sciences, and Natural Resources | *Working to develop a foundational understanding of ecosystem dynamics, assessing the socio-economic value of freshwater ecosystems, and developing "potential futures" to illustrate feedback between socio-ecological systems, with a focus on large lakes and reservoirs and their connection to environmental conditions and fish populations.* |

## VI. Paleo-hydroclimate Modeling

Contributing to the understanding of historical hydrological patterns in Wyoming to simulate past hydrological conditions.

### Team leader

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|---|---|
| **Bryan Shuman** – Professor, Paleohydrology, Paleoclimatology, Paleoecology<br>Department of Geology & Geophysics | *A Co-PI working to provide Wyoming communities with information needed to understand potential future climate impacts that will affect them. Roles include working with communities, organizations, and individuals to consider potential future scenarios and evaluating climate and watershed models by testing their ability to simulate climate changes and impacts in past millennia.* |

### Graduate Student

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|---|---|
| **Sara McCullough**<br>Master's Student, Research Assistant with Bryan Shuman, Department of Geology & Geophysics | *Studying how Rocky Mountain alpine lake levels have varied in the past to better understand the timing and effects of multimillennial and multicentennial hydroclimate events.* |

## VII. Watershed Science

Focusing on developing observational infrastructure and conducting ecohydrological modeling to quantify and model responses of watershed hydrology to climate change, forest disturbances, and management actions. The team engages in knowledge co-production with stakeholders, contributes to SEaSON through long-term monitoring, and collaborates with other teams on climate modeling, aquatic ecology, scenario planning, baseline social and economic sciences, and integrated modeling within the WyACT framework.

### Team leader

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|---|---|
| **Fabian Nippgen** – Associate Professor, Watershed Hydrology, Ecosystem Science and Management, College of Agriculture and Natural Resources | *Exploring how physical watershed characteristics and climatic variability influence various metrics of watershed hydrologic response in natural and anthropogenically altered landscapes.* |

### Faculty & Staff

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|---|---|
| **Brent Ewers**<br>Professor,<br>Botany Department Head | *WyACT PI, ensuring the project meets its mission, fulfills its strategic plan, and stays within budget. Aiming to create a sustainable research enterprise that leverages advanced science tools to benefit Wyoming communities (especially those underrepresented) in adapting to changing water availability in a warming climate, and fostering greater trust in scientific models among Wyoming communities for effective planning and decision making.* |

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| **Tucker Furniss**<br>Assistant Professor, Department of Ecosystem Science and Management | *Building dynamic ecological simulation models to forecast forest dynamics, disturbance process, and land management actions; collaborating with the team to visualize anticipated changes with climate and hydrological models to estimate future snowpack dynamics and water supply in diverse socio-ecological scenarios.* |
| **Ginger Paige**<br>Professor, Water Resources, Ecosystem Science and Management,<br>College of Agriculture and Natural Resources | *Establishing long-term hydrologic instrumentation and datasets, development of water quality training programs to collect credible data, and direct collaboration with stakeholders and decision makers.* |
| **David Williams**<br>Professor, Department of Botany | *WyACT Co-PI, investigating vegetation-environment interactions and scaling microbial and plant metabolism to the ecosystem level, aligning with the project's goals in advancing understanding and management of terrestrial ecosystems.* |

## Postdoctoral Scholar

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| **Danielle Berardi**<br>Postdoctoral Scholar with the Wyoming Natural Diversity Database (WYNDD) | |

## Graduate Students

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| **Bryce Shoup**<br>PhD Student with Williams Lab, Research Assistant with Dave Williams, Department of Botany | *Working on issues of water quality and quantity.* |
| **Samantha Dilworth**<br>PhD Student, Research Assistant with Ginger Paige and Dave Williams, Department of Ecosystem Science and Management | *Using aquatic insects and exploring other physical and/or chemical shifts in streams as indicators of climate change in the Greater Yellowstone Ecosystem.* |
| **Cory Ott**<br>PhD Student in the Hydrologic Sciences Program,<br>Research Assistant with Fabian Nippgen, and Brent Ewers | *Working closely with the interdisciplinary team to provide meaningful ecohydrological data outputs that can be analyzed and applied to the various future scenarios being explored for the WyACT project.* |

# Research Question 2

**How do individuals, communities, and organizations best respond to climate-induced risks (including mitigation, adaptation, and transformation)?**

## I. Baseline Social Context

Aims to understand the baseline conditions and practices of stakeholders within study basins. Activities include institutional analysis, values mapping, and a survey about water-related perceptions and preferences.

### Team Leader

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|---|---|
| **Corrine Noel Knapp**<br>Associate Professor, Department of Environment and Society, Haub School of Environment & Natural Resources | *WyACT Co-PI, coordinating social science and co-production efforts. Research focuses in climate change adaptation, local and indigenous knowledges, sense of place, and conservation innovation. Interested in improving understanding of linked socio-ecological systems.* |

### Faculty & Staff

| | |
|---|---|
| **Kristi Hansen**<br>Associate Professor, Department of Agriculture and Applied Economics | *Playing a dual role on the WyACT project, conducting interdisciplinary research on water usage responses in Wyoming and the Western region, while also function as an Extension specialist collaborating with communities on issues of water scarcity and responses to weather and climate variations.* |
| **Kristen Landreville**<br>Research Scholar, Haub School of Environment & Natural Resources | *Coordinating climate communication and science journalism project elements, including analyzing regional news coverage, collaborating with Wyoming journalists for internships and development, conducting a baseline survey on public attitudes, and creating a climate-water ambassador program for improved interpersonal communication.* |
| **Tarissa Spoonhunter**<br>Assistant Professor, Haub School of Environment and Natural Resources; Director, High Plains American Indian Research Institute | *Leading collaboration with Tribal partners on the Wind River Indian Reservation, with specific focuses on Tribal data sovereignty, building capacity, and addressing climate transitions as a headwater nation in the Wind River Reservation.* |
| **Mary Keller**<br>Senior Lecturer, Religious Studies; Adjunct, African American and Diaspora Studies, Adjunct, Haub School of Environment & Natural Resources | *Facilitating scenario workshops for WyACT, focusing on co-producing knowledge with stakeholders, emphasizing the analysis of diverse water values and their impact of social hydrology, with an interest in integrating critical insights from Indigenous perspectives.* |

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| **Jeff Hamerlinck**<br>Director and Senior Research Scientist,<br>Wyoming Geographic Information Science Center, School of Computing | *Working in water resource management and committed to capacity building in both the social science and data science aspects of the project. Working with scenario planning and participatory GIS as areas of research that integrate these two components.* |
| **Rebecca Witinok-Huber**<br>Co-production Associate Research Scientist,<br>Haub School of Environment & Natural Resources | *Studying how individuals and communities respond to changing water conditions and working to bridge research and practice for improved baseline capacities through knowledge co-production, with a focus on inclusive and effective research methods.* |

## Postdoctoral Scholars

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|---|---|
| **Caitlin Ryan**<br>Postdoctoral Research Associate | *Using scenario planning methodologies to help Wyoming communities imagine, strategize and adapt to climate-driven uncertainties related to the future of water. Building local capacity for climate adaptation and transformative change, connecting local knowledge to improve climate modeling efforts, understanding baseline context through public opinion surveys, and mapping institutional capacities to respond to changing water resources.* |

## Graduate Students

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|---|---|
| **Peyton Loss**<br>Master's Student, Agricultural and Applied Economics<br>Graduate Research Assistant with Kristi Hansen | *Expanding research experience by developing baseline economic response functions specific to the agricultural, industrial, and recreational sectors of northwestern Wyoming.* |
| **Maggie O'Neill**<br>Graduate Research Assistant with Corrie Knapp,<br>Haub School of Environment & Natural Resources | *Conducting a water stakeholder assessment in Wyoming watersheds to identify key water stakeholder positions, aiming to inform WyACT Co-production Committee members and support future activities and relationships with stakeholders.* |
| **Callie Surber**<br>Graduate Research Assistant with Corrie Knapp,<br>Haub School of Environment & Natural Resources | *Working with Dr. Corrie Knapp, Dr. Kristi Hansen, and Agricultural Economics student Peyton Loss on the social dimensions of changing water availability in Wyoming and related tipping points and thresholds of concern.* |
| **Pallavi Pokharel**<br>Graduate Research Assistant with Corrie Knapp,<br>Haub School of Environment and Natural Resources | *Exploring Wyoming residents' perceptions and values towards water using storytelling. Through interviews and StoryMaps, the aim is to visually represent water values for decision-makers and use interactive tools for educational awareness among children and teachers.* |

## II. Economics and Communication (behavioral experiments)

Focuses on behavioral experiments to estimate risk preferences and responses to climate-induced changes in climate-related risks.

### Team Leader

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|---|---|
| **Todd L. Cherry**<br>Professor,<br>Department of Economics | *Working to enhance environmental and social change modeling by integrating behavioral insights through experimental methods to improve the accuracy of scenarios for both environmental and policy changes.* |

### Faculty & Staff

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|---|---|
| **Kristen Landreville**<br>Research Scholar, Haub School of Environment & Natural Resources | *Coordinating climate communication and science journalism project elements, including analyzing regional news coverage, collaborating with Wyoming journalists for internships and development, conducting a baseline survey on public attitudes, and creating a climate-water ambassador program for improved interpersonal communication.* |
| **David Finnoff**<br>Professor,<br>Department of Economics | *Working to conduct research that will help inform natural resource policy in response to the anticipated effects of future climate scenarios.* |

### Graduate Students

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|---|---|
| **Peri Brimley**<br>PhD Student, Research Assistant with Todd L. Cherry, Department of Economics | *Conducting behavior research that investigates individual and collective behavior in environmental problems, specifically in responses to changes in environmental risk.* |
| **Chandler Hubbard**<br>PhD Student, Research Assistant with Todd L. Cherry, Department of Economics | *Aims to integrate behavioral insights into models addressing climate change impacts, using experiments to estimate responses and constructing dynamic models to assess the impact of various factors on the landscape, while also fostering interdisciplinary collaborations for a comprehensive exploration of data sources.* |
| **Ian Fletcher**<br>PhD Student, Research Assistant with Todd L. Cherry, Department of Economics | *Working on behavioral responses to environmental changes, particularly those related to grizzly bear population growth in the greater Yellowstone ecosystem, using experimental methods.* |
| **Connor Lubsen**<br>PhD Student, Research Assistant with Todd L. Cherry, Department of Economics | *Working to enhance environmental and social change modeling by integrating behavioral and experimental insights, focusing on analyzing policy measures addressing climate change externalities, and investigating preferences related to messaging, design, environmental risk, and amenities to inform effective and inclusive policies.* |

## III. Communication & Journalism

A media content analysis project on climate change coverage. The team plans to conduct surveys, create a journalist climate cohort, and establish a climate-water ambassador program.

### Team Leader

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|---|---|
| **Kristen Landreville**<br>Research Scholar, Haub School of Environment & Natural Resources | *Coordinating climate communication and science journalism project elements, including analyzing regional news coverage, collaborating with Wyoming journalists for internships and development, conducting a baseline survey on public attitudes, and creating a climate-water ambassador program for improved interpersonal communication.* |

### Faculty & Staff

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|---|---|
| **Hye Soo Nah**<br>Assistant Professor, Department of Communication and Journalism | *Leading the Science/ENR Journalism Internship Program, fostering relationships with Wyoming media outlets, developing a climate-water journalism program, and placing interns to produce climate-water stories, and working with a "climate cohort" of Wyoming journalists to provide professional development opportunities for enhanced climate and environmental reporting.* |

# Research Question 3

**How can the process of co-production build trust and adaptive capacity for key stakeholders and communities?**

## II. Co-production

Ensuring that our overarching grant outcomes are collaboratively developed and improved through iterative learning processes. This includes engagement through listening sessions and waterboard meetings and linking work across research questions, and contributes to establishing the sustainable Center for Climate, Water and People, which is one of the sustainability elements of the grant and will allow the impact of the grant to last beyond the 5-year project.

### Team Leader

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|---|---|
| **Corrine Noel Knapp**<br>Associate Professor, Department of Environment and Society | *WyACT Co-PI, coordinating social science and co-production efforts. Research focuses in climate change adaptation, local and indigenous knowledges, sense of place, and conservation innovation. Interested in improving understanding of linked socio-ecological systems.* |

## Faculty & Staff

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|---|---|
| **Weston Eaton**<br>Visiting Assistant Professor, Haub School of Environment & Natural Resources | *Contributing to WyACT research on how knowledge co-production relates to adaptive capacity.* |
| **Jewell Lund**<br>Associate Research Scientist, Haub School of Environment & Natural Resources, WyACT Knowledge Co-production Coordinator | *Working to bridge research and practice through transdisciplinary frameworks of knowledge co-production, facilitating basin-specific Actionable Science Committees that will work with the WyACT team to co-define/refine basin research objectives and co-identify useful and actionable scientific outputs within WyACT scope, interest, and expertise*. |
| **Rebecca Witinok-Huber**<br>Co-Production Associate Research Scientist,<br>Haub School of Environment & Natural Resources | *Studying how individuals and communities respond to changing water conditions and working to bridge research and practice for improved baseline capacities through knowledge co-production, with a focus on inclusive and effective research methods.* |

## Undergraduate Assistant

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| **William Galloway**<br>Undergraduate Knowledge Co-Production Research Assistant | *Assisting Jewell Lund to create a transdisciplinary framework of knowledge production to connect WyACT to stakeholders and close collaborators.* |

## III. Scenario Planning

Focus is to incorporate social science-enabled scenario planning methodologies to enhance climate-induced risk understanding and co-production of knowledge across WyACT study areas, bridging social science and climate science, building capacity, and advancing scenario planning theory and practice.

### Team Leader

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|---|---|
| **Mary Keller**<br>Senior Lecturer, Religious Studies; Adjunct, African American and Diaspora Studies, Adjunct, Haub School of Environment & Natural Resources | *Facilitating scenario workshops for WyACT, focusing on co-producing knowledge with stakeholders, emphasizing the analysis of diverse water values and their impact of social hydrology, with an interest in integrating critical insights from Indigenous perspectives.* |

### Faculty & staff

| | |
|---|---|
| **Corrine Noel Knapp**<br>Associate Professor, Department of Environment and Society | *WyACT Co-PI, coordinating social science and co-production efforts. Research focuses in climate change adaptation, local and indigenous knowledges, sense of place, and conservation innovation. Interested in improving understanding of linked socio-ecological systems.* |
| **Jeff Hamerlinck**<br>Director and Senior Research Scientist,<br>Wyoming Geographic Information Science Center, School of Computing | *Working in water resource management and committed to capacity building in both the social science and data science aspects of the project. Additionally viewing scenario planning and participatory GIS as areas of research that integrate these two components.* |
| **Bryan Shuman**<br>Professor, Paleohydrology, Paleoclimatology, Paleoecology Department of Geology & Geophysics | *A Co-PI working to provide Wyoming communities with information needed to understand potential future climate impacts that will affect them. Roles include working with communities, organizations, and individuals to consider potential future scenarios and evaluating climate and watershed models by testing their ability to simulate climate changes and impacts in past millennia.* |

### Postdoctoral Scholars

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|---|---|
| **Anderson de Figueiredo** – Scenario Planning Postdoctoral Research Associate,<br>Haub School of Environment and Natural Resources | *Focusing on scenario building and climate change adaptation research. Engaging with communities to integrate meaningful climate science, responsible for co-designing scenario-building interviews, focus groups and community deliberations with community members, as well as to understand community needs, responses and strategies to adapt to climactic changes.* |

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| **Caitlin Ryan**<br>Postdoctoral Research Associate | *Using scenario planning methodologies to help Wyoming communities imagine, strategize and adapt to climate-driven uncertainties related to the future of water. Building local capacity for climate adaptation and transformative change, connecting local knowledge to improve climate modeling efforts, understanding baseline context through public opinion surveys, and mapping institutional capacities to respond to changing water resources.* |

## IV. Teacher-Researcher Knowledge Exchange

Facilitating co-production of knowledge and understanding among K-12 teachers, researchers, and non-formal educators related to climate-induced risks and responses. These collaborative groups interact with WyACT research questions and various teams to support Wyoming students and communities, while also supporting the integration of traditional ecological knowledge, economic and modeling connections, scenario planning, and data collection efforts, and building capacity in scenario planning methods.

### Team leader

| | |
|---|---|
| **Martha Inouye**<br>Research Scientist, Professional Development Specialist, Science and Math Teaching Center | *Utilizing WyACT data in K-12 education settings to enhance instruction to foster dialogue between scientists, researchers, and K-12 educators, while co-coordinating the Teacher-Researcher Knowledge Exchange as a Senior Personnel on the project.* |

### Faculty & staff

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|---|---|
| **Clare Gunshenan**<br>Outreach Science Educator, Science and Math Teaching Center | *Involved with the SMTC team facilitating annual cohorts in Teacher Researcher Knowledge Exchange (TRKE), which will bring teachers, researchers, and non-formal educators together to exchange their expertise.* |
| **Sarah Konrad**<br>Project Deputy Director, WyACT | *Project Deputy Director managing all formal reporting and coordinating evaluation activities. Also focusing on growing and managing our inclusion of LatinX people into the project, supporting the remote PhD program, coordinating with the AMK, and handling graphic design work.* |

# Research Question 4

**How might societal responses interact with biophysical processes and feedbacks to alter future risks and vulnerabilities?**

## I. Snake River Pilot Integrated Modeling

Aims to pilot basin-specific integrated modeling activities, covering climate, hydrology, aquatics, and economics, with a focus on the Snake River Basin to address stakeholders' questions about how climate change impacts the region's ecosystem and economy through data collection, model development, and collaboration among team personnel, with the goal of informing policy decisions.

### Team leader:

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|---|---|
| **Bryan Shuman**<br>Professor, Paleohydrology, Paleoclimatology, Paleoecology<br>Department of Geology & Geophysics | *A Co-PI working to provide Wyoming communities with information needed to understand potential future climate impacts that will affect them. Roles include working with communities, organizations, and individuals to consider potential future scenarios and evaluating climate and watershed models by testing their ability to simulate climate changes and impacts in past millennia.* |

### Initial Pilot modeling team

Faculty & Staff

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|---|---|
| **Kristi Hansen**<br>Associate Professor, Department of Agriculture and Applied Economics | *Playing a dual role on the WyACT project, conducting interdisciplinary research on water usage responses in Wyoming and the Western region, while also function as an Extension specialist collaborating with communities on issues of water scarcity and responses to weather and climate variations.* |
| **Fabian Nippgen**<br>Associate Professor, Watershed Hydrology, Ecosystem Science and Management, College of Agriculture and Natural Resources | *Exploring how physical watershed characteristics and climatic variability influence various metrics of watershed hydrologic response in natural and anthropogenically altered landscapes.* |
| **Ginger Paige**<br>Professor, Water Resources, Ecosystem Science and Management,<br>College of Agriculture and Natural Resources | *Establishing long-term hydrologic instrumentation and datasets, development of water quality training programs to collect credible data, and direct collaboration with stakeholders and decision makers.* |

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|---|---|
| **Annika Walters**<br>Associate Professor, Zoology & Physiology | *Contributing to our understanding of the mechanistic drivers of climate change in aquatic ecosystems and the implications for fish. Current projects are currently focused on alpine lakes in the Wind River Range and cutthroat trout in the Upper Snake watershed.* |
| **Bart Geerts**<br>Professor, Department of Atmospheric Sciences | *WyACT Co-PI conducting research into cloud-scale to mesoscale atmospheric processes using aircraft measurements with a variety of radars. Working with the Climate Modeling team to develop CMIP6-informed regional climate modeling for public use and to drive WyACT hydrological, ecological, aquatic, and socio-economic models.* |
| **Shannon Albeke**<br>Senior Research Scientist, WyGISC; GIST Faculty | *Spearheading the development of custom web applications using the University of Wyoming's cyberinfrastructure, enabling efficient data exchange and visualization for WyACT colleagues, stakeholders, and the public in our digitally interconnected world.* |
| **Jewell Lund**<br>Associate Research Scientist, Haub School of Environment & Natural Resources, WyACT Knowledge Co-production Coordinator | *Working to bridge research and practice through transdisciplinary frameworks of knowledge co-production, facilitating basin-specific Actionable Science Committees that will work with the WyACT team to co-define/refine basin research objectives and co-identify useful and actionable scientific outputs within WyACT scope, interest, and expertise.* |

## Postdoctoral Scholars

| | |
|---|---|
| **Caitlin Ryan** - (Postdoctoral Research Associate) | *Using scenario planning methodologies to help Wyoming communities imagine, strategize and adapt to climate-driven uncertainties related to the future of water. Building local capacity for climate adaptation and transformative change, connecting local knowledge to improve climate modeling efforts, understanding baseline context through public opinion surveys, and mapping institutional capacities to respond to changing water resources.* |
| **Anderson de Figueiredo** – Scenario Planning Postdoctoral Research Associate,<br>Haub School of Environment and Natural Resources | *Focusing on scenario building and climate change adaptation research. Engaging with communities to integrate meaningful climate science, responsible for co-designing scenario-building interviews, focus groups and community deliberations with community members, as well as to understand community needs, responses and strategies to adapt to climactic changes.* |
| **Pramod Adhikari** – Regional Climate Modeling Postdoctoral Researcher WyACT- Climate Science | *Collecting and validating climate model data for the Interior Western United States, focusing on Wyoming, to run standard RCMs for climate change impact studies, and collaborating with researchers from various fields.* |

### Graduate Students

| | |
|---|---|
| **Jeff Baldock** – PhD Candidate, Research Assistant with Annika Walters, Wyoming Cooperative Fish and Wildlife Research Unity, Program in Ecology and Department of Zoology and Physiology | *Working with WyACT to understand the influence of historical natural flow, temperature, and dam management on Yellowstone cutthroat trout in the Snake River to project future abundance and inform conservation planning.* |
| **Patrick Hofstedt** – Graduate Research Assistant with Kristi Hansen, MSc in Agricultural and Applied Economics | *Conducting survey of anglers who have bought fishing licenses in Teton County to gauge the impact of climate change on the local angling industry, aiming to contribute to the preparedness of the outdoor recreation sector for future climate effects to expand study to other fishing destinations throughout Wyoming.* |

## II. Wind River Indian Reservation co-production opportunities: collaborating with the Wind River Tribal Buffalo Initiative

Collaboration with the Wind River Tribal Buffalo Initiative, working to measure baseline ecohydrology and impacts of buffalo reintroduction and potential stream restoration efforts, and fostering a nation-to-nation partnership emphasizing knowledge co-production and respecting Tribal data sovereignty.

### Team Leader

| | |
|---|---|
| **Tarissa Spoonhunter** – Assistant Professor, Haub School of Environment & Natural Resources | *Leading collaboration with Tribal partners on the Wind River Indian Reservation, with specific focuses on Tribal data sovereignty, building capacity, and addressing climate transitions as a headwater nation in the Wind River Reservation.* |

### Faculty & staff

| | |
|---|---|
| **Nichole Lumadue** – Education, Outreach, & Diversity Coordinator, Wyoming EPSCoR | *Aiming to make research and scientific knowledge universally accessible, prioritizing communities disproportionately affected by environmental changes through a co-production approach.* |
| **Kyle Trumble** – Wind River Project Coordinator | *Seeking to improve economic development tools for the Wind River Indian Reservation, reduce unemployment through native-owned businesses, provide business model innovation to tribal programs, and enhance connections between county, state, and reservation communities.* |

| | |
|---|---|
| **Jewell Lund** – Associate Research Scientist, Haub School of Environment & Natural Resources, WyACT Knowledge Co-production Coordinator | *Working to bridge research and practice through transdisciplinary frameworks of knowledge co-production; facilitating basin-specific Actionable Science Committees that will work with the WyACT team to co-define/refine basin research objectives and co-identify useful and actionable scientific outputs within WyACT scope, interest, and expertise.* |

### Postdoctoral Scholars

| | |
|---|---|
| **Caitlin Ryan** – Postdoctoral Research Associate | *Using scenario planning methodologies to help Wyoming communities imagine, strategize and adapt to climate-driven uncertainties related to the future of water. Building local capacity for climate adaptation and transformative change, connecting local knowledge to improve climate modeling efforts, understanding baseline context through public opinion surveys, and mapping institutional capacities to respond to changing water resources.* |

## III. Green River Pilot Integrated Modeling team

Aims to pilot basin-specific integrated activities covering climate, hydrology, aquatics, and economics, with a focus on the Green River Basin. The group aims to address key questions related to historic and future climate change impacts the region's hydrology, ecology, and socio-economy. Approaches include data collection and empirical analyses, model development, and interdisciplinary integration among team personnel, with the goal of research outputs that support decision-making in the Green River Basin.

### Team Leaders

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|---|---|
| **Kristi Hansen** – Associate Professor, Department of Agriculture and Applied Economics | *Playing a dual role on the WyACT project, conducting interdisciplinary research on water usage responses in Wyoming and the Western region, while also function as an Extension specialist collaborating with communities on issues of water scarcity and responses to weather and climate variations.* |
| **Ginger Paige** – Professor, Water Resources, Ecosystem Science and Management, College of Agriculture and Natural Resources | *Establishing long-term hydrologic instrumentation and datasets, development of water quality training programs to collect credible data, and direct collaboration with stakeholders and decision makers.* |

## Initial Pilot team

### Faculty & Staff

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|---|---|
| **Brent Ewers** – Professor, Botany Department Head | *WyACT PI, ensuring the project meets its mission, fulfills its strategic plan, and stays within budget. Aiming to create a sustainable research enterprise that leverages advanced science tools to benefit Wyoming communities (especially those underrepresented) in adapting to changing water availability in a warming climate, and fostering greater trust in scientific models among Wyoming communities for effective planning and decision making.* |
| **Corrine Noel Knapp** – Associate Professor, Department of Environment and Society | *WyACT Co-PI, coordinating social science and co-production efforts. Research focuses in climate change adaptation, local and indigenous knowledges, sense of place, and conservation innovation. Interested in improving understanding of linked socio-ecological systems.* |
| **Jewell Lund** – Associate Research Scientist, Haub School of Environment & Natural Resources, WyACT Knowledge Co-production Coordinator | *Working to bridge research and practice through transdisciplinary frameworks of knowledge co-production; facilitating basin-specific Actionable Science Committees that will work with the WyACT team to co-define/refine basin research objectives and co-identify useful and actionable scientific outputs within WyACT scope, interest, and expertise.* |
| **Fabian Nippgen** – Associate Professor, Watershed Hydrology, Ecosystem Science and Management, College of Agriculture and Natural Resources | *Exploring how physical watershed characteristics and climatic variability influence various metrics of watershed hydrologic response in natural and anthropogenically altered landscapes* |
| **David Williams** – Professor, Department of Botany | *WyACT Co-PI, investigating vegetation-environment interactions and scaling microbial and plant metabolism to the ecosystem level, aligning with the project's goals in advancing understanding and management of terrestrial ecosystems.* |
| **Rebecca Witinok-Huber** - (Co-Production Associate Research Scientist, Haub School of Environment & Natural Resources) | *Studying how individuals and communities respond to changing water conditions and working to bridge research and practice for improved baseline capacities through knowledge co-production, with a focus on inclusive and effective research methods.* |

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### Postdoctoral Scholar

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|---|---|
| **Caitlin Ryan** – Postdoctoral Research Associate | *Using scenario planning methodologies to help Wyoming communities imagine, strategize and adapt to climate-driven uncertainties related to the future of water. Building local capacity for climate adaptation and transformative change, connecting local knowledge to improve climate modeling efforts, understanding baseline context through public opinion surveys, and mapping institutional capacities to respond to changing water resources.* |

## Climate Assessment team

### Faculty & Staff

| | |
|---|---|
| **Bart Geerts** – Professor, Department of Atmospheric Sciences | *WyACT Co-PI conducting research into cloud-scale to mesoscale atmospheric processes using aircraft measurements with a variety of radars. Working with the Climate Modeling team to develop CMIP6-informed regional climate modeling for public use and to drive WyACT hydrological, ecological, aquatic, and socio-economic models.* |
| **Stefan Rahimi** – UW Derecho Professor of Atmospheric Sciences, College of Engineering & Physical Sciences | *Leading the regional climate modeling wing of WyACT. Collaborating with faculty, students, research, and end-users in policymaking to quantify the risks and potential impacts of climate change on disadvantaged communities, local and regional economies, water resources, and electricity generation.* |
| **Shannon Albeke** – Senior Research Scientist, WyGISC; GIST Faculty | *Spearheading the development of custom web applications using the University of Wyoming's cyberinfrastructure, enabling efficient data exchange and visualization for WyACT colleagues, stakeholders, and the public in our digitally interconnected world.* |

### Postdoctoral Scholars

| | |
|---|---|
| **Anderson de Figueiredo** - Scenario Planning Postdoctoral Research Associate, Haub School of Environment and Natural Resources) | *Focusing on scenario building and climate change adaptation research. Engaging with communities to integrate meaningful climate science, responsible for co-designing scenario-building interviews, focus groups and community deliberations with community members, as well as to understand community needs, responses and strategies to adapt to climactic changes.* |
| **Pramod Adhikari** – Regional Climate Modeling Postdoctoral Researcher WyACT- Climate Science | *Collecting and validating climate model data for the Interior Western United States, focusing on Wyoming, to run standard RCMs for climate change impact studies, and collaborating with researchers from various fields.* |

## IV. CLIMES (The CoLaborative for Intersectoral Modeling of the Earth System) team

An interdisciplinary, collaborative space for regional, intersectoral modeling of earth's systems. The lab provides quantitative, computational projections of regionally relevant environmental futures for Wyoming and beyond. Aiming to produce innovative research with practical applications, aiming to make a real difference in how we understand and respond to environmental change.

### Team Leader

| | |
|---|---|
| **Melissa Bukovsky** – CLIMES Director, Associate Professor, Haub School of Environment and Natural Resources | *Research focusing on regional climate modeling and climate change impacts, with a specialty in integrating interdisciplinary approaches to inform decision-making amidst uncertainty, and directing the CoLABorative for Intersectoral Modeling of the Earth System (CLIMES) as part of WyACT's capacity-building efforts.* |

### Faculty & Staff

| | |
|---|---|
| **Nino Abashidze** | |
| **Tucker Furniss** – Assistant Professor, Department of Ecosystem Science and Management | *Building dynamic ecological simulation models to forecast forest dynamics, disturbance process, and land management actions, collaborating with the team to visualize anticipated changes with climate and hydrological models to estimate future snowpack dynamics and water supply in diverse socio-ecological scenarios.* |
| **Stefan Rahimi** – UW Derecho Professor of Atmospheric Sciences, College of Engineering & Physical Sciences | *Leading the regional climate modeling wing of WyACT. Collaborating with faculty, students, research, and end-users in policymaking to quantify the risks and potential impacts of climate change on disadvantaged communities, local and regional economies, water resources, and electricity generation.* |

# WyACT Team Directory by Alphabet

## Dr. Pramod Adhikari (he/him)

Regional Climate Modeling Postdoctoral Researcher
WyACT Climate Science

pramod.adhikari@uwyo.edu

**About**

I am an atmospheric scientist focused on the regional aspects of climate change over the mountain environment. My doctorate research emphasized understanding the role of natural and anthropogenic aerosols in modulating cloud properties, regional and elevation-dependent precipitation distribution and intensity, and vertical and surface temperature distribution over the Central Himalayas, which are crucial for the regional hydroclimate. I have a broad interest in understanding the impact of climate change on regional and local levels using satellite-based observational datasets, reanalysis, and numerical modeling.

**Vision/scope for WyACT**

For WyACT, I am responsible for the collection of climate model guidance for the Interior western US, including Wyoming, through the development and validation of dynamically downscaled historical simulations. This will lead us to run our own standard RCM, and the output will be used for applied climate change impact studies. Furthermore, hydrologists and ecologists will use the downscaled modeling output for collaborative modeling to understand the impact of future climate change (~ 40 years from now). I am excited to work collaboratively with researchers and scientists from diverse fields.

**Publications relevant to my work with WyACT**


- Adhikari, P., & Mejia, J. F. (2023). Aerosol–precipitation elevation dependence over the central Himalayas using cloud-resolving WRF-Chem numerical modeling. *Atmospheric Chemistry and Physics*, *23*(2), 1019-1042.
- Adhikari, P., & Mejia, J. F. (2021). Influence of aerosols on clouds, precipitation and freezing level height over the foothills of the Himalayas during the Indian summer monsoon. *Climate Dynamics*, *57*(1-2), 395-413.


**Links to understand more of my work**

- LinkedIn profile
- https://scholar.google.com/citations?user=QLI8ZaMAAAAJ&hl=en

## Dr. Shannon E. Albeke (he/him)

Senior Research Scientist, WyGISC; GIST Faculty

salbeke@uwyo.edu

**About**

I am a Senior Research Scientist and GIST Faculty member. I hold a Bachelor of Arts degree in Environmental Sciences, with minors in Biology and Geography in 1997 from the University of Colorado – Boulder. After graduation, I began an 8-year career as an Aquatic Habitat Biologist for the Colorado Division of Wildlife and by necessity learned how to be a GeoSpatial Data Scientist. I received my PhD from the University of Georgia – Warnell School of Forestry and Natural Resources in 2010 as well as becoming a member of WyGISC.

My general research interests center around applied GIS, programming and statistics. Specific interests include: 1) Modeling of ecological processes across broad spatial extents and multiple scales. 2) Facilitation of Data Science workflows using cutting edge modeling, programming and data management techniques. 3) Promoting and enabling scientific outreach to others through open-data portals and visualization tools. 4) Use of UAS for estimation of vegetation community assembly and biomass.

**Vision/scope for WyACT**

We live in a brave new world where the rapid sharing of data and information is an expectation more so than a luxury. As Lead for the Data Science Team, we aim to facilitate the efficient exchange, storage, and visualization of information to our WyACT colleagues, stakeholders and other unaffiliated members of the public. We accomplish this goal through the development of custom web-based software applications that use U. of Wyoming cloud-based cyberinfrastructure. The creation of dynamic, interactive web map applications provides the ideal platform for WyACT partners to explore and share our new-found knowledge with people from around the world.

**Publications relevant to my work with WyACT**


- Fitch, K., Nippgen, F., Albeke, S. E., & Paige, G. B. (2022). Where the wild beavers are: Climate and landscape controls on beaver pond area in snow-dominated rangeland headwaters. *Ecohydrology*, *15*(4), e2418.
- Stears, A. E., Adler, P. B., Albeke, S. E., Atkins, D. H., Studyvin, J., & Laughlin, D. C. (2022). plantTracker: An R package to translate maps of plant occurrence into demographic data. *Methods in Ecology and Evolution*, *13*(10), 2129-2137.
- LeCheminant, A. G., Barrile, G. M., Albeke, S. E., & Walters, A. W. (2021). Movement Dynamics and Survival of Stocked Colorado River Cutthroat Trout. *Transactions of the American Fisheries Society*, *150*(6), 679-693.
- Hoffman, A. S., Albeke, S. E., McMurray, J. A., Evans, R. D., & Williams, D. G. (2019). Nitrogen deposition sources and patterns in the Greater Yellowstone Ecosystem determined from ion exchange resin collectors, lichens, and isotopes. Science of the Total Environment, 683, 709-718.


**Links to understand more of my work**

- https://www.uwyo.edu/wygisc/people/albeke-shannon-employee-page/shannon-short-cv.html
- https://www.uwyo.edu/wygisc/our_research/ongoing_research/ecoinformatics_initiative.html
- https://scholar.google.com/citations?user=vVXF4S4AAAAJ&hl=en

## Jeff Baldock (he/him)

PhD Candidate, Research Assistant with Annika Walters, Wyoming Cooperative Fish and Wildlife Research Unity, Program in Ecology and Department of Zoology and Physiology

jbaldock@uwyo.edu

**About**

I am a fisheries ecologist with broad interests in individual behavior, population ecology, landscape complexity, and conservation biology. I am specifically interested in the linkages between habitat heterogeneity, life history diversity, and metapopulation dynamics of salmonid fishes. My research is focused on understanding the role of groundwater-fed streams to Yellowstone cutthroat trout in the upper Snake River basin, Wyoming. I use observational field studies, genomic techniques, and statistical models to understand the drivers of individual behavior and population dynamics and demographics across riverscapes. Through my research I aim to provide a mechanistic understanding of the benefits of alternative conservation strategies and the tools required for effective and efficient decision making.

**Vision/scope for WyACT**

I am working with WyACT to understand how historical natural flow and temperature regimes and Jackson Lake Dam management practices have affected the population dynamics of Yellowstone cutthroat trout (a.k.a., Snake River cutthroat trout) in the Snake River and its tributaries. I will use this historical understanding to forecast future trends in abundance under alternative climate change and dam management scenarios to inform conservation planning. The results of this work have important implications for broader ecosystem processes as well as the economic impact of recreational fishing in northwest Wyoming.

**Talks/publications relevant to my work with WyACT**

- Baldock JR, Al-Chokhachy R, Campbell MR, & Walters A. *In* press. Timing of reproduction underlies fitness trade-offs for a salmonid fish. *Oikos*.
- Baldock, J. R., Al-Chokhachy, R., Walsworth, T. E., & Walters, A. (2023). Redd superimposition mediates the accuracy, precision, and significance of redd counts for cutthroat trout. *Canadian Journal of Fisheries and Aquatic Sciences*,
- Baldock, Jeffrey & Al-Chokhachy, Robert & Campbell, Matthew & Walters, Annika. (2023). Timing of reproduction underlies fitness tradeoffs for a salmonid fish. Oikos. 2023. 10.1111/oik.10184
- *Co-Wy Chapter of the American Fisheries Society Annual Meeting*. March 2. Virtual conference.

**Link to understand more of my work**

- https://scholar.google.com/citations?user=CRU3WVMAAAAJ&hl=en

## Tony Bergantino

Director, Wyoming State Climate Office and Water Resources Data System
University of Wyoming, Atmospheric Science

antonius@uwyo.edu

**About**
Research Interests: Drought, Evapotranspiration, Consumptive Use, Water Resources Management, Water Quality, Climate, Snow Hydrology, Geographic Information Systems

**Vision/scope for WyACT**
Working on data display and retrieval interfaces (WyGISC is lead)

**A talk relevant to my work with WyACT**

- Bergantino, A.R. 17 Oct 2022. *Keeping an Eye on the Water Supply*, Presented at Wyoming Water Association Annual Meeting, Laramie, WY.

**Links to understand more of my work**

- https://scholar.google.com/citations?user=p4JqcD0AAAAJ&hl=en
- https://www.researchgate.net/profile/Antony-Bergantino

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## Sean Bertalot (he/him)

Master's Student, Department of Zoology & Physiology

sbertalo@uwyo.edu

**About**
I have a broad interest in water quality, freshwater ecosystem function and resilience. I enjoy exploring how new sampling technologies can deepen our understanding of aquatic systems. My past work utilized high frequency sensors and satellite remote sensing to better understand spatial variability of cyanobacteria in a eutrophic urban lake.

**Vision/scope for WyACT**
While working on the WyACT project, I hope to investigate how we can fill historical data gaps for Jackson Lake. Ideally, filling these holes would allow for better forecasting of future ecosystem shifts in the face of anthropogenic climate change. I am excited to dive into an entirely new lake system and build on the data collection and processing foundation I developed during undergrad.

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## Janna Black (she/her)

Graduate Research Assistant, Haub School of Environment and Natural Resources

Jblack30@uwyo.edu

**About**
I'm a graduate student at the University of Wyoming pursuing a Master of Science degree in the Environment, Natural Resources, and Society program. My perspective is shaped by a holistic view of ecology where everything is interconnected, reflecting a kinship or sacred ecology lens. I've been influenced by Etuaptmumk/Two-Eyed Seeing (E/TES), which emphasizes the need for innovative thinking to adapt after the impacts of colonialism. Additionally, I value a multiple evidence-based approach (MEB) that combines Indigenous, local, and scientific knowledge systems to generate new insights and innovations. My work is rooted in a social-ecological framework, incorporating Indigenous Traditional Ecological Knowledge, a kincentric ecological lens, land-based pedagogies, sense of place, climate adaptation and a deep connection to Mother Earth.

**Vision/scope for WyACT**
WyACT provided summer support for developing and hosting Indigenous Youth-Elder Culture & Climate Camps.

**LinkedIn profile**

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## Shelby Leigh Brewer (she/her)

PhD Student
University of Wyoming Department of Economics

sbrewe13@uwyo.edu

**About**
I received my undergraduate degree in Agricultural Economics from Mississippi State University in May 2020 and stayed there to pursue my master's in Agricultural Economics with a concentration in Natural Resource Economics. I received my master's degree in August 2022. In my master's thesis, I utilized natural capital valuation methodologies in order to analyze the economic value and sustainability of the blue crab stock in the Gulf of Mexico under the environmental threat of hypoxia. My thesis work triggered my research

interests in fisheries and natural capital valuation and optimal management under various environmental threats exacerbated by climate change.

**Vision/scope for WyACT**
My hope for my work with WyACT is to increase my research experience by conducting research on Wyoming fisheries, which should further inform natural resource policy under future environmental changes.

**A publication relevant to my work with WyACT**

- Brewer, S. L. (2022). Natural Capital Value of Fisheries under Environmental Stressor: A Case of Blue Crab under Hypoxia in the Gulf of Mexico. *Theses and Dissertations*. 5583. https://scholarsjunction.msstate.edu/td/5583.

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## Peri Brimley (she/her)

PhD Student, Department of Economics

pbrimley@uwyo.edu

**About**
My research focuses on the intersection between economic institutions, environmental issues, and human behavior. I strive to understand the way that economic institutions can be modified and adapted to better address today's most pressing environmental challenges, including the transition to alternative types of energy and adaptation to harmful climate change impacts.

**Vision/scope for WyACT**
I am conducting behavioral research that investigates individual and collective behavior in environmental problems, specifically in responses to changes in environmental risk. I am particularly interested in furthering our understanding of how people react to uncertain environmental problems and to better inform the models we use to forecast economic responses to environmental changes.

**Publications relevant to my work with WyACT**

- Brimley P. and Cherry, T. (2023). Economic valuation of species specific wildlife recreation in the Greater Yellowstone ecosystem: a revealed-stated preference model. Manuscript in preparation.
- Thunström, L., Noy, S., Cherry, T., Brimley, P. (2023) Coping with Natural Disasters Caused by Climate Change: Religious Meaning-Making and Adaptation. Manuscript in preparation.

**Links to understand more of my work**

- LinkedIn profile
- https://www.uwyo.edu/economics/graduate/phd-students.html

## Tristan Blechinger (he/him)

M.S. Student
Research Assistant with William Fetzer, Fetzer Lab

tblechin@uwyo.edu

**About**
My research is focusing on changing fisheries habitat in WY reservoirs and how aquatic food webs are responding to these changes. We use stable isotopes to track the flow of energy through these food webs, allowing us to understand how species are interacting and which pathways are most important.

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## Dr. Melissa Bukovsky (she/her)

Associate Professor, Haub School of Environment and Natural Resources
Director, CoLABorative for Intersectoral Modeling of the Earth System (CLIMES, previously known as the Laboratory for Regional Earth Systems Modeling)

melissa.bukovsky@uwyo.edu

**About**
Melissa's research focuses on topics related to regional climate modeling, regional climate change, and climate change impacts and adaption for various North American regions and interests. Projecting how climate will change, using that information to help inform how decisions can be made in the face of great uncertainty, understanding those uncertainties, and working across disciplines to model the potential effects of climate change from many angles is her specialty.

Melissa is the director of the new CoLABorative for Intersectoral Modeling of the Earth System (CLIMES), the modeling lab created as a part of the capacity building activities facilitated by WyACT.

**Vision/scope for WyACT**
Integration!

**Projects/publications relevant to my work with WyACT**

- Bukovsky, M.S., J. Gao, L. Mearns, B. O'Neill, 2021: SSP-based land use change scenarios: a critical uncertainty in future regional climate change projections. Earth's Futures, 9, e2020EF001782. https://doi.org/10.1029/2020EF001782
- Bukovsky M.S., and L.O. Mearns, 2020: Regional climate change projections from NA-CORDEX and their relation to climate sensitivity. Climatic Change,162, 645-665. https://doi.org/10.1007/s10584-020-02835-x.
- McGinnis, S., L. Kessenich, L. Mearns, A. Cullen, H. Podschwit, M.S. Bukovsky, 2023: Future regional increases in simultaneous large Western USA wildfires. Int. J. Wildland Fire, https://doi.org/10.1071/WF22107.
- Bukovsky, M.S., W. Gutowski, L.O. Mearns, D. Paquin, and S. Pryor, 2023: Climate Storylines. Meeting Summary. Bull. Amer. Meteor. Soc., https://doi.org/10.1175/BAMS-D-22-0224.1
- Bukovsky, M.S., L. Kessenich, S. McGinnis, L. Mearns, J. Abatzoglou, A. Cullen, 2023: A Multi-Index Examination of Future Fire Season Length and Severity Over the United States. Poster. *EGU General Assembly,* Vienna, Austria. 26 April 2023.

**Link to understand more of my work**

- https://scholar.google.com/citations?hl=en&user=WV1vAqsAAAAJ

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## Nicholas William Case (he/him)

Geospatial Developer

ncase2@uwyo.edu

**About**

Nicholas Case has been an integral member of WyGISC since 2018, serving as a Geospatial Developer. He is responsible for developing, testing, debugging and maintaining an array of custom web-based GIS applications, tools and supporting web services using standard software life cycle processes. He supports existing infrastructure by maintaining and developing new capabilities in Microsoft .Net, JavaScript, and others.

Nicholas holds a Bachelor of Arts and Sciences in Anthropology from San Diego State University and an Associate of Science in Geography from San Diego Mesa College. He obtained his master's degree from University of Wyoming's Geospatial Information Science and Technology (GIST) program, where he focused on learning advanced methods and technologies that enable researchers and decision-makers to extract valuable insights from complex data sets.

**Vision/scope for WyACT**

Nicholas Case is a member of WyACT's Data team. His main tasks include the development of geospatial dashboards, crucial for data visualization. He also establishes data repositories for secure and reliable storage. Lastly, he assists in managing project data, ensuring a smooth flow in all data-related operations.

**Projects/talks/publications relevant to my work with WyACT**

- Utilizing ArcGIS Javascript API and ChatGPT for Efficient Geospatial Dashboard Development
  In this presentation at the 2023 WyGEO annual spring conference, we explored an innovative approach to developing a geospatial web application that effectively combines the powerful capabilities of the ArcGIS Javascript API with the cutting-edge natural language processing model, ChatGPT, to enhance the development process. We showcased how the application can leverage geospatial visualization and AI-driven insights to create a user-friendly and adaptable dashboard for improved decision-making.
- https://wygeo.org/utilizing-arcgis-javascript-api-and-chatgpt-for-efficient-geospatial-dashboard-development/
- Global Vegetation Project: An Interactive Online Map of Open-Access Vegetation Photos
  The Global Vegetation Project (http://gveg.wyobiodiversity.org) is a new initiative to host an online database of open-access, georeferenced vegetation photos. The mission of the Global Vegetation Project is 'to inspire and empower people of all ages to learn about the diversity of vegetation on our planet and to provide educators with a resource for teaching ecology online'
- Fleri, Jesse & Wessel, Sienna & Atkins, David & Case, Nicholas & Albeke, Shannon & Laughlin, Daniel. (2021). Global Vegetation Project: An Interactive Online Map of Open-Access Vegetation Photos. 41-45. 10.3897/VCS/2021/60575.
- http://dx.doi.org/10.3897/VCS/2021/60575

**Links to understand more of my work**

- LinkedIn profile
- https://www.uwyo.edu/wygisc/people/index.html

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## Dr. Todd L. Cherry


John S Bugas Chair and Professor, Department of Economics
Director of Graduate Studies, Department of Economics
Director, The Teton Lab, Department of Economics
Faculty Affiliate, Haub School of Environment & Natural Resources
Faculty Affiliate, Ostrom Workshop, Indiana University
Senior Research Fellow, CICERO Center for International Climate Research-Oslo, Norway

tcherry@uwyo.edu

**About**

My research focuses on the interplay between individual behavior and institutions with a particular interest in designing and implementing effective environmental policies. Much of this work employs experimental methods to inform our efforts to address collective action problems. Recent projects investigate energy transitions and climate policy.

**Vision/scope for WyACT**
I will contribute to the work that will integrate behavioral insights in the modeling of environmental and social change. We will use experimental methods to estimate behavioral responses to changes in environmental risk and amenities, which will inform and improve the efforts to model scenarios of exogenous environmental change and endogenous policy change.

**Publications relevant to my work with WyACT**

- Cherry, T. L., Kroll, S., McEvoy, D. M., Campoverde, D., & Moreno-Cruz, J. (2022). Climate cooperation in the shadow of solar geoengineering: an experimental investigation of the moral hazard conjecture. *Environmental Politics*, 1-9.
- Ashworth, M., Thunström, L., Cherry, T. L., Newbold, S. C., & Finnoff, D. C. (2021). Emphasize personal health benefits to boost COVID-19 vaccination rates. Proceedings of the National Academy of Sciences, 118(32), e2108225118.
- Cherry, T. L., Kallbekken, S., Sælen, H., & Aakre, S. (2021). Can the Paris Agreement deliver ambitious climate cooperation? An experimental investigation of the effectiveness of pledge-and-review and targeting short-lived climate pollutants. Environmental Science & Policy, 123, 35-43.

**Links to understand more of my work**

- https://www.uwyo.edu/economics/faculty-staff/todd-cherry/
- http://tlcherry.weebly.com

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## Dr. Sarah Collins


Assistant Professor, Department of Zoology and Physiology

sarah.collins@uwyo.edu

**About**
I am a freshwater ecosystem ecologist who studies elemental cycling and food web dynamics, and their relevance to ecosystem function and water quality. I ask questions about ecological patterns and processes through a combination of local field studies and data syntheses at broad spatial scales, and my work spans a variety of temperate and tropical ecosystems. My research draws from two traditionally disparate disciplines: local, mechanistic food web ecology and synthesis studies about ecosystems at regional to continental scales. I work with collaborators from various disciplines, including computer science, statistics, and evolutionary biology. Overall, I aim to develop the approaches and concepts to understand how accelerating human-driven changes in terrestrial landscapes and climate are reflected in aquatic ecosystems at local to continental scales.

**Vision/scope for WyACT**
My lab is interested in understanding how climate change influences freshwater ecosystem ecology, including spatial and temporal patterns in productivity and nutrient dynamics.

**Papers/projects relevant to my work with WyACT**

- Collins, S. M., Yuan, S., Tan, P. N., Oliver, S. K., Lapierre, J. F., Cheruvelil, K. S., ... & Soranno, P. A. (2019). Winter precipitation and summer temperature predict lake water quality at macroscales. *Water Resources Research*, *55*(4), 2708-2721.
- Oliver, S. K., Collins, S. M., Soranno, P. A., Wagner, T., Stanley, E. H., Jones, J. R., ... & Lottig, N. R. (2017). Unexpected stasis in a changing world: Lake nutrient and chlorophyll trends since 1990. *Global Change Biology*, *23*(12), 5455-5467.
- Stanley, E. H., Collins, S. M., Lottig, N. R., Oliver, S. K., Webster, K. E., Cheruvelil, K. S., & Soranno, P. A. (2019). Biases in lake water quality sampling and implications for macroscale research. *Limnology and Oceanography*, *64*(4), 1572-1585.

**Links to understand more of my work**

- Collins-lab.org
- https://www.uwyo.edu/zoology/people/collins.html
- https://scholar.google.com/citations?user=8M2PT8oAAAAJ&hl=en
- https://twitter.com/eco_scollins?lang=en

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## Kinsale Day (she/her)

Research Aide, Atmospheric Sciences, Science Initiative

kday13@uwyo.edu

**About**

My research so far has been focused on model analysis compared to observational datasets, primarily concerning orographic precipitation within Wyoming. So far, I have been studying these models compared to SNOw TELemetry (SNOTEL) sites.

**Vision/scope for WyACT**I will be working alongside Dr. Bart Geerts to study regional climate modeling. Specifically, I am looking at how different models perform in the mountain ranges across Wyoming regarding precipitation and snow-water equivalent (SWE). These models are then compared to SNOTEL sites. This research will help us to understand local impacts of a warming climate in complex terrain. I am excited to see how these models differ in smaller areas such as a mountain range compared to an area the size of Wyoming.

**Projects relevant to my work with WyACT**

My most recent project studied the performance of nine global climate models (GCMs) for snow depth across thirty-seven SNOTEL sites within known snowmobile areas in Wyoming. Then using these nine GCMs I projected the change in snow depth at these sites of interest.

## Samantha Dilworth (she/her)


PhD Student, Department of Ecosystem Science and Management

sdilwort@uwyo.edu

**About**
I am broadly interested in aquatic ecology, ecohydrology, and future changes in aquatic systems. More specifically, I study streams and the aquatic insects that inhabit them. I am currently focused on physical, chemical, and biological alterations to rivers and streams resulting from land use and climate changes.

**Vision/scope for WyACT**
Aquatic insects are some of the most valuable and studied indicators of environmental change because they are a diverse group of organisms that respond to change in a multitude of ways, but they are not the only indicator of change. I will be using aquatic insects, as well as exploring other physical and/or chemical shifts in streams as indicators of climate change in the Greater Yellowstone Ecosystem.

**Links to my work**

- My Website
- Google Scholar
- LinkedIn

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## Dr. Weston M. Eaton

Visiting Assistant Professor
Haub School of Environment and Natural Resources

weaton@uwyo.edu

**About**
I am a visiting assistant professor with the Haub School of Environment and Natural Resources at the University of Wyoming. I conduct research and teach courses on collaborative and community stakeholder driven approaches to managing complex environmental problems including water resource challenges and energy transitions. I apply mixed qualitative and quantitative research methods to address both practical and scholarly problems. I pursue

opportunity to support knowledge co-production, social learning, and relationship building among scientists, practitioners, students, and communities.

**Vision/scope for WyACT**
I contribute to WyACT research on how knowledge co-production relates to adaptive capacity. I am also interested in scenario planning as a mode of stakeholder engagement.

**Publications relevant to my work with WyACT**

- Eaton, W. M., Burnham, M., Robertson, T., Arbuckle, J. G., Brasier, K. J., Burbach, M. E., ... & Rogers, A. (2022). Advancing the scholarship and practice of stakeholder engagement in working landscapes: a co-produced research agenda. Socio-Ecological Practice Research, 1-22.
- Eaton, W. M., Brasier, K. J., Whitley, H., Bausch, J. C., Hinrichs, C. C., Quimby, B., ... & Williams, C. (2022). Farmer perspectives on collaboration: Evidence from agricultural landscapes in Arizona, Nebraska, and Pennsylvania. Journal of Rural Studies, 94, 1-12.
- Eaton, W. M., Brasier, K. J., Burbach, M. E., Whitmer, W., Engle, E. W., Burnham, M., ... & Weigle, J. (2021). A conceptual framework for social, behavioral, and environmental change through stakeholder engagement in water resource management. Society & Natural Resources, 34(8), 1111-1132.
- Eaton, W. M., Brasier, K. J., Burbach, M. E., Kennedy, S., Delozier, J. L., Anariba, S. E. B., ... & Santangelo, N. (2023). A new approach for studying social, behavioral, and environmental change through stakeholder engagement in water resource management. Journal of Environmental Studies and Sciences, 1-15.

**Links to understand more of my work**

- http://www.uwyo.edu/haub/**About**-us/people/eaton-wes.html
- https://scholar.google.com/citations?user=ggR5CW4AAAAJ&hl=en
- https://www.researchgate.net/profile/Weston-Eaton-2

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## Dr. Brent E. Ewers


Professor & Botany Department Head
College of Agriculture, Life Sciences and Natural Resources
WyACT PI & Director Biodiversity Institute

beewers@uwyo.edu

**About**
I am the Director of the University of Wyoming Biodiversity Institute and a professor of plant physiological ecology in the Botany Department. I joined the faculty at UW as a plant physiological ecologist in 2002. With my lab group members, I use first principles of biophysics approaches to look at how the diversity of plant traits in crops, rangelands, and forests impact plant controls over mass and energy exchanges and plant productivity. These techniques allow the group to address plant responses to drought, fire, and insect activity and determine how plant biodiversity should be included in ecosystem

models ranging in scales from plant organs to landscapes. Over my career, I have produced more than 130 peer-reviewed publications and successfully competed for more than $75 million in external research funds from many state and federal agencies. In my free time, I enjoy taking my family on hiking, fishing, and hunting excursions.

**Vision/scope for WyACT**

I envision the investments in WyACT sustaining an externally funded research enterprise in which cutting edge science tools are used by communities in Wyoming to best position themselves to deal with changing water availabilities under future climate. These communities would include all of Wyoming, especially those currently underserved and underrepresented in science and economic development activities. I would consider the whole process a success if Wyoming communities have greater trust in the use of scientific models for planning and decision making.

My contributions to WyACT include leading the whole project to ensure it meets its mission, fulfills its strategic plan, and stays within its budget. I will also provide expertise on various types of models and measurements used in WyACT through the lens of the first principles of biophysics. I am especially interested in learning to communicate the value of models in a way that changes how both scientists and community members view their contributions to predictive understanding.

**Publications relevant to my work with WyACT**


- *Caetano-Anollés, K., Ewers, B., Iyer, S., Lucas, J. R., Pavlic, T. P., Seale, A. P., & Zeng, Y. (2021). A minimal framework for describing living systems: a multi-dimensional view of life across scales. Integrative and comparative biology, 61(6), 2053-206*
- *Knowles, J. F., Bjarke, N. R., Badger, A. M., Berkelhammer, M., Biederman, J. A., Blanken, P. D., ... & Molotch, N. P. (2023). Bark beetle impacts on forest evapotranspiration and its partitioning.* Science of the Total Environment, 880, *163260.*
- *Beverly, D. P., Guadagno, C. R., & Ewers, B. E. (2020). Biophysically informed imaging acquisition of plant water status. Frontiers in Forests and Global Change, 3, 589493.*


**Links to understand more of my work**

- https://www.uwyo.edu/botany/people/faculty/brent-ewers.html
- https://www.uwyo.edu/botany/people/faculty/Links/plantecofizz/index.html
- https://www.wyomingbiodiversity.org/index.php/About/faculty-staff/brent-e-ewers
- https://scholar.google.com/citations?user=LcJ-Un8AAAAJ&hl=en
- LinkedIn profile

## Samantha Ewers (she/her)


Geospatial Specialist for WyGISC

sewers@uwyo.edu

**About**

I am a Geospatial Specialist for WyGISC. I joined WyGISC in 2014 as a data manager for an NSF EPSCoR grant in spatial hydrology and now spatial microbial diversity. My primary focus has been to perform data management for academic research projects and research groups. I also assist with development and maintenance of data management for projects and applications across WyGISC. I am a member of Women in GIS and hold a Bachelor's in Civil Engineering from North Carolina State University. I enjoy being outside hiking and more recently gardening and am an avid quilter.

**Vision/scope for WyACT**

As a member of the WyACT project's data team, our focus is on managing the project's data storage, sharing, and visualization requirements. Working alongside my colleagues, I specialize in overseeing both relational structured databases and graph databases.

**Projects/publications relevant to my work with WyACT**

- Data repository: https://datacorral.uwyo.edu/
- Lab Inventory Management System: https://datacorral.uwyo.edu/lims
- Wyoming Archeological Repository: https://www.wyoarch.org/

**Links to understand more of my work**

- https://www.uwyo.edu/wygisc/people/geo-specialists.html

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## Dr. William Warren Fetzer (he/him)

Assistant professor, Aquatic and Fisheries Science,
Department of Zoology and Physiology

wfetzer@uwyo.edu

**About**

My research interests lie at the interface of basic and applied research and I aim to answer questions directly relevant to the management and conservation of fisheries and freshwater ecosystems. Specifically, I am interested in spatial and temporal responses of aquatic food webs to anthropogenic perturbations, such as climate change,

invasive species, and eutrophication, with an emphasis quantifying how energy flows from the base of the food web to top predators, like sportfish. I work closely with state, federal, and tribal collaborators to ensure research findings directly inform management of large lakes and reservoirs in the western United States and the Laurentian Great Lakes.

**Vision/scope for WyACT**
I am excited about the opportunities WyACT will provide to: 1) develop a baseline understanding of ecosystem dynamics across a range of freshwater ecosystems, 2) assess how ecological dynamics impact the social-economic value of freshwater ecosystems to local and regional communities, and 3) integrate this information to develop a suite of "potential futures" that highlight the range of feedbacks between socio-ecological systems in a rapidly changing world. My research will primarily focus on large lakes and reservoirs to identify feedbacks between environmental conditions (e.g., temperature, productivity, and water level) and fish population and community dynamics.

**Papers relevant to my work with WyACT**

- Fetzer, W. W., Roth, B. M., Infante, D. M., Clapp, D. F., Claramunt, R. M., Fielder, D. G., ... & Zorn, T. G. (2017). Spatial and temporal dynamics of nearshore fish communities in Lake Michigan and Lake Huron. *Journal of Great Lakes Research*, *43*(2), 319-334.
- Fetzer, W. W., Luebs, M. M., Jackson, J. R., & Rudstam, L. G. (2015). Intraspecific niche partitioning and ecosystem state drive carbon pathways supporting lake food webs. *Ecosystems*, *18*, 1440-1454.
- Fetzer, W. W., Farrell, C. J., Jackson, J. R., & Rudstam, L. G. (2016). Year-class variation drives interactions between warm-water predators and yellow perch. *Canadian Journal of Fisheries and Aquatic Sciences*, *73*(9), 1330-1341.

**Links to understand more of my work**

- https://www.uwyo.edu/zoology/people/fetzer.html
- https://wwfetzer.weebly.com/people.html
- https://twitter.com/wwfetzer?lang=en
- https://scholar.google.com/citations?user=ywsPGmkAAAAJ&hl=en
- LinkedIn profile
- https://www.researchgate.net/profile/William-Fetzer

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## Dr. Anderson Ribeiro de Figueiredo (he/him)

Scenario Planning Postdoctoral Research Associate

adefigue@uwyo.edu

**About**
As a geographer, I am deeply interested in learning how overburdened and rural communities can build strategies to adapt to climatic changes. My research interests notably include integrating qualitative and quantitative research, diverse knowledge systems, adaptation and resilience in a

changing climate, and decolonizing methodologies. I've been working with a mix of methods, including participant observation, semi-structured interviews, focus groups, and participatory GIS, to understand place-based knowledge and climate change adaptation.

**Vision/scope for WyACT**

My research in WyACT focuses on scenario building and climate change adaptation, engaging communities with meaningful climate science. I'm excited to learn how scientific models can help Wyoming communities to plan and prepare for climate change impacts and how communities can inform and improve climate change scenarios.

I'm responsible for co-designing scenario-building interviews, focus groups, and community deliberations with community members. As well as to understand more about the community's needs, responses, and strategies to adapt to climatic changes.

As environmental justice is as compelling as the need for adaptation to climate change impacts, one of my roles in WyACT is to locate spokespersons for communities most impacted by climate change.

**Publications relevant to my work with WyACT**

- Figueiredo, A. R., Simões, J. C., Menegat, R., & Rodrigues, B. B. (2019). Perceptions of and adaptation to climate change in the Cordillera Blanca, Peru, *Sociedade & Natureza*, 31, 1–22. https://doi.org/10.14393/SN-v31-2019-45623
- Emmer et al. (2022). Progress and challenges in glacial lake outburst flood research (2017–2021): a research community perspective, *Natural Hazards and Earth System Sciences*, 22, 3041–3061. https://doi.org/10.5194/nhess-22-3041-2022

**Links to understand more of my work**

- LinkedIn
- Google Scholar
- ResearchGate

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## Dr. David Finnoff

Professor of Economics
Wyoming Excellence Chair, Economics
McMurry Foundation Business Dean's Excellence Fellow

finnoff@uwyo.edu

**About**

I have been named the Wyoming Excellence Chair in Economics, under the program established by the Wyoming Legislature, and also have been named a McMurry Fellow, under a McMurry Foundation Business Dean's Excellence Fund program created through a 2008 donation by Mick and Susie McMurry, of Casper.

My research focuses on the interplay between humans and nature, how risk affects this interplay, and in working on projects that help inform policies aimed at this interface. In my work with collaborators and graduate students, I have (1) developed models that link the general public's preferences, ecological science, and management responses together in bioeconomic models that evaluate current and proposed policies for managing wildlife; (2) integrated economic/ecological models for optimal management of economic and ecological systems subject to the risk of nonindigenous species invasion; (3) integrated economic/ecological models for optimal management of native pests; (4) integrated economic/epidemiological models for management of infectious diseases in humans; and (5) integrated economic/ecological/epidemiological models for management of infectious diseases in wildlife.

**Vision/scope for WyACT**

My vision for WyACT is to conduct research that will help inform natural resource policy in response to the anticipated effects of future climate scenarios.

**Papers/projects relevant to my work with WyACT**

- Enriquez, A. J., & Finnoff, D. C. (2021). Managing mortality of multi-use megafauna. *Journal of Environmental Economics and Management*, *107*, 102441.
- Sims, C., & Finnoff, D. (2016). Opposing irreversibilities and tipping point uncertainty. *Journal of the Association of Environmental and Resource Economists*, *3*(4), 985-1022.
- Hochard, J., & Finnoff, D. (2017). Cross-jurisdictional management of a trophy-hunted species. *Journal of Theoretical Biology*, *420*, 41-52.

**Links to understand more of my work**

- https://www.uwyo.edu/economics/faculty-staff/david-finnoff/
- https://www.uwyo.edu/news/2021/07/grizzly-bear-recovery-topic-of-uws-harlow-summer-seminars-in-jackson-july-8.html
- https://www.wsj.com/articles/viral-outbreaks-once-rare-become-part-of-the-global-landscape-11583455309
- https://www.uwyo.edu/uw/news/2020/09/uws-finnoff-draws-inspiration-from-mcmurrys.html
- https://scholar.google.com/citations?user=6OcVtF0AAAAJ&hl=en
- https://www.researchgate.net/profile/David-Finnoff/4
- https://www.uwyo.edu/business/focus/e-focus/spring2020-corona.html
- https://www.uwyo.edu/news/2020/04/uw-economists-lack-of-covid-19-preparedness-in-line-with-previous-findings.html
- https://www.uwyo.edu/business/focus/e-focus/spring2020-corona.html
- https://www.uwyo.edu/news/2021/07/uw-researchers-emphasize-personal-health-benefits-of-covid-19-vaccination.html

## Ian Fletcher (he/him)

PhD Student, Department of Economics

ifletche@uwyo.edu

**About**
My research focuses on policy decisions and individual behavior, with particular interests in water allocation and education research. I'm intrigued by what drives policy and how personal choices may sway policymakers' decisions.

**Vision/scope for WyACT**
The current project I am working on under WyACT focuses on the behavioral responses to environmental risk and amenities, specifically following changes stemming from climate change. The project uses experimental methods to identify behavioral insights of the public to help motivate policy changes following the growth in Grizzly Bear populations in the GYE. Future projects may include modeling optimal water releases from Jackson Lake Dam to help maximize societal welfare.

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## Bryana Funk (she/her)

PhD in Hydrologic Sciences student, WRESE

bgetchel@uwyo.edu

**About**
My general research focuses on water management and optimal allocation of water as a scarce resource across competing uses. I have previously focused on optimal groundwater use in drought-stricken regions to ensure food security. My methodologies include mathematical programming, specifically nonlinear optimization.

**Vision/scope for WyACT**
My research is focused on optimal water allocation as dam release decisions by a manager, given considerations for flows to maintain trout health and the ID/WY compact, as well as both consumptive and recreational water uses at several nodes. Interactive groundwater and surface water modeling will be employed as a next step. Stochastic dynamic programming and modified PMP will be applied.

**Projects/talks/publications relevant to my work with WyACT**

- I have worked with USGS/USAID in water optimization teaching workshops for hydrologists, first in Kenya and upcoming in Jordan.
- Sustainable aquifer management for food security - ScienceDirect

## Dr. Tucker J. Furniss (he/him)

Assistant Professor
Department of Ecosystem Science and Management

tucker.furniss@uwyo.edu

**About**

I am an Assistant Professor in the Department of Ecosystem Science and Management and am part of the Laboratory for Regional Earth System Modeling. My research focuses on forests, tree mortality, and disturbance ecology of western landscapes. I use a combination of field-based longitudinal monitoring, remote sensing, and process-based simulation models to understand how climate, management, and ecological processes are influencing the structure, function, and resilience of forest ecosystems. I am motivated by a deep passion for our western forests and am devoted to producing research that informs science-based management and policy on public lands.

**Vision/scope for WyACT**

As the Forest Ecosystem Modeler for WyACT, I will be building dynamic ecological simulation models to forecast forest dynamics, disturbance processes (including fire, pests, and pathogens), and land management actions. These models will help us visualize anticipated changes over the coming decades and will be coupled with climate and hydrological models to estimate future snowpack dynamics and water supply under various socio-ecological scenarios. I am enthusiastic about working with the WyACT team and stakeholders to develop creative, forward-thinking solutions to the challenges that we face.

**Publications relevant to my work with WyACT**


- Furniss, T. J., Hessburg, P. F., Povak, N. A., Salter, R. B., & Wigmosta, M. S. (2022). Predicting future patterns, processes, and their interactions: Benchmark calibration and validation procedures for forest landscape models. Ecological Modelling, 473,
- Povak, N. A., Furniss, T. J., Hessburg, P. F., Salter, R. B., Wigmosta, M., Duan, Z., & LeFevre, M. (2022). Evaluating basin-scale forest adaptation scenarios: wildfire, streamflow, biomass, and economic recovery synergies and trade-offs. Frontiers in Forests and Global Change, 5, 73.
- Furniss, T. J., Larson, A. J., Kane, V. R., & Lutz, J. A. (2020). Wildfire and drought moderate the spatial elements of tree mortality. *Ecosphere*, *11*(8), e03214.


**Links to understand more of my work**

- Google Scholar
- www.tuckerfurniss.com

## Kevin Gauthier (he/him)

Aquatic Research Technician

kgauthi2@uwyo.edu

**About**
I have a broad background in field research on lakes and streams, with a focus on aquatic biogeochemistry. I am interested in the biogeochemical patterns and processes that occur within and among aquatic ecosystems and how they change over time and in response to human-induced change. Combining environmental sensing with chemical lab analysis of field samples has been crucial to all of my research broadly aimed at understanding spatial and temporal dynamics of physical (e.g., water temperature, nutrient and sediment pollution, organic matter inputs) and biological (e.g., productivity, trophic interactions) characteristics of aquatic ecosystems.

**Vision/scope for WyACT**
I am excited to work within WyACT to establish a baseline understanding of water quantity and quality and ecosystem-level productivity in lakes, reservoirs, and streams of Wyoming that will support efforts to predict potential changes to these valuable ecosystems in the face of human-induced change.

**Link to understand more of my work**

- https://gauthierkevin.weebly.com/

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## William C. M. Galloway (he/him)

Undergraduate Knowledge Co-Production Research Assistant

wgallow1@uwyo.edu

**About**
I'm an Undergraduate in my second semester here at The University of Wyoming enrolled in a dual major in Wildlife & Fisheries Biology and Management, and Energy & Natural Resources.

**Vision/scope for WyACT**
*Assisting Jewell Lund to create a transdisciplinary framework of knowledge production to connect WyACT to stakeholders and close collaborators.*

**Projects relevant to my work with WyACT**

- USDA-APHIS-PPQ scout surveyor
  Conducting visual and collection surveys throughout the state of Wyoming monitoring concentrations and different species of grasshoppers and bark beetles. My focus was on pest detection of invasive beetles that threaten Wyoming's forests.

**LinkedIn profile**

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## Dr. Bart Geerts (he/him)


Professor, Atmospheric Sciences, College of Engineering & Physical Sciences
WyACT Co-PI

geerts@uwyo.edu

**About**

I, along with my graduate students, conduct research into cloud-scale to mesoscale atmospheric processes, mainly using aircraft measurements and a variety of radars. Recently I have become involved with regional climate modelling: my team ran a 60 year climate simulation (30 in the recent past, 30 centered on ~2050) at 4 km resolution across the Interior Western USA (IWUS) on the NCAR Wyoming Supercomputer. The future climate was informed by the CMIP5 ensemble mean GCM difference between the historical and the 2050 climate under the RCP8.5 scenario (Wang et al. 2018). This IWUS dataset may estimate mountain precipitation better than the PRISM and other gridded, gauge-based datasets (Jing et al. 2017).

**Vision/scope for WyACT**

The IWUS dataset was hardly used – we merely did one study on the impact of global warming in the ski industry in the interior West (Lackner et al. 2021). WyACT serves as an excellent platform for CMIP6-informed regional climate modeling, and for the use of this model output to engage the public & stakeholders with quantitative local climate change info (using an interactive web portal) and also to drive hydrological, ecological, aquatic, and socio-economic models (by WyACT participants). We also plan to conduct "scenario modeling" in a warmer climate, where we can look at the impact of a perturbation (like a big wildfire) on the local climate and water resources.

**Projects publications relevant to my work with WyACT**

- Jing, X., Geerts, B., Wang, Y., & Liu, C. (2017). Evaluating seasonal orographic precipitation in the interior western United States using gauge data, gridded precipitation estimates, and a regional climate simulation. Journal of Hydrometeorology, 18(9),
- Jing, X., Geerts, B., Wang, Y., & Liu, C. (2019). Ambient factors controlling the wintertime precipitation distribution across mountain ranges in the interior western United States. Part II: Changes in orographic precipitation distribution in a pseudo–glo

- Lackner, C. P., Geerts, B., & Wang, Y. (2021). Impact of global warming on snow in ski areas: A case study using a regional climate simulation over the interior western United States. *Journal of Applied Meteorology and Climatology*, *60*(5), 677-694.

**Links to understand more of my work**

- https://www.uwyo.edu/atsc/directory/faculty/geerts/
- ORCID page: https://orcid.org/0000-0002-1508-6121
- google scholar page

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## Clare Gunshenan (she/her)


Outreach Science Educator, Science & Math Teaching Center

cgunshen@uwyo.edu

**About**

In my role with the Science & Mathematics Teaching Center (SMTC), I have designed and facilitated K-12 science professional development with teachers from around Wyoming. We support place-based and research-backed instruction that meets the vision of the Wyoming science standards (closely based on the Next Generation Science Standards [NGSS]). This builds on my background in non-formal science education instruction, coordination, and research, including how the NGSS can be reached and supported through non-formal science learning.

**Vision/scope for WyACT**

The SMTC team involved in WyACT (including myself, colleague Martha Inouye, and our incoming graduate student Theresa Cicchinelli) will facilitate annual cohorts in a program called the Teacher Researcher Knowledge Exchange [TRKE]. This work will Wyoming bring teachers, researchers, and non-formal educators together to exchange their expertise, collaborate around translating WyACT work into relevant resources for the state, and ensure that the educational sector informs work that WyACT researchers pursue.

**Publications relevant to my work with WyACT**

- Inouye, M., Houseal, A. K., Gunshenan, C., McReynolds, A., & Perkins, M. (2023). Exploring Collaborative Professionalism as a Means of Virtually Supporting Rural Teachers. The Rural Educator, 44(1), 14-27.
- Harvey, J., Gunshenan, C., & Inouye, M. (2022). Freezing Lake Phenomenon. *Science and Children*, *59*(6), 46-51.
- Gunshenan, C., Inouye, M., Houseal, A., & Jacobs, T. (2021). Start With Phenomena. *Science and Children*, *58*(4), 74-80.

**Links to understand more of my work**

- https://www.uwyo.edu/smtc/faculty-and-staff/clare-gunshenan.html
- https://www.uwyo.edu/smtc/professional-development/
- https://sites.google.com/view/wyssconsultants/home?authuser=1

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## Dr. Jeffrey D. (Jeff) Hamerlinck (he/him)


Director and Senior Research Scientist
Wyoming Geographic Information Science Center, School of Computing
Adjunct Faculty, Haub School of Environment and Natural Resources
Faculty Fellow, Daniels Fund Ethics Initiative, College of Business

jeff.hamerlinck@uwyo.edu

**About**

I am a Senior Research Scientist and Director of the Wyoming Geographic Information Science Center (WyGISC; www.uwyo.edu/wygisc) in UW's School of Computing, for which I also serve as Co-Director and currently oversee its Data Science Center. My PhD is in Geography from the University of Colorado-Boulder and I maintain credentials as both GIS Professional and member of the American Institute of Certified Planners. My areas of expertise are found at the intersection of rural planning/resource management and geographic information science, with my current research interests centered on multifunctional rural landscape transitions and smart rural places.

**Vision/scope for WyACT**

Participating in WyACT has given me an opportunity to return to working more deeply in the water resource management arena where I started my professional career. I am equally committed to the capacity building efforts of both the social science and data science aspects of the grant and view scenario planning and participatory GIS as areas of research that bring the two components together. I also have a particular interest in engaging with local government planners and helping them build adaptive capacity in their communities in response to climate-induced risks.

**Papers relevant to my work with WyACT**


- Lieske, S. N., & Hamerlinck, J. D. (2023). Geodesign in historical process: case study insights for improving theory and practice. *International Planning Studies*, 1-17. https://doi.org/10.1080/13563475.2023.2205031
- Hamerlinck, J.D. 2020. Applying Planning Support Science in Rural Environments. Chapter 33 in Geertman, S. and J. Stillwell, eds. Handbook on Planning Support Science: Best Practice and New Methods. Edward Elgar Publishers: Cheltenham, UK. https://doi.org/10.4337/9781788971089.00045

- Hamerlinck, J. D., & Lieske, S. N. (2015). Siting carbon conversion energy facilities with spatial multicriteria decision analysis. *Papers in Applied Geography*, *1*(2), 197-204. https://doi.org/10.1080/23754931.2015.1009330

**Links to understand more of my work**

- https://www.uwyo.edu/wygisc/people/hamerlinck-jeff-employee-page/jeff-short-cv.html
- LinkedIn profile

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## Dr. Kristiana Hansen (she/her)


Associate Professor, Extension Water Resource Economist
Department of Agricultural and Applied Economics

khanse18@uwyo.edu

**About**

I am an Associate Professor and Extension Water Resource Economist in the Department of Agricultural & Applied Economics at the University of Wyoming. My research is in water resource economics, community resilience to weather/climate variability, and wildlife habitat conservation policy. My Extension program seeks to inform and improve regional decision-making in water management and allocation. Current research projects include water markets in the western U.S., and analysis of the risks and impacts of different ways that Wyoming and other upper Colorado River Basin states could meet their obligations to downstream states under the Colorado River Compact.

**Vision/scope for WyACT**

I wear two hats on the WyACT project. I am an agricultural economist who has engaged in applied, interdisciplinary research on how agricultural, municipal, and recreational water users respond to changes in water availability in Wyoming and elsewhere in the West. I am also an Extension specialist with experience engaging with Wyoming communities on water scarcity and community/individual response to weather/climate variability. I work with others on the WyACT project to deepen the connections between my water resource economics research, the research of other WyACT team members, and the communities who inspire, inform, and co-produce our research.

**Publications relevant to my work with WyACT**

- Hansen, K., R. Coupal, E. Yeatman, and D. Bennett. 2021. "Economic Assessment of a Water Demand Management Program in Wyoming's Portion of the Colorado River Basin: Summary" Bulletin B-1373. Laramie, WY: University of Wyoming Extension.
- Hansen, K., Duke, E., Bond, C., Purcell, M., & Paige, G. (2018). Rancher preferences for a payment for ecosystem services program in southwestern Wyoming. Ecological Economics, 146, 240-249.
- Hansen, K., Howitt, R., & Williams, J. (2014). An econometric test of water market structure in the western United States. Natural Resources Journal, 55(1), 127-152.

**Links to understand more of my work**

- University of Wyoming
- Google Scholar
- Western Water Network
- Western Water Assessment

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## Patrick Hofstedt (he/him)

Graduate Research Assistant, MSc in Agricultural and Applied Economics

phofsted@uwyo.edu

**About**

My general research focus is recreation economics, specifically focused on angling and water-based recreation. Additionally, I'm interested in the economics of regenerative agriculture. Outside of work, I enjoy playing rugby and coaching wrestling.

**Vision/scope for WyACT**

This year, I will conduct a survey of anglers who have bought fishing licenses in Teton County, in order to gauge the impact of climate change on the angling industry in Teton County. I'm excited to learn more about the angling industry in Wyoming, and to help the outdoor recreation industry prepare for future climate change impacts. I also hope in the future to extend my study to other fishing destinations throughout Wyoming.

**LinkedIn profile**

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## Shay Howlin (she/her)

Senior Statistician, Western EcoSystems Technology

Showlin@west-inc.com

**About**

My projects focus on helping clients navigate natural resource and endangered species challenges using data driven solutions. Recent projects include brown bear movement analyses to guide visitor usage recommendations and developing an information system to document adaptive learning on an endangered species collaborative program. Project work associated with renewable energy development includes a study of military-grade acoustic and visual detection methods for improved marine mammal monitoring and a meta-analysis of ecological monitoring information at installed wind energy facilities.

**Vision/scope for WyACT**

Our work with WyACT focuses on data science workforce development in Wyoming through workshops, internships and business enhancement consulting. We provide students with real-world applied experiences to encourage growth in analyses, data visualization and computer programming best practices.

**Projects relevant to my work with WyACT**

We have a WyACT internship opportunity in cooperation with the National Park Service to provide analytical help in forecasting water balance indicators in lakes with downstream farming communities. Many of the National Parks have a need for predictions of water availability and use, and the PI is interested in ensuring that the models are defensible, the analysis approach is scalable, and the estimates have appropriate measures of uncertainty.

**LinkedIn profile**

## Chandler Hubbard

PhD Student, Research Assistant with Todd L. Cherry,
Department of Economics

chubba12@uwyo.edu

**About**

My research delves into the realm of dynamic modeling and experiments, where I explore the relationship between individual behavior and institutions. Within this field, my fascination lies in the conservation of endangered species and the preservation of protected lands. I am also interested in understanding how we can best continue to leverage the power of public-private partnerships as catalysts for driving transformative change. Currently, my foremost projects revolve around the intriguing realms of predator risk preferences and park congestion. By employing experimental methods in tandem with dynamic modeling, my goal is to unravel the complexities of these challenges and craft innovative environmental policies that promote sustainable solutions and are feasible for policymakers and constituents alike.

**Vision/scope for WyACT**

I will contribute to the work that integrates behavioral insights into modeling environmental and social change in the face of climate change. Utilizing experimental methods, we aim to estimate behavioral responses to changes in environmental risk, encompassing both climatic factors and wildlife factors, as well as changes in amenities. These valuable insights will inform the second layer of my contributions: constructing dynamic models that enable us to examine the impacts of diverse climatic futures, policy changes, and social preferences on the landscape. Lastly, I hope to contribute to and forge interdisciplinary linkages - as they will allow for a comprehensive exploration and understanding of various data sources, an opportunity not frequently easily accessible to junior researchers.

**Papers/publications relevant to my work with WyACT**

- Hubbard, C., Cherry, T., Fletcher, I., Hochard, J., & Finnoff, D. (2023). The Economics of Trophic Rewilding: Start by Aligning Public Action with Public Preferences. Working paper, to be presented by Chandler at SEA AERE in November 2023.
- Dayaratna, K. D., Hubbard, C., & Legreid, M. C. (2023). Bayesian Inferences for Counterterrorism Policy: A Retrospective Case Study of the US War in Afghanistan. *Terrorism and Political Violence*, 1-17.
- Dayaratna, K., Crosson, J., & Hubbard, C. (2022). Closed Form Bayesian Inferences for Binary Logistic Regression with Applications to American Voter Turnout. *Stats*, *5*(4), 1174-1194.

**Links to understand more of my work**

- LinkedIn profile
- https://www.uwyo.edu/economics/graduate/phd-students.html

## Martha Inouye


Research Scientist, Professional Development Specialist,
Science and Mathematics Teaching Center

minouye@uwyo.edu

**About**

I am an Associate Research Scientist in the Science and Mathematics Teaching Center. My area of focus is on K-12 science professional development (PD). My current research interests include science instructional and assessment supports, place-relevance, and PD efficacy. I am committed to supporting K-12 educators and students in accessing current, relevant, place-specific resources and data.

**Vision/scope for WyACT**

I envision a space where WyACT data and research is being used across the state in K-12 settings to foster instruction that is relevant, engaging, accessible, and meaningful. I am committed to creating spaces that promote productive dialogue between scientists, researchers, formal and nonformal K-12 educators, and others with an interest in K-12 education. As a Senior Personnel on the project, I co-coordinate the Teacher-Researcher Knowledge Exchange with Clare Gunshenan.

**Publications relevant to my work with WyACT**


- Inouye, M., Houseal, A. K., Gunshenan, C., McReynolds, A., & Perkins, M. (2023). Exploring Collaborative Professionalism as a Means of Virtually Supporting Rural Teachers. *The Rural Educator*, *44*(1), 14-27.
- Inouye, M., Gunshenan, C., Houseal, A., Applequist, J., & Bath, L. (2021). Transforming Local Spaces With Relevant Perspectives. *Science Scope*, *44*(4), 78-87.
- Inouye, M., & Houseal, A. (2019). Theory to Process to Practice: A Collaborative, Reflective, Practical Strategy Supporting Inservice Teacher Growth. *Innovations in Science Teacher Education*, *4*(1).


**Links to understand more of my work**

- https://www.uwyo.edu/smtc/professional-development/
- https://sites.google.com/view/wyssconsultants/home?authuser=1

## Meredith Journey (she/her)

PhD Student – Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology, University of Wyoming

mjourney@uwyo.edu

**About**
I am an aquatic biologist with research interests in fish ecology, zooplankton ecology, and the interactions between abiotic factors and biological processes. I am interested in the resilience of alpine lake ecosystems to anthropogenic change, including localized and downstream effects.

**Vision/scope for WyACT**
My WyACT project is investigating the resilience of alpine lakes to stressors of climate change in the Wind River Range. Specifically, changes in the timing and duration of snow-free periods and the potential role of elevational buffering in zooplankton and trout communities. I am excited to learn from and collaborate with our diverse and interdisciplinary team.

**Publications relevant to my work with WyACT**

- Duguid, W. D., Iwanicki, T. W., Journey, M. L., Noel, A. L., Beckman, B. R., & Juanes, F. (2018). Assessing indices of growth for field studies of juvenile salmon: an experiment and synthesis. Marine and Coastal Fisheries, 10(2), 204-223.
- Journey, M. L., Trudel, M., Young, G., & Beckman, B. R. (2018). Evidence for depressed growth of juvenile pacific salmon (Oncorhynchus) in Johnstone and Queen Charlotte Straits, British Columbia. Fisheries Oceanography, 27(2), 174-183.

**Links to understand more of my work**

- Google Scholar

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## Dr. Mary L. Keller


Senior Lecturer, Religious Studies; Adjunct, African American and Diaspora Studies, Adjunct, Haub School of Environment and Natural Resources, University of Wyoming

mkeller@uwyo.edu

**About**
Working at the interfaces of the academy and public opinion on issues of religion, land, and identity, with a focus on race, gender, and economic capabilities, I seek to instruct and write in ways that build community resilience in the face of

climate change. My interest in the digital humanities comes from wanting to contribute to the preservation of Indigenous cultural heritage in ways that provide compelling instructional tools. I'm attracted to the elephants in the room, and like making them the center of collaborative study.

**Vision/scope for WyACT**
As a member of the WyACT team, I work in the co-production of knowledge with stakeholder groups through the implementation of scenario workshops. I bring expertise based in the social sciences and humanities having to do with how we construct categories of analysis for fundamental worldviews, and how to discuss such issues in public forums. I am particularly interested in competing perceptions of the value of water (relational, religious, ecological, economic) and how those values impact social hydrology. I am most excited to ask questions based on the critical insights gained from Indigenous perspectives on responsible relations with water.

**Papers/projects relevant to my work with WyACT**

- Allen, D. E., Keller, M., & McGoun, E. (2015). Teleinvestmentevangelists: celebrity, ritual and religion and the quest to "beat the market". *Qualitative Research in Financial Markets*, *7*(3), 290-308.
- Keller, M. L. (2014). Indigenous studies and "the sacred". *American Indian Quarterly*, *38*(1), 82-109.
- Keller, M.L. (2016). Indigenous Religion: From the Origin to the Future of Religious Studies. In J. Kripal (Ed.). *Macmillan Interdisciplinary Handbooks: Religion*.

**Links to understand more of my work**

- https://www.uwyo.edu/philrelig/faculty/relig/keller.html
- LinkedIn profile
- https://www.montanapbs.org/programs/return-to-foretops-father/#:~:text=Return%20to%20Foretop's%20Father%20follows,to%20Heart%20Mountain%20in%20Wyoming

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## Dr. Jacki Klancher


Director of Instruction and Research, Alpine Science Institute, Central Wyoming College

jklanche@cwc.edu

**About**
I am a professor, researcher, adventurer, storyteller, and project manager who develops research and education programs in environmental science and Geographic Information Systems (GIS) to increase our understanding of climate, water, and air quality challenges. I am highly committed to creating opportunities that foster, and exemplify diversity, equity, and inclusion in STEM and develop combined conservation and outdoor education programs that welcome a broad group of participants. Grant writing and fund-raising are key

components of Alpine Science Institute (ASI) project development and we engage our students in this work as well. The ASI Expedition Science geospatial education program has been awarded funding from the National Science Foundation through an Advanced Technical Education grant and our field-based Interdisciplinary Climate Change Expedition (ICCE) is a recipient of generous subawards from Wyoming EPSCOR; Wyoming INBRE; and the Wyoming NASA Space Grant Consortium. Sharing the outcomes of our expeditions is a critical component of our research, education, and conservation efforts and students create research posters to summarize research data, and make extensive use of ESRI StoryMaps to document our expeditions and share tales of our field adventures. Over the past decade our programs have included conservation and glaciological work in Wyoming's Wind River Range, a student expedition to Mount Kilimanjaro, and an expedition to Everest Base Camp to test the capacities of portable meteorological sensors.

**Vision/scope for WyACT**

My vision and scope for WyACT includes the advancement and engagement of undergraduate students in STEM, increasing diversity, equity and inclusion in climate and water science, and integrated research in water and climate intended for publication. We will be partnering with several audiences this summer to pilot the use of portable meteorological sensors in the Wind River Range.

**Papers/projects relevant to my work with WyACT**

- Klingsporn, K. (2022, July 6). *Climate data on top of the world: CWC students trek to Everest*. Laramie Boomerang.
- Klancher, J., Guenther, T., Wells, D. (2019). A Glacier in Retreat. In D. Wright & C. Harder. *GIS for Science*. ESRI Publications.
- Glaciers, Graduates and Geospatial Science – a presentation at the Draper Museum of Natural History (2023).

**Links to understand more of my work**

- https://storymaps.arcgis.com/stories/5fba0713959a4f249ea7b4ed666e738c
- https://www.youtube.com/watch?v=p12KJ05dzhc
- https://www.cwc.edu/faculty/jacki-klancher/
- LinkedIn profile

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## Dr. Corrine (Corrie) Noel Knapp (she/her)


Associate Professor, Environment and Society, Haub School of Environment and Natural Resources
Director, Center for Climate, Water, and People
WyACT Co-PI

cknapp4@uwyo.edu

**About**

I am an Associate Professor in the Haub School of Environment and Natural Resources. My research interests are at the confluence of climate change, conservation & livelihoods. Using a social-ecological approach, I work in

climate change adaptation, local and indigenous knowledge, sense of place, and conservation innovation. I have a deep commitment and passion for Western landscapes, rangelands, and the human and ecological communities that depend on them.

**My vision for WyACT**
I am committed to and passionate about helping Wyoming communities anticipate and plan for change. As a Co-PI on the project, I coordinate social science and co-production efforts as well as being very interested in understanding linked socio-ecological systems. I am excited to learn about how we can better understand change and work towards thriving and equitable futures.

**Publications relevant to my work with WyACT**

- Knapp, C. N., McNeeley, S. M., Gioia, J., Even, T., & Beeton, T. (2020). Climate change, agency decision-making, and the resilience of land-based livelihoods. *Weather, Climate, and Society*, *12*(4), 711-727.
- Knapp, C. N., Reid, R. S., Fernández-Giménez, M. E., Klein, J. A., & Galvin, K. A. (2019). Placing transdisciplinarity in context: A review of approaches to connect scholars, society and action. *Sustainability*, *11*(18), 4899.
- Knapp, C. N., Chapin III, F. S., Kofinas, G. P., Fresco, N., Carothers, C., & Craver, A. (2014). Parks, people, and change: the importance of multistakeholder engagement in adaptation planning for conserved areas. *Ecology and Society*, *19*(4).

**Links to understand more of my work**

- University of Wyoming
- Corrie's website
- Google Scholar

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## Dr. Sarah Konrad


Associate Project Director, Wyoming EPSCoR

skonrad@uwyo.edu

**About**
Multidisciplinary scientist specializing in geology and geomorphology with additional expertise in spatial analysis and entomology. Substantial research administration experience as part of a team managing five-year, $20 million grants. Background in outdoor education that led to the creation of the NOLS/CWC/UW scientific research expedition on Mt. Killimanjaro. The first American woman to compete in two sports during same Olympic Games. Committed to community service as an athlete advocate and non-profit board member. Linoleum-cut printmaker with national and international sales. Forager of mushrooms.

**Vision/scope for WyACT**
My roles in WyACT include managing all formal reporting and coordinating evaluation activities, growing and managing our inclusion of LatinX people into the project, support of the remote PhD program, coordination with the AMK, graphic design work, and otherwise filling in for the Project Director wherever needed.

**Publications relevant to my work with WyACT**

- Konrad, S. K., & Clark, D. H. (1998). Evidence for an early Neoglacial glacier advance from rock glaciers and lake sediments in the Sierra Nevada, California, USA. *Arctic and Alpine Research*, *30*(3), 272-284.
- Humphrey, N. F., & Konrad, S. K. (2000). River incision or diversion in response to bedrock uplift. *Geology*, *28*(1), 43-46.
- Heller, P. L., Beland, P. E., Humphrey, N. F., Konrad, S. K., Lynds, R. M., McMillan, M. E., ... & Furbish, D. J. (2001). Paradox of downstream fining and weathering-rind formation in the lower Hoh River, Olympic Peninsula, Washington. Geology, 29(11), 97

**Links to understand more of my work**

- https://www.uwyo.edu/epscor/contact-us/
- LinkedIn profile
- https://en.wikipedia.org/wiki/Sarah_Konrad
- https://www.skinnyski.com/gear/display.asp?Id=3979
- https://skonrad153.wixsite.com/skon

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## Dr. Kristen Landreville (she/her)


Communication Consultant and Social Scientist

klandrev@uwyo.edu

**About**
Broadly, my research seeks to understand how people consume, process, and discuss various narratives in science, the environment, health, and politics. Some questions that I consider are: How can we have more effective dialogue about delicate issues? How do media influence our attitudes, beliefs, behaviors, and knowledge, and how do identity and emotions facilitate that relationship? How can we encourage individuals to identify misinformation?

To answer these questions, I use social scientific research methods, including experimental design, survey design and public opinion research, quantitative content analysis of media coverage, and advanced statistical analysis for the social sciences. I also use qualitative methods as well, including focus groups, scenario workshops, and interviewing.

**Vision/scope for WyACT**
I coordinate the science communication and science journalism project elements. Currently, I am conducting a media content analysis of climate change news coverage in the Rocky Mountain region to understand how news organizations are addressing climate change causes, consequences, and adaptive capacity. In 2023, I worked with Wyoming journalists to host environmental journalism interns across the state, and there are plans to coproduce a professional development opportunity with Wyoming journalists. I will lead a baseline survey of Wyomingites attitudes, beliefs, behaviors, and knowledge surrounding climate change. Finally, I am developing a climate-water ambassador program that aims to improve climate change communication among our interpersonal social networks.

**Papers relevant to my work with WyACT**

- Landreville, K. D., Cooper, K., Keller, M. L., Hansen, K., Paige, G., Shinker, J., & Van Sandt, A. (in progress). Understanding risk perceptions of water-related natural disasters in an at-risk Rocky Mountain state: Lived experience, affect, climate beliefs, and value-orientations toward water.
- Connell, E., Landreville, K. D., Price Schultz, C., & Singh, R. (in progress). Pushing the Boundaries of Instagram Influencers: How celebrity and color strategy impact source credibility perceptions and parasocial behavior within the online health community.
- "Models and Approaches to Science Journalism", Presentation at the 2019 Annual Winter Convention of the Wyoming Press Association, Cheyenne, WY, 2019.

**Links to understand more of my work**

- https://klandreville.com
- LinkedIn profile
- https://scholar.google.com/citations?user=4At5_M0AAAAJ&hl=en

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## Shawn Lanning

Geospatial Specialist, Wyoming Geographic Information Science Center (WyGISC)

SGL55@uwyo.edu

**About**
I have been an integral part of the Wyoming Geographic Information Science Center (WyGISC) since 2005, where I currently hold the position of Geospatial Specialist. In this role, I am responsible for overseeing, managing, and providing technical support for the WyGISC server infrastructure. My primary objective is to ensure the availability and functionality of resources to meet the diverse demands of WyGISC's geospatial projects. Other geospatial interests include Unmanned Aerial Systems (UAs) data acquisition and leveraging GIS decision support for applications in natural resource management.

I earned my bachelor's (2003) and master's degree (2005) from the Geography Department at the University of Wyoming. My graduate studies focused on developing a pronghorn migration and habitat model, incorporating updated user inputs for a more accurate representation of real-world conditions. As a founding member of the Wyoming Geospatial Organization (WyGEO), I dedicated seven years to serving on the board during the organization's formative years. Additionally, I have the designation of GIS Professional (GISP) from the GIS Certification Institute.

**Vision/scope for WyACT**
The data science team within the WyACT project aims to manage the project's data storage, sharing, and visualization needs. As a team member, I actively collaborate with others to establish, maintain, and improve cyberinfrastructure capabilities, ensuring alignment with the overarching goals of WyACT.

**Links to understand more of my work**

- LinkedIn profile
- https://www.uwyo.edu/wygisc/people/geo-specialists.html

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## Peyton Loss (she/her)

Agricultural and Applied Economics Graduate Research Assistant

ploss@uwyo.edu

**About**
I am a graduate research assistant in the Agricultural and Applied Economics department working under Dr. Kristi Hansen. I hold a Bachelor of Science degree in Agribusiness from the University of Minnesota – Crookston. I worked for the University of Minnesota Northwest Research and Outreach Center as an agricultural water and nutrient researcher for three years. My role included implementing field trials, collecting data, and working closely with regional growers and stakeholders. I am interested in climate resiliency, community responses to water related hazards, and socioeconomic tipping points and thresholds.

**Vision/scope for WyACT**
Through this project I hope to expand my research experience by developing baseline economic response functions specific to the agricultural, industrial, and recreational sectors of northwestern Wyoming.

## Connor S. Lubsen

PhD Student, Department of Economics

clubsen@uwyo.edu

**About**
My research interests focus on the connections between the fields of behavioral, experimental, and environmental economics. My work uses various forms of individual and public preference mapping to then model how groups respond to societal problems that require cooperation.

**Vision/scope for WyACT**
I will contribute to the work that integrates behavioral and experimental insights into modeling environmental and social change. Drawing on both behavioral and experimental methods, we aspire to analyze policy measures that address the externalities associated with climate change. To do so, we will examine the role of messaging and design in the adoption of environmental policy as well as investigate individual and public preferences regarding changes in environmental risk and amenities. Research in this space engenders effective policies designed to consider all affected members in the modeling environment. This process constructs not only effective policies but also informs the best delivery method to ensure adherence by all involved parties. Measuring both individual and public responses to policy messaging, design, changes in environmental risk, and amenities will inform and improve policy models in the face of climatic risk.

**Paper relevant to my work with WyACT**

- Cherry, T., James, A., Landreville, K., Lubsen, C. (2023). Partisan Leadership and the Impact of Communication on the Adoption of Public Policy: Experimental Evidence. Working paper.

**LinkedIn profile**

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## Nichole Lumadue (she/her/hers)


Education, Outreach, & Diversity Coordinator, Wyoming EPSCoR

nlumadue@uwyo.edu

**About**
As the current Education, Outreach, and Diversity Project Coordinator for Wyoming EPSCoR, I am driven by curiosity to understand the unique perspectives that influence scientific research and education throughout the WY jurisdiction. Since arriving in Laramie in 2013, I have made it my goal to learn about, and advocate for, the diverse ecosystems and

communities that make up the region. I leverage my background in natural science education, outdoor leadership, and fine arts to facilitate collaborations influenced by environmental and social challenges.

**Vision/scope for WyACT**
We have a privileged opportunity to make research and scientific knowledge accessible to everyone - specifically communities that are (or will be) disproportionately impacted by environmental changes. The co-production nature of this project assures that appropriate representation of these communities leads the collaborative efforts and intentional partnerships. I hope to increase public understanding of, and appreciation for, challenging environmental topics and identify needs, resources, and interests among diverse groups to support mutual consideration of research and educational impacts.

**Links to understand more of my work**
- http://wyoepscor.org/index.php
- https://circlesalliance.org/people/

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## Dr. Jewell Lund (she/her)

Associate Research Scientist, Haub School of Environment and Natural Resources
WyACT Knowledge Co-production Coordinator

jewell.lund@uwyo.edu

**About**
I am a snow hydrology researcher that uses integrative methods to improve understanding of the timing and magnitude of snowmelt contributions to streamflow in mountainous areas. I am particularly interested in how field methodologies and physically based modeling may complement, validate, and further elucidate remotely sensed information, with an eye for the topographic complexities of mountain environments that challenge accurate snowmelt runoff forecasting.

Recognizing that many communities around the world rely on snow as a primary water resource, and that this natural reservoir is changing with climate, I work to support the generation of actionable scientific knowledge through processes of inter- and trans-disciplinary knowledge co-production. It is my hope that, through processes of knowledge co-production that bring scientific researchers together with operational experts, decision-makers, sovereign tribes, community members, farmers and ranchers, recreationists, and others, we can together create a holistic and robust understanding of the complex and interconnected challenges related to climate change impacts on the water cycle, and together innovate pathways to anticipate and adapt to those impacts.

**Vision/scope for WyACT**
My work with WyACT is to primarily facilitate basin-specific Actionable Science Committees in each of the project river basins. The committees will collaborate with the WyACT team to co-produce research

outputs are credible, salient, and legitimate for those involved. I also work to support various aspects of knowledge co-production for the project, as needed.

**Publications relevant to my work with WyACT**

- Lund, J., Forster, R. R., Jameel, Y., Rupper, S. B., Deeb, E. J., Dars, G. H., ... & Burian, S. J. (2023). Constraining Mountain Streamflow Constituents by Integrating Citizen Scientist Acquired Geochemical Samples and Sentinel-1 SAR Wet Snow Time-Series for the Shimshal Catchment in the Karakoram Mountains of Pakistan. Water Resources Research, 59(3), e2022WR032171.
- Lund, J., Forster, R. R., Deeb, E. J., Liston, G. E., Skiles, S. M., & Marshall, H. P. (2022). Interpreting Sentinel-1 SAR Backscatter Signals of Snowpack Surface Melt/Freeze, Warming, and Ripening, through Field Measurements and Physically-Based SnowModel. Remote Sensing, 14(16), 4002.
- Lund, J., Forster, R. R., Rupper, S. B., Deeb, E. J., Marshall, H. P., Hashmi, M. Z., & Burgess, E. (2020). Mapping snowmelt progression in the Upper Indus Basin with synthetic aperture radar. Frontiers in Earth Science, 318.

**Links to understand more of my work**

- LinkedIn
- Google Scholar
- US-Pakistan Center for Advanced Studies in Water
- Some recreational writing

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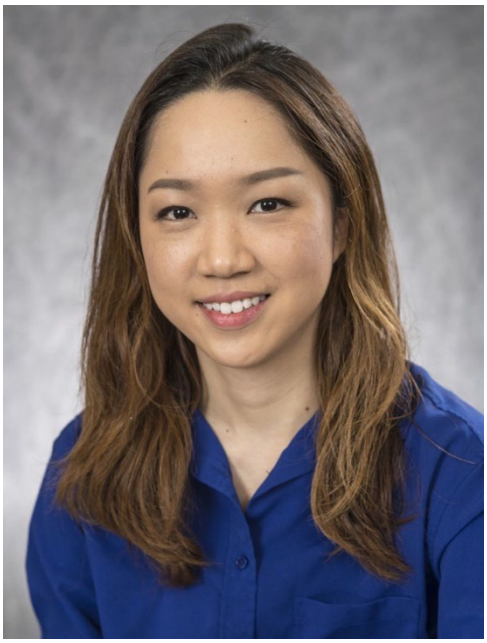
## Hye Soo Nah (she/her)



Assistant Professor, Department of Communication and Journalism

hnah@uwyo.edu

**About**

My research centers on how individuals perceive the authenticity of media personalities and how this perception affects persuasion. I've studied this within the context of parasocial interaction, where people form personal connections with media figures during media exposure. My future work will continue to explore how authenticity and other factors influence science communication effectiveness. I utilize experimental methods to study these psychological processes in persuasion.

**Vision/scope for WyACT**

I will be leading the Science/ENR Journalism Internship Program, which seeks to foster relationships with Wyoming media outlets, develop a climate-water journalism program for interns, and place Indigenous and non-Indigenous science/ENR journalism interns in these outlets with the objective of producing climate-water stories in Wyoming. I will also collaborate with a "climate cohort" of Wyoming journalists. This initiative involves listening to journalists' needs and offering professional development

opportunities such as conferences, mentoring, and specialized training to enhance climate and environmental reporting in the state.

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## Kristen Nasman

Senior Statistician, Western EcoSystems Technology, Inc.

knasman@west-inc.com

**About**

I am a statistical consultant interested in study design and analysis of ecological datasets. I enjoy engaging with various stakeholders to help to identify the question that needs to be answered using statistical models. Modeling techniques I use are occupancy modeling, distance sampling, resource selection functions, generalized linear mixed models, and collision risk models.

**Vision/scope for WyACT**

Our work with WyACT focuses on data science workforce development in Wyoming through workshops, internships and business enhancement consulting. We provide students with real-world applied experiences to encourage growth in analyses, data visualization and computer programming best practices.

**Projects relevant to my work with WyACT**

WEST is offering a WyACT internship opportunity in cooperation with the National Park Service to provide analytical help in forecasting water balance indicators in lakes with downstream farming communities. Many National Parks have a need for predictions of water availability and use, and the Principle Investigator is interested in ensuring that the models are defensible, the analysis approach is scalable, and the estimates have appropriate measures of uncertainty.

**LinkedIn**

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## Dr. Fabian Nippgen (he/him)

Assistant Professor, Watershed Hydrology, Ecosystem Science and Management
College of Agriculture and Natural Resources

fnippgen@uwyo.edu

**About**

Research in my lab explores how physical watershed characteristics and climatic variability influence various metrics of watershed hydrologic response in natural and anthropogenically altered landscapes. Approaches to disentangle these relationships include a combination of field-based, remote sensing, and modeling methodologies. General interests include–but are not limited to–the following:

- Watershed hydrology
- Storage and memory (i.e., carry-over) effects
- Evapotranspiration
- Remote sensing (UAV and traditional)
- Snow hydrology
- Disturbed/designed systems
- Runoff source areas
- (Shallow) groundwater dynamics

**Vision/scope for WyACT**

To provide the people of Wyoming with reliable data and analyses that can assist them in making informed decisions about going into a future shaped by climate change.

**Publications relevant to my work with WyACT**


- Fitch, K., Nippgen, F., Albeke, S. E., & Paige, G. B. (2022). Where the wild beavers are: Climate and landscape controls on beaver pond area in snow-dominated rangeland headwaters. *Ecohydrology*, *15*(4), e2418.
- Ross, M. R., Nippgen, F., McGlynn, B. L., Thomas, C. J., Brooks, A. C., Shriver, R. K., ... & Bernhardt, E. S. (2021). Mountaintop mining legacies constrain ecological, hydrological and biogeochemical recovery trajectories. Environmental Research Letters,
- Nippgen, F., McGlynn, B. L., & Emanuel, R. E. (2015). The spatial and temporal evolution of contributing areas. *Water Resources Research*, *51*(6), 4550-4573.


**Links to understand more of my work**

- https://www.watershed-hydrology.com
- https://scholar.google.com/citations?user=yw4tlTwAAAAJ&hl=en
- https://www.uwyo.edu/esm/faculty-and-staff/faculty/fabian-nippgen.html

## Sara Renea McCullough (she/her)

Master's Student, Department of Geology & Geophysics

smccull5@uwyo.edu

**About**
I work in Dr. Shuman's lab and am interested in Rocky Mountain paleoclimate and hydroclimate using paleolimnological methods.

**Vision/scope for WyACT**
I work with Rocky Mountain alpine lakes to reconstruct hydroclimatic changes through during the Quaternary. I use paleolimnological methods to reconstruct lake levels, tracking water levels over time to determine multimillenial and multicentennial variations. This can be used in modeling to better predict what effects of a changing climate we'll see in the future and provides ecological records that stretch beyond historical observations. I envision WyACT to be the prime initiative for preparing Wyoming for future climatic changes and the best place for my work to be utilized.

**Talk relevant to my work with WyACT**

- McCullough, S., & Shuman, B. (2023, March 25). *Paleohydrology of the Bighorn Mountains, Wyoming.* Presentation at the American Association of Geographers Annual Conference, Denver, Colorado.

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## Maggie O'Neill

Graduate Research Assistant with Corrine Knapp, Haub School of Environment and Natural Resources

moneill9@uwyo.edu

**About**
I have strong interests in a range of environmental issues, specifically human-environmental interactions. I enjoy research methods that focus on climate change adaptation and mitigation and that include human behavioral dimensions. My current research will focus on assessing water stakeholders in Wyoming with specifics TBD.

**Vision/scope for WyACT**
I will be conducting a stakeholder assessment in a certain watershed in Wyoming to identify and understand the positions of key water stakeholders. This research will be conducted in order to inform

WyACT co-production committee members and support future activities and relationships with stakeholders.

**Papers/projects relevant to my work with WyACT**

- Reyes, D. C., Meredith, J., Puro, L., Berry, K., Kersbergen, R., Soder, K. J., ... & Brito, A. F. Maine organic dairy producers' receptiveness to seaweed supplementation and effect of Chondrus crispus on enteric methane emissions in lactating cows. *Frontiers in Veterinary Science*, *10*, 1153097.
- Johnson, K. H., Dobkowski, K. A., Seroy, S. K., Fox, S., & Meenan, N. (2023). Feeding preferences and the effect of temperature on feeding rates of the graceful kelp crab, Pugettia gracilis. *PeerJ*, *11*.
- Truelove, H. B., Raimi, K. T., & Carrico, A. R. (2022). Curbing single-use plastic with behaviour change interventions. *Nature Reviews Earth & Environment*, *3*(11), 722-723

**Links to understand more of my work**

- LinkedIn Page
- Weebly Page

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## Cory Ott (he/him)

PhD Student in the Hydrologic Sciences Program

**About**

I am focusing my research on integrated mechanistic modeling of the effects of projected future climate change on the hydrologic regimes and ecophysiologic processes of forested and dryland ecosystems in Wyoming. I am generally interested in how future climate perturbations may result in hydrological changes and how those changes to the environment will affect important plant physiological processes in those same forested and dryland ecosystems over time. Bolstering the parameterization and calibration of complex ecohydrological modeling efforts with high-resolution field observations and supercomputing resources will be his general focus, as more specific research questions are still being formulated for the duration of the WyACT project.

**Vision/scope for WyACT**

I am extremely excited for the opportunity to contribute novel ecohydrologic findings to the WyACT project, and most looking forward to experiencing the knowledge co-production phase of the project to learn how physical modeling outputs can best inform and drive socioeconomic modeling efforts that importantly attribute monetary value to the cascading effects of future climate change in headwaters ecosystems. I will work closely with the interdisciplinary team to provide meaningful ecohydrologic data outputs that can be analyzed and applied to the various future scenarios being explored for the WyACT project.

**Links to more of my work**

- Ott, C.W.; Adhikari, B.; Alexander, S.P.; Hodza, P.; Xu, C.; Minckley, T.A. Predicting Fire Propagation across Heterogeneous Landscapes Using WyoFire: A Monte Carlo-Driven Wildfire Model. MDPI Fire, 2020, 3, 71. https://doi.org/10.3390/fire3040071,

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## Ginger Paige

Professor, Water Resources, Ecosystem Science and Management, College of Agriculture and Natural Resources

gpaige@uwyo.edu

**About**

Ginger Paige is a Professor of Watershed Hydrology and Water Resource Extension Specialist at the University of Wyoming. She has led or co-led numerous projects funded by agencies including USDA, NSF, NASA Space Grant, as well as State and Tribal Agencies. As State Water Quality Coordinator for Wyoming for the USDA CSREES National Water Quality Program from 2005- 2012, she expanded the scope and impacts of Wyoming's water extension program to regional and national levels. Her programs have focused on establishing long-term hydrologic instrumentation and datasets, development of water quality training programs to collect credible data, and direct collaboration with stakeholders and decision makers. As UW representative to CUASHI and active member the WERA Watershed Processes and Human Water Systems, she supports the collection and analysis of credible data and the promotion of interdisciplinary and transdisciplinary approaches to address water resource issues.

**Papers relevant to my work with WyACT**

- Paige, Ginger B., William J. Gribb, and Roger H. Coupal. "Agriculture Resource Management Planning on the Wind River Indian Reservation: An Integrative Approach." *Journal of Geoscience and Environment Protection* 7.12 (2019): 206.
- Gordon, Beatrice L., et al. "Field scale quantification indicates potential for variability in return flows from flood irrigation in the high altitude western US." *Agricultural Water Management* 232 (2020): 106062.
- Carey, Austin M., and Ginger B. Paige. "Ecological site-scale hydrologic response in a semiarid rangeland watershed." *Rangeland ecology & management* 69.6 (2016): 481-490.

**Links to understand more of my work**

- https://www.uwyo.edu/esm/faculty-and-staff/faculty/ginger-paige/
- https://scholar.google.com/citations?user=NiEZsYsAAAAJ&hl=en
- https://wwa.colorado.edu/About/team/ginger-paige

## Pallavi Pokharel

Graduate Research Assistant
Haub School of Environment and Natural Resources

ppokhare@uwyo.edu

**About**

I am a second-year graduate student at the Environment, Natural Resources, and Society major at the Haub School. I work as a graduate research assistant to the Climate Adaptation lab under Dr. Corrie Knapp where I use a qualitative storytelling research method to investigate the relation Wyoming residents hold towards water amidst its changing availability due to climate change. My research interest lies in understanding the interaction of human behavior, policy, and technological changes in the climate change realm. I have a strong inclination towards working with communities and making my work leave some kind of impact on the community I serve.

**Vision/scope for WyACT**

For WYACT, my research will work on using storytelling as a method to understand the perceptions and values people hold to water. Although values and perceptions of natural resources directly inform the adaptive capacity of the people, this human dimension of climate adaptation is found to be less explored in this region. My research is aimed at helping in building adaptive capacity among Wyoming residents in the long run. I will be using storytelling interviews among farmers, ranchers, and recreationists and later incorporate the stories in StoryMaps. I am most excited about using StoryMaps to not only have a visual representation of WY residents' values on water (which could inform decision-makers), but also to educate people about using and sharing interactive tools as such to create awareness among children and teachers.

**LinkedIn profile**

## Dr. Stefan Rahimi

UW Derecho Professor
Atmospheric Sciences, College of Engineering & Physical Sciences

srahimi@uwyo.edu

**About**
Dr. Rahimi's research is principally focused on creating and improving the quality/trustworthiness of high-resolution physics-based climate change projections via dynamical downscaling. He is also interested in quantifying how traditional forms of climate uncertainties (e.g., model choice, emissions trajectory, and internal variability) compare to the uncertainties introduced by choices made in downscaling (e.g., bias correction), and how these new uncertainties may amplify future uncertainty and distort the climate change signal, particularly for extreme weather events.

**Vision/scope for WyACT**
I am going to be leading the regional climate modeling wing of WyACT, and I am most eager to partner with other faculty, students, and researchers, as well as end-users in the policymaking and decision-making space to quantify the risk and potential impacts of climate change on disadvantaged communities, local and regional economies, water resources, and electricity generation.

**Publications relevant to my work with WyACT**

- Rahimi, S., Krantz, W., Lin, Y. H., Bass, B., Goldenson, N., Hall, A., ... & Norris, J. (2022). Evaluation of a reanalysis-driven configuration of WRF4 over the western United States from 1980 to 2020. *Journal of Geophysical Research: Atmospheres*, *127*(4), e2021JD035699.

**Links to understand more of my work**

- Faculty page: https://www.uwyo.edu/atsc/directory/faculty/rahimi/index.html
- Google Scholar: https://scholar.google.com/citations?user=33ZA-eIAAAAJ&hl=en

## Caitlin M. Ryan, PhD (she/her)

Postdoctoral Research Associate

Caitlin.ryan@uwyo.edu

**About**

I am a geographer interested in the co-production of human-environmental systems. My research, from Wyoming to Central Asia and the South Caucasus, focuses on understanding the historical and contemporary processes that drive cooperation and conflict over land, natural resources, and development. I am especially interested in connecting scientific and local knowledge in ways that enable communities to address complex problems. My work draws on the fields of critical development geographies, urban and regional planning, political ecology, history and memory, and peace and conflict studies. I have expertise in a range of qualitative methods that prioritize participant-led and collaborative approaches to knowledge co-production, as well as mapping and survey design.

My dissertation explored histories of urban transformation, development, and contemporary identity politics in Kyrgyzstan. Prior to earning my PhD, I spent six years conducting policy-focused research in the South Caucasus related to anti-corruption initiatives, forced displacement, and humanitarian aid. I am also an Editor with the Boulder Housing Network, which seeks to bring more pro-affordability voices to city planning meetings. Prior to joining WyACT, I taught courses in international development, geographies of global change, and global public health at the University of Colorado Boulder.

**Vision/scope for WyACT**

Within WyACT, one main focus is on Scenario Planning, co-designing and carrying out workshops that help communities on the three river basins plan and strategize for climate-driven uncertainties related to the future of water. I study how scenario planning can bridge traditional, local and academic knowledge systems, and how it can be used to facilitate interdisciplinary and co-produced science. I am also involved with several other parts of the WyACT project, including coordination of Research Questions 2 and 3, understanding institutional capacity to respond to changing water resources on the Wind River basin, conceptualizing uncertainty, connecting scenario planning with WyACT's climate and hydrological modeling efforts, and a baseline survey design on public attitudes towards water and climate.

**Publications relevant to my work with WyACT**


- Ryan, Caitlin M., and Sarah Tynen. 2020. "Fieldwork Under Surveillance: Rethinking Relations of Trust, Vulnerability, and State Power." *Geographical Review* 110 (1–2): 38–51.
- Cowley, Austin, Caitlin Micaela Ryan, and Elizabeth Cullen Dunn. 2015. "The Law, the Mafia, and the Production of Sovereignties in the Kyrgyz Penal System." *Ab Imperio* 2015 (2): 183–208.
- Sayara Research, 2016. "Afghan Information Ecosystems: A Design Research Approach."


**Links to understand more of my work**

- LinkedIn
- Google Scholar
- Boulder Housing Network

## Bryce Shoup

(PhD Student with Williams Lab, Department of Botany)

bshoup@uwyo.edu

**About**
I focus on issues of water quality and quantity utilizing geochemical tracers.

**Vision/scope for WyACT**
I am currently working on issues of water quality and quantity.

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## Dr. Bryan N. Shuman

Professor: Paleohydrology, Paleoclimatology, Paleoecology
Department of Geology & Geophysics
WyACT Co-PI

bshuman@uwyo.edu

**About**
My work focuses on climate changes and their effects on water resources, ecosystems, and cultures. In particular, much of my research uses the sedimentary records of ancient lake-level changes to examine how and why the availability of water has changed in the past and how these changes have impacted ecological processes recorded by fossil material. Examining the geologic evidence of ancient environmental change can provide a context for future change. Recent work has also examined historic changes in the Rocky Mountains.

**Vision/scope for WyACT**
A goal for WyACT is to provide Wyoming communities with information needed to understand potential future climate impacts that will affect them. My roles include working with communities, organizations, and individuals to consider potential future scenarios and evaluating climate and watershed models by testing their ability to simulate climate changes and impacts in past millennia.

**Papers/projects relevant to my work with WyACT**

- Marsicek, J., Shuman, B. N., Bartlein, P. J., Shafer, S. L., & Brewer, S. (2018). Reconciling divergent trends and millennial variations in Holocene temperatures. Nature, 554(7690), 92-96.
- Higuera, P. E., Shuman, B. N., & Wolf, K. D. (2021). Rocky Mountain subalpine forests now burning more than any time in recent millennia. Proceedings of the National Academy of Sciences, 118(25), e2103135118.

- Hostetler, S., Whitlock, C., Shuman, B., Liefert, D., Drimal, C. W., & Bischke, S. (2021). Greater Yellowstone climate assessment: past, present, and future climate change in greater Yellowstone watersheds. Montana State University, Institute on Ecosystems.

**Links to understand more of my work**

- https://www.uwyo.edu/geolgeophys/people/faculty/bryan-shuman.html
- https://scholar.google.com/citations?user=S5HWncYAAAAJ&hl=en

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## Kaitlin Smith (she/her)

Graduate Student
Department of Atmospheric Science

ksmit186@uwyo.edu

**About**
I'm a graduate student in Dr. Geerts Region Climate Modelling (RCM) research group, working with and verifying CONUS404 data in the Intramountain West.

**Vision/scope for WyACT**
Currently, for my master's work, I am working on verifying historical CONUS404 runs using observations, data assimilation products, and other model output, with a particular focus on mountain Snow Water Equivalent (SWE) and precipitation patterns. This verification will help determine how viable CONUS404 data are for driving future climate and hydrologic predictions.

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## Dr. Tarissa Spoonhunter

Assistant Professor, Haub School of Environment and Natural Resources

tarissa.spoonhunter@uwyo.edu

**About**
You need one good partner to demonstrate a working relationship to gain the trust of others.
The Wind River Tribal Buffalo Initiative (WRTBI) is that partner for WyACT High Plains American Indian Research Institute (HPAIRI) Circles!

RQ2 Storytelling: We have revised the consent form to represent some authority for the Wind River tribes owning the material when grant is completed. We have met with a consultant that is willing to assist and guide the oral storytelling as she was a former member of the Water Board and researched water usage on the reservation. Once we have Sandra hired, we will begin seeking approval from the Intertribal Business Councils and work with THPOs.

RQ4: Wind River Start up Challenge is getting ready to begin programming. We are still mentoring STEAM students and hoping to get the AISE chapter established this fall. We have set up the initial stream restoration meetings at Crow Creek and now a bioblitz will happen hopefully next June. Wind River Tribal Buffalo Initiative has been a great partner in continuing to need support through data science, water, wildlife, and student connections.

**Vision/scope for WyACT**
The Wind River is a great pilot for collaboration and partnership with data sovereignty building capacity and addressing climate transitions as head water nation.

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## Callie Surber (she/her)

Graduate Research Assistant with Corrine Noel Knapp, Haub School of Environment and Natural Resources

csurber@uwyo.edu

**About**
I am a graduate student in the Haub School's Environment, Natural Resources, and Society program. I am interested in many areas of research focusing on social-ecological systems and human dimensions of conservation, climate change, and sustainability. Primarily, I focus on qualitative research.

**Vision/scope for WyACT**
I will be working with Dr. Corrie Knapp, Dr. Kristi Hansen, and Agricultural Economics student Peyton Loss on the social dimensions of changing water availability in Wyoming and related tipping points and thresholds of concern. We will be conducting focus groups to gather our data.

**Projects/talks/publications relevant to my work with WyACT**

- Collaborated on Friendly Lawns project for Jackson Hole Clean Water Coalition, Teton Conservation District, Trout Unlimited, and Friends of Fish Creek. program page
- Surber, Callie Noel (2021). *Self-objectification and video chatting: Exploring trends in college women*. University of Wyoming. Thesis. https://doi.org/10.15786/14575698.v2

**LinkedIn profile**

## Luke Todd (he/him)

Geospatial Analyst, Assistant Research Scientist

luke.todd@uwyo.edu

**About**
As a member of the data team, my work is centered around the management and visualization of WyACT's data. We are doing this by creating web-based tools and dashboards that will make WyACT's data easily accessible and searchable.

**Vision/scope for WyACT**
I am currently working on compiling data provided by various outside entities (e.g. USGS stream gages, SNOTEL, etc.) for displaying current climate conditions in WyACT's Data Repository.

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## Kyle Trumble (he/him)

Wind River Project Coordinator

ktrumble@uwyo.edu

**About**
Connector. Coach. Catalyst.
Kyle is the primary coordinator for The Wind River Startup Challenge and collaborates with organizations across the state such as gBeta, IMPACT 307, Ellbogen 50K, Wyoming Afterschool Alliance, and Young Entrepreneur Institute, as a coach, judge, mentor, and geospatial market researcher. He also served as an associate researcher for the WORTH (Wyoming Outdoor Recreation and Tourism) Initiative. Prior to that he taught economics, management and entrepreneurship courses at Central Wyoming College. He received his bachelors in Business Administration with a focus in economics from Flagler College, and his MBA from the University of Wyoming. Trained in flow state coaching and passionate about human flourishing, Kyle is curious about the intersections of the chemical, natural, and management sciences.

**Vision/scope for WyACT**
To continue transition of university project to community-led entity and build on the economic development data and tools available for Eastern Shoshone and Northern Arapaho community members. To directly reduce the unemployment rate by creating more native owned/operated businesses. Providing business model innovation methods to tribal programs/councils to guide decision-making for tribal enterprise. Fostering greater connection between inhabitants of the county, state, and Wind River Indian Reservation.

**A few projects/talks/publications relevant to my work with WyACT**

- Mentor for John P Ellbogen 50K Entrepreneurship Competition participants
- Business Model Generation Webinar for Wyoming SBDC
- Flow for Resilience presentation at Native American Education Conference

**Links to understand more of my work**

- Wind River Startup Challenge

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## Dr. Annika Walters

Assistant Unit Leader - Fisheries, U.S. Geological Survey, Wyoming Cooperative Fish and Wildlife Research Unit
Associate Professor, Zoology & Physiology, College of Agriculture, Life Sciences, and Natural Resources

annika.walters@uwyo.edu

**About**

I am an applied aquatic ecologist with research interests in population and community ecology, fisheries, and conservation biology. I study the resistance and resilience of aquatic communities to disturbances such as flow alteration, climate change, nutrient loading, invasive species, and energy development through field observation, experimentation, and modeling. Most of my research involves fish that are of conservation concern and is set in a management context.

**Vision/scope for WyACT**

I am excited to contribute to our understanding of the mechanistic drivers of climate change in aquatic ecosystems and the implications for fish. My WyACT projects are currently focused on alpine lakes in the Wind River Range and cutthroat trout in the Upper Snake watershed.

**Papers relevant to my work with WyACT**

- Walker, R. H., Girard, C. E., Alford, S. L., & Walters, A. W. (2020). Anthropogenic land-use change intensifies the effect of low flows on stream fishes. *Journal of Applied Ecology*, *57*(1), 149-159.
- Walters, A. W., Mandeville, C. P., & Rahel, F. J. (2018). The interaction of exposure and warming tolerance determines fish species vulnerability to warming stream temperatures. *Biology Letters*, *14*(9), 20180342.
- Gsell, A. S., Scharfenberger, U., Özkundakci, D., Walters, A., Hansson, L. A., Janssen, A. B., ... & Adrian, R. (2016). Evaluating early-warning indicators of critical transitions in natural aquatic ecosystems. Proceedings of the National Academy of Scien

**Links to understand more of my work**

- https://wyocoopunit.org/labs/walters-lab/

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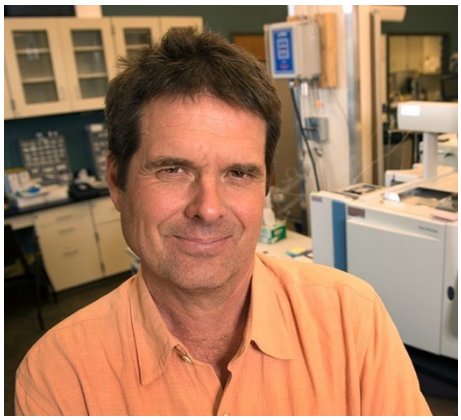
## Dr. David G. Williams



Professor, Department of Botany, College of Agriculture, Life Sciences and Natural Resources
WyACT Co-PI

dgw@uwyo.edu

**About**

I am a terrestrial ecosystem ecologist who uses a variety of approaches to understand how vegetation interacts with the physical environment, and how microbial and plant metabolism scales to the ecosystem level. My research interests include plant physiological ecology, soil ecology, carbon and water cycles in arid and semi-arid environments, global change ecology, and application of stable isotope techniques to ecology and hydrology. I hold faculty appointments in the Departments of Botany and Ecosystem Science and Management and am a member of graduate programs in Ecology and Hydrology at the University of Wyoming. I serve as the faculty director of the University of Wyoming Stable Isotope Facility.

**Papers relevant to my work with WyACT**

- Miller, S. A., Mercer, J. J., Lyon, S. W., Williams, D. G., & Miller, S. N. (2021). Stable isotopes of water and specific conductance reveal complimentary information on streamflow generation in snowmelt-dominated, seasonally arid watersheds. Journal of H
- Hoffman, A. S., Albeke, S. E., McMurray, J. A., Evans, R. D., & Williams, D. G. (2019). Nitrogen deposition sources and patterns in the Greater Yellowstone Ecosystem determined from ion exchange resin collectors, lichens, and isotopes. Science of the Tota
- Cable, J., Ogle, K., & Williams, D. (2011). Contribution of glacier meltwater to streamflow in the Wind River Range, Wyoming, inferred via a Bayesian mixing model applied to isotopic measurements. *Hydrological Processes*, *25*(14), 2228-2236.

**Links to understand more of my work**

- https://www.uwyo.edu/botany/people/faculty/david-williams%20.html
- https://www.uwyo.edu/dgw/home.html
- https://www.uwyo.edu/sif/About/dave.html
- https://scholar.google.com/citations?user=-IMhly8AAAAJ&hl=en
- https://dgwilliamslab.wordpress.com

## Dr. Rebecca Witinok-Huber (she/her)

WyACT Co-Production Associate Research Scientist, Haub School of Environment & Natural Resources

rwitinok@uwyo.edu

**About**

I am an applied, transdisciplinary systems scientist focused on intersections related to water and climate change adaptation, gender equality, sustainable development, environmental health and justice, and agricultural extension. I collaborate with partners across academia, communities, Tribes, non-profits, private industry, and government. My passions and experience lie in research and mentorship, and are rooted in community-based participatory research and decolonizing methodologies.

**Vision/scope for WyACT**

My main role for WyACT is to learn how individuals, groups, and communities understand, respond, and adapt to changing water conditions. As well as, to build bridges between research and practice to improve baseline capacities through knowledge co-production.
I look forward to working with the team and community to understand the most effective and inclusive research methods to build our capacity to anticipate and respond to changing water conditions through actionable research, team science, smart evaluation, and knowledge co-production.

I'm excited to learn more about the potential for co-production and team science to translate research into actionable climate solutions. As well, to work and learn with new colleagues and students, and diverse community members.

**Publications relevant to my work with WyACT**


- Givens, J. E., Padowski, J., Guzman, C. D., Malek, K., Witinok-Huber, R., Cosens, B., ... & Adam, J. (2018). Incorporating social system dynamics in the Columbia River Basin: Food-energy-water resilience and sustainability modeling in the Yakima River B
- Witinok-Huber, R., & Radil, S. M. (2021). Introducing the Local Agricultural Potential Index: An approach to understand local agricultural extension impact for farmer adaptive capacity and gender equity. *World Development Perspectives*, *23*, 100345.
- Coulter, J. E., Witinok-Huber, R. A., Bruyere, B. L., & Dorothy Nyingi, W. (2019). Giving women a voice on decision-making about water: barriers and opportunities in Laikipia, Kenya. *Gender, Place & Culture*, *26*(4), 489-509.


**Links to understand more of my work**

- LinkedIn profile
- https://scholar.google.com/citation?user=x0Aq8x4AAAAJ&hl=en&oi=sra