WyACT Team Directory
May 2025

Project Leadership

Dr. Brent E. Ewers	Principal Investigator
Dr. Bart Geerts	Co- Principal Investigator
Dr. Kristi Hansen	Co- Principal Investigator
Dr. Sarah Konrad	Project Deputy Director
Dr. Bryan Shuman	Co- Principal Investigator
Dr. David G. Williams	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

Bart Geerts – Professor, Atmospheric Sciences, College of Engineering & Physical 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.

Faculty & Staff

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.
Bryan Shuman 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 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.

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.
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

Pramod Adhikari 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 Students

Tim Corrie Ph.D. Student, Research Assistant with Stefan Rahimi, Department of Atmospheric Science	Research Atmospheric Rivers' (ARs') response to climate change. Additionally, analyzing how bias correction impacts affect historical and future ARs, and as a result, land-surface hydrology across the Western US.
Kaitlin Smith 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

Kinsale Day 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

Annika Walters
Associate Professor, Zoology & Physiology, 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

William Fetzer
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
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
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.

Chuck Williams
Research Assistant with Sarah Collins, Annika Walters, and Willie Fetzer, Department of Zoology and Physiology

Helping collect long-term data in Wyoming's Upper Snake and Upper Green River watersheds, focusing on zooplankton for Jackson Lake, water quality in the Snake River with a FLAMe device, and assisting with stream temperature and lake buoy networks, as well as fish community sampling.

Graduate Students

Tristan Blechinger
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 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.

Postdoctoral Scholar

Carly Olson Postdoctoral Research Associate, Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology	Working to adapt existing lake ecosystem models to understand how Wyoming reservoir biogeochemistry will respond to future climate scenarios.

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

Martha Inouye 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

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
Bart Geerts 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 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.

Clare Gunshenan 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.

Graduate Student

Andrea Hagadorn Master's student, Haub School of Environment and Natural Resources	Working with Martha Inouye and Clare Gunshenan supporting the Teacher-Researcher Knowledge Exchange (TRKE), bringing K-12 teachers, researchers and non-formal educators together to create collaborative spaces for mutual benefit.

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

Shannon Albeke 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

Samantha Ewers 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 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 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 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

David Finnoff Professor, 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

Nino Abashidze Assistant Professor, Economics	
Mahdi Asgari Post-doctoral Research Associate, Department of Agricultural and Applied Economics	Working on the continuation of the hydro-economic modeling in the region.
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.

Graduate Students

Chandler Hubbard PhD Student, Research Assistant with Todd L. Cherry, 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

Todd Cherry Professor, 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 PhD student in Hydrological Science	Conducted survey of anglers who have bought fishing licenses in Teton County to gauge the impact of climate change on the local angling industry. Planning to expand study to other fishing destinations throughout Wyoming.
Peyton Loss Master's Student, Agricultural and Applied Economics 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 Assistant Professor, Zoology & Physiology, 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

Bryan Shuman – 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.

Graduate Student

Sara McCullough PhD candidate, 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

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

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.
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.
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.
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.

Graduate Students

Bryce Shoup PhD Student with Williams Lab, Research Assistant with Dave Williams, Department of Botany	Working on issues of water quality and quantity.
Samantha Dilworth 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 PhD Student in the Hydrologic Sciences Program, 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

Corrine Noel Knapp Associate Professor, Department of Environment and Society, Haub School of Environment & Natural Resources	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 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 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 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 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.

Jeff Hamerlinck Director and Senior Research Scientist, 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 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.

Postdoctoral Scholars

Caitlin Ryan Postdoctoral Research Associate, Scenario Planning	Scenario Planning: designing and carrying out workshops that help communities on the three river basins plan and strategize for climate-driven uncertainties related to water.

Graduate Students

Peyton Loss Master's Student, Agricultural and Applied Economics, 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 Graduate Research Assistant with Corrie Knapp, Haub School of Environment & Natural Resources	Conducting an institutional analysis to understand how agricultural water users are adapting to changing water availability in the Green River Basin. Also assisted with an internal WyACT water stakeholder assessment.

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

Todd L. Cherry Professor, 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

Kristen Landreville 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 Professor, 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

Peri Brimley 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 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 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 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

Kristen Landreville 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

Hye Soo Nah 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 will allow the impact of the grant to last beyond the 5-year project.

Team Leader

Corrine Noel Knapp Associate Professor, Department of Environment and Society	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

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.

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

Mary Keller
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
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
Director and Senior Research Scientist, 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.

Jake Hawes
University of Wyoming School of Computing and Haub School of Environment and Natural Resources

Aiming to leverage downscaled climate models and large-scale community engagement, including the elaborate scenario planning processes, to developed more useful coupled models that incorporate both natural and human drivers of change in Wyoming's communities.

Bryan Shuman
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

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.

Caitlin Ryan
Postdoctoral Research Associate, Scenario planning

Scenario Planning: designing and carrying out workshops that help communities on the three river basins plan and strategize for climate-driven uncertainties related to water.

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 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

Clare Gunshenan 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 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:

Bryan Shuman 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.
Ashley Babcock PhD Student, Hydrological Sciences	Coordinating the Snake River Headwaters Climate Assessment, analyzing the relationship between drought and lake levels in each of the three headwater basins.

Initial Pilot modeling team

Faculty & Staff

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.
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.
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.
Annika Walters 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 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 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

Caitlin Ryan Postdoctoral Research Associate, Scenario Planning	Scenario Planning: designing and carrying out workshops that help communities on the three river basins plan and strategize for climate-driven uncertainties related to water.
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.

Graduate Student

Patrick Hofstedt PhD Student in Hydrological Science	Conducted survey of anglers who have bought fishing licenses in Teton County to gauge the impact of climate change on the local angling industry. Planning 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.

Postdoctoral Scholars

Caitlin Ryan Postdoctoral Research Associate, Scenario Planning	Scenario Planning: designing and carrying out workshops that help communities on the three river basins plan and strategize for climate-driven uncertainties related to water.

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

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

Mahdi Asgari Post-doctoral Research Associate, Department of Agricultural and Applied Economics	Working on the continuation of the hydro-economic modeling in the region.

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	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.
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

Caitlin Ryan Postdoctoral Research Associate, Scenario Planning	Scenario Planning: designing and carrying out workshops that help communities on the three river basins plan and strategize for climate-driven uncertainties related to water.

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

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.
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.
Weichen Liu – Postdoctoral Researcher, Atmospheric Sciences	Focusing on quantifying the risks and potential impacts of wildfire change on vulnerable ecosystems, water resources, and extreme weather, with a particular emphasis on wildfire behavior and its cascading effects on the environment and climate change.

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 Assistant Professor, Economics	
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.
Jake Hawes University of Wyoming School of Computing and Haub School of Environment and Natural Resources	Aiming to leverage downscaled climate models and large-scale community engagement, including the elaborate scenario planning processes, to developed more useful coupled models that incorporate both natural and human drivers of change in Wyoming's communities.
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.

Postdoctoral Scholars

Tyler Joseph Mitchell Postdoctoral Researcher, Department of Ecosystem Science and Management	Research focused on process-based forest landscape modeling with a particular emphasis on wildfire in the Central Rocky Mountain region.

WyACT Team Directory by Alphabet

Dr. Pramod Adhikari

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

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

Mahdi Asgari

Post-doctoral Research Associate, Department of Agricultural and Applied Economics

mmasgari@uwyo.edu

About

I am an agricultural economist by training. I study water economics and policy in the U.S. West, focused on water allocations in the Colorado River Basin. I started developing a hydro-economic model for the Green River Basin when I joined the Department of Agricultural and Applied Economics, University of Wyoming as a post-doctoral research associate.

Vision/scope for WyACT

My contribution to WyACT would be the continuation of the hydro-economic modeling in the region. These models are great tools to estimate regional economic impacts of various policy scenarios under different climate projections. So, I hope that our work would ultimately inform stakeholders including water users, water managers, and policy makers in Wyoming and in the Colorado River Basin.

Publication relevant to my work with WyACT

Threading the Needle: Upper Colorado River Basin Responses to Reduced Water Supply Availability (with Kristiana Hansen). Choices Magazine. Forthcoming.

Links to understand more of my work

LinkedIn profile
Google Scholar

Ashley Babcock

PhD Student, Hydrological Sciences

ababcoc5@uwyo.edu

About

My background is in physical geography and natural science education. I have spent most of my life in the headwaters of the Colorado and the Snake, skiing and running rivers, which is how I found my way to hydrology. I am interested in the intersections of hydrology, ecology, soil, food, and climate. It is an honor to contribute to WyACT because transdisciplinary work and each of the river systems and in this project are important to me.

Vision/scope for WyACT

My work will focus on coordinating the Snake River Headwaters Climate Assessment. As part of that, I plan to analyze the relationship between drought and lake levels in each of the three headwater basins.

Projects relevant to my work with WyACT

Before starting this program, I worked with Teton County and many community partners to coordinate and develop their recently adopted Water Quality Master Plan. I also participated in the 2023/24 cohort of the Ruckelshaus Institute's Collaborative Program in Natural Resources.

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

Sean Bertalot

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.

Tristan Blechinger

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.

Peri Brimley

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-economics/current-students.html

Dr. Melissa Bukovsky

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.
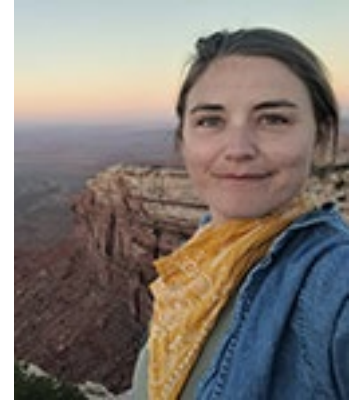
Link to understand more of my work
- https://scholar.google.com/citations?hl=en&user=WV1vAqsAAAAJ

Emma Carlson

Knowledge Coproduction Coordinator

ecarlso9@uwyo.edu

About

I am a recent graduate from the Haub School with a Master of Science in Environment, Natural Resources & Society, where I focused on community resilience, storytelling, and collaboration. My work spanned both international research and domestic projects, including supporting the Collaborative Practicum in Natural Resources (CPNR) with the Ruckelshaus Institute and assisting in community trail planning charrettes for Wyoming Pathways. I am passionate about connecting communities to resources and amplifying the voices of those affected by landscape and climate challenges. I am interested in understanding how solutions on a local and global scale can inform one another to create stronger, more adaptive communities.

Vision/scope for WyACT

I'm excited to step into the role of Knowledge Coproduction Coordinator, where I'll be acting as a bridge between partners on the ground and our WyACT team — helping to connect research and practice that supports local knowledge, water stewardship, and resilient futures across Wyoming. I look forward to collaborating with and learning from folks who care deeply about these watersheds and the communities that depend on them.

Nicholas William Case

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

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

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

Tim Corrie

Ph.D. Student, Research Assistant with Stefan Rahimi, Department of Atmospheric Science

tcorrie@uwyo.edu

About
Research Atmospheric Rivers' (ARs') response to climate change. Additionally, analyzing how bias correction impacts affect historical and future ARs, and as a result, land-surface hydrology across the Western US.

Kinsale Day

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

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

former project member:
Dr. Weston M. Eaton

Contributed 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
- https://scholar.google.com/citations?user=ggR5CW4AAAAJ&hl=en
- https://www.researchgate.net/profile/Weston-Eaton-2

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

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.
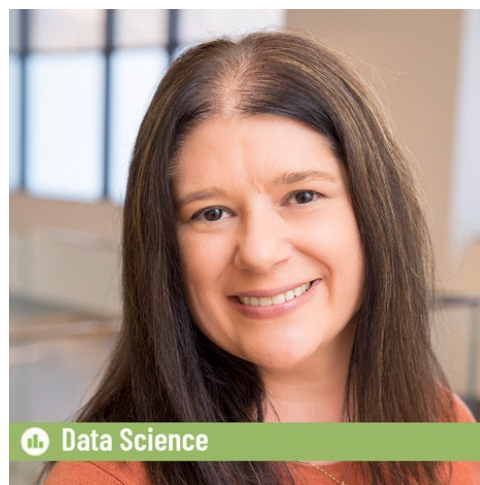
Vision/scope for WyACT

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

Dr. William Warren Fetzer

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

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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

Dr. Anderson Ribeiro de Figueiredo

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

Dr. David Finnoff

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

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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

PhD Student, Research Assistant with Todd L. Cherry, 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.

Bryana Funk

PhD in Hydrologic Sciences student, WRESE

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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

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

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/

Dr. Bart Geerts

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

Clare Gunshenan

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

Andrea Hagadorn

Graduate Research Assistant
Haub School of Environment and Natural Resources

ahagador@uwyo.edu

About

I am a graduate student pursuing a Master of Science degree in the Environment, Natural Resources, and Society program. My research interests include investigating how media and societal factors influence sustainability practices across various communities and societies, as well as identifying methods for reducing resource consumption.

Prior to graduate school, I earned a Bachelor of Science in Geospatial Science from the U.S. Air Force Academy, which began my 10-year long career as an Air Force Intelligence Officer. My career in the Air Force afforded me opportunities to explore and appreciate Earth's natural wonders, inspiring me to pivot towards a career in environmentalism.

Vision/scope for WyACT

As a Graduate Research Assistant, I am working with Martha Inouye and Clare Gunshenan supporting the Teacher-Researcher Knowledge Exchange (TRKE). By bringing K-12 teachers, researchers and non-formal educators together, TRKE aims to create collaborative spaces for mutual benefit, while also enabling Wyoming communities to anticipate and plan for change.

Dr. Jeffrey D. (Jeff) Hamerlinck

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

Data Science

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

Dr. Kristiana Hansen

Associate Professor, Extension Water Resource Economist
Department of Agricultural and Applied Economics
WyACT Co-PI

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.
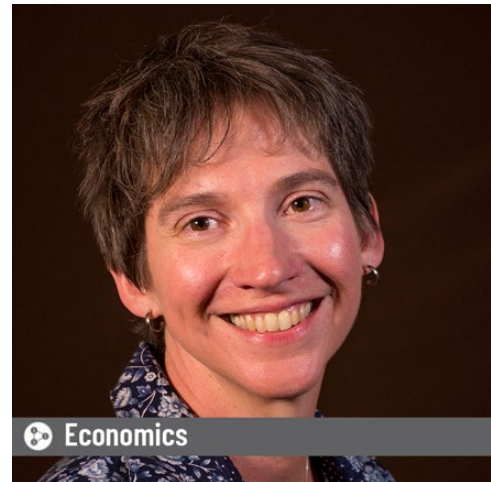
Vision/scope for WyACT
I wear two hats on the WyACT project. I am an agricultural economist who has engaged in applied, interdisciplinary research on how agricultural, municipal, and recreational water users respond to changes in water availability in Wyoming and elsewhere in the West. I am also an Extension 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

Jake Hawes

jhawes@uwyo.edu

About

Jake Hawes recently joined the University of Wyoming School of Computing and Haub School of Environment and Natural Resources. His work focuses on coupled natural-human system modeling, with a particular focus on food-energy-water systems. He employs mixed social science methods alongside spatial science and industrial ecology to capture the impacts of climate change mitigation and adaptation on people, places, and the planet. In doing so, his work traces tradeoffs and synergies between sustainability, resilience, and justice. Before joining UW, Hawes worked for Idaho National Laboratory in the Critical Infrastructure Security and Resilience division, and he completed his PhD at the School for Environment and Sustainability at the University of Michigan.

Vision/scope for WyACT

Looking forward to diving back into water in the west after a few years away. The climate-water-people nexus in the American west is so complex that it absolutely requires big projects like this to make sense of interventions and next steps. I'm hopeful that we can bridge the gap between large-scale, quantitative and small-scale, rich, qualitative data as part of this project - integrating the numbers and the lived experience in the river basins.

Publications with themes related to the WyACT focus

- Caputo, Silvio, Victoria Schoen, Kathrin Specht, Baptiste Grard, Chris Blythe, Nevin Cohen, Runrid Fox-Kämper, Jason Hawes, Joshua Newell, and Lidia Poniży. "Applying the Food-Energy-Water Nexus Approach to Urban Agriculture: From FEW to FEWP (Food-Energy-Water-People)." Urban Forestry & Urban Greening, December 16, 2020, 126934. https://doi.org/10.1016/j.ufug.2020.126934.
- Hawes, Jason K., Morey Burnham, Margaret V. du Bray, Vicken Hillis, Zhao Ma, and Katrina Running. "Social Vulnerability to Irrigation Water Loss: Assessing the Effects of Water Policy Change on Farmers in Idaho, USA." Environmental Management, January 5, 2022. https://doi.org/10/gnz5j4.
- Kirby, Caitlin K., Kathrin Specht, Runrid Fox-Kämper, Jason K. Hawes, Nevin Cohen, Silvio Caputo, Rositsa T. Ilieva, et al. "Differences in Motivations and Social Impacts across Urban Agriculture Types: Case Studies in Europe and the US." Landscape and Urban Planning 212 (August 1, 2021): 104110. https://doi.org/10/gjsqbq.
- Limerick, Samuel, Jason K. Hawes, Dimitrios Gounaridis, Nevin Cohen, and Joshua P. Newell. "Community Gardens and the 15-Minute City: Scenario Analysis of Garden Access in New York City." Urban Forestry & Urban Greening 89 (November 1, 2023): 128107. https://doi.org/10.1016/j.ufug.2023.128107.

Personal website
LinkedIn profile

Patrick Hofstedt

PhD student in Hydrological Science

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

I have conducted 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

Shay Howlin

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

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

Social Science

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

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

Dr. Corrine (Corrie) Noel Knapp

Associate Professor, Environment and Society, Haub School of Environment and Natural Resources
Director, Center for Rural Resilience and Innovation

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

Dr. Sarah Konrad

Associate Project Director

skonrad@uwyo.edu

Project Administration

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

Dr. Kristen Landreville

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

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

Weichen Liu

Postdoctoral researcher, Atmospheric Sciences

wliu2@uwyo.edu

About

Dr. Liu specializes in integrating high-resolution wildfire simulations with climate and socio-economic models to assess the impacts of climate change on fire behavior and community resilience. She focuses on understanding and reducing uncertainties in wildfire risk predictions by examining the interplay between climate variables and fire dynamics. Her research aims to improve projections and inform more effective adaptation and risk management strategies in a changing climate.

Vision/scope for WyACT

I participate in the wildfire and climate interaction modeling wing of WyACT, and I am eager to collaborate with others. My focus is on quantifying the risks and potential impacts of wildfire change on vulnerable ecosystems, water resources, and extreme weather, with a particular emphasis on wildfire behavior and its cascading effects on the environment and climate change.

Google Scholar

Peyton Loss

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

Nichole Lumadue (she/her/hers)

Education & Outreach Coordinator

nlumadue@uwyo.edu

About

As the current Education and Outreach Project Coordinator for WyACT, 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/

Sara Renea McCullough

PhD Candidate, 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.

Tyler Joseph Mitchell

Postdoctoral Researcher, Department of Ecosystem Science and Management

tmitch18@uwyo.edu

About

I am a postdoctoral researcher working with Tucker Furniss in the Department of Ecosystem Science and Management and the CoLABorative for Intersectoral Modeling of the Earth System (CLIMES). My research focuses on process-based forest landscape modeling with a particular emphasis on wildfire in the Central Rocky Mountain region of the United States. I am also interested in modeling pine radial growth responses to particular types and intensities of precipitation.

Vision/scope for WyACT

I am excited to contribute to CLIMES and to work collaboratively with the amazing interdisciplinary team at WyACT!

Links to understand more of my work

Google Scholar: https://scholar.google.com/citations?user=fVIX3dYAAAAJ

Hye Soo Nah

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.
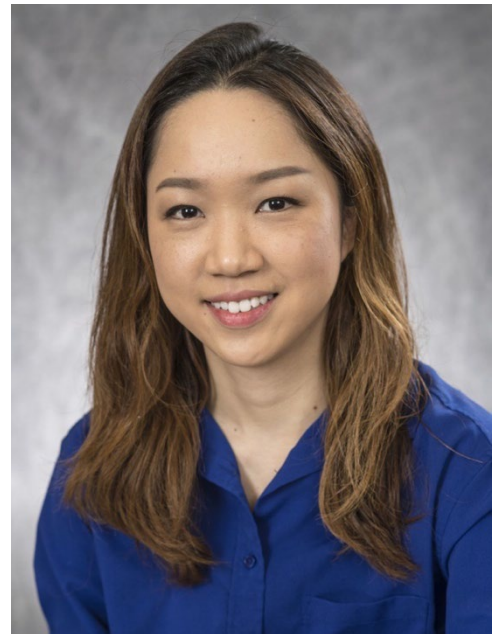
Vision/scope for WyACT

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.

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

Dr. Fabian Nippgen

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

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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 am conducting an institutional analysis to understand how agricultural water users are adapting to changing water availability in the Green River Basin. Also assisted with an internal WyACT water stakeholder assessment.

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

Carly Olson

Postdoctoral Research Associate, Wyoming Cooperative Fish and Wildlife Research Unit, Department of Zoology and Physiology
colson34@uwyo.edu

About

I am an aquatic ecosystem ecologist who leverages both data and theory to quantify the role, and interaction, of multi-scale drivers in dictating patterns of lake biogeochemistry. Much of my research has focused on linking the limitation-status of phytoplankton to ecosystem-scale processes such as lake metabolism and carbon sequestration. All of my research is conducted within the context of global change drivers such as eutrophication and climate change.

Vision/scope for WyACT

With the WyACT project, I'm working with the Aquatic Ecology team to understand how Wyoming's water resources will respond to future climate scenarios. First, I'll be working with several limnological data types collected from Jackson Lake and Boyson Reservoir to understand baseline spatiotemporal variation in water quality parameters. Second, I will adapt existing lake ecosystem model(s) to simulate future responses of Jackson Lake biogeochemistry to different climate scenarios.

Publications relevant to my work with WyACT

- Olson, C.R. and Jones, S.E. (2022), Chlorophyll–total phosphorus relationships emerge from multiscale interactions from algae to catchments. Limnol. Oceanogr. Lett, 7: 483-491. https://doi.org/10.1002/lol2.10281

- Oleksy, I. A., Solomon, C. T., Jones, S. E., Olson, C., Bertolet, B. L., Adrian, R., et al. (2024). Controls on lake pelagic primary productivity: Formalizing the nutrient-color paradigm. *Journal of Geophysical Research: Biogeosciences*, 129, e2024JG008140. https://doi.org/10.1029/2024JG008140

Cory Ott

PhD Student in the Hydrologic Sciences Program
cott5@uwyo.edu

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,

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

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

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Caitlin Ryan

Postdoctoral Research Associate, Scenario Planning

Caitlin.ryan@uwyo.edu

About

I am a human geographer studying the socio-economic, political and institutional 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 socio-ecological systems, critical development geographies, regional and municipal planning, humanitarian and disaster response, and peace and conflict studies. I have expertise in research design and a range of qualitative methods that prioritize participant-led and collaborative approaches to knowledge production.

My dissertation explored histories of urban transformation, development, and 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 a volunteer Editor with the Boulder Housing Network, which seeks to bring more pro-housing affordability voices to the city of Boulder's planning meetings. Before coming to UW, I taught courses in international development, geographies of global change, global public health, and introductory human geography with the University of Colorado Boulder's Department of Geography.

Vision/scope for WyACT

My main focus is on Scenario Planning, a set of futures-oriented, participatory research methods that I use to help Wyoming headwater communities plan for, and adapt to, climate-driven changes to the water resources that affect their linked environmental and social systems. I am also exploring how uncertainty about the climate future affects the decisions and actions of land managers, county and municipal leaders, and the public. I am particularly excited about the possibilities for scenario planning to bridge traditional, local and academic knowledge systems, to engage in interdisciplinary and co-produced science, and to think about the possibilities for connecting integrative modeling with local planning around climate-related adaptation strategies. Also, with WyACT, I am exploring an institutional analysis of decision making around water for the Wind River basin.

Publications relevant to my work with WyACT

- Ryan, Caitlin M., A. de Figueiredo, M. Keller and J. Hamerlinck (In preparation, abstract accepted to special issue). "Communicating Uncertainty about Climate Change through Scenario Planning: An Engaged Approach to Knowledge Co-Production and Transdisciplinary Scholarship," Annals of the Association of American Geographers.
- Ryan, Caitlin M. 2024. "The Upper Snake River's Climate Future: Scenario Planning for Uncertainty." Research Brief. University of Wyoming, Laramie: Wyoming Anticipating the Climate-Water Transition. August.
- Knight, Ethan., S. Arens, K. Clifford, B. Duncan, E. Knight, C.M. Ryan and W. Quiles-Guzman. 2023. "Lander Climate Hazard Planning for Flooding: Workshop Final Report." Western Water Assessment: Boulder, CO.
- 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. doi: 10.1111/gere.12360

Links to understand more of my work

- LinkedIn
- Google Scholar
- Boulder Housing Network

Bryce Shoup

PhD Student with Williams Lab, Department of Botany

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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.

Dr. Bryan N. Shuman

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

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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

Kaitlin Smith

Graduate Student
Department of Atmospheric Science

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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.

Dr. Tarissa Spoonhunter

Assistant Professor, Haub School of Environment and Natural Resources

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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!

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.

Luke Todd

Geospatial Analyst, Assistant Research Scientist

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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.

Kyle Trumble

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](#)

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/

Chuck Williams

Research Assistant with Sarah Collins, Annika Walters, and Willie Fetzer, Department of Zoology and Physiology

mailto:mcwill104@uwyo.edu

About

I am an experienced field technician who has spent the last seven years exploring and studying aquatic ecosystems in the pacific northwest and intermountain west regions of North America. I joined the WyACT project in 2024 as a Research Assistant for the Aquatics team. Outside of work, I spend most of my free time rafting, fishing, or snowboarding. Between work and play, any time on the water is time well spent!

Vision/scope for WyACT

I will help develop long-term data collection in the Upper Snake and Upper Green River watersheds of Wyoming. Primarily, I will be focusing on utilizing zooplankton to observe environmental change in Jackson Lake and monitoring water quality in the Snake River using a Fast Limnological Automated Measurements (FLAMe) device. I will also be assisting in data collection for a stream temperature network, a lake buoy network, and will conduct fish community sampling.

Presentation relevant to my work with WyACT

Poster Presentation "LONG-TERM MONITORING OF ENVIROMENTAL CHANGES USING ZOOPLANKTON" at Association for the Sciences of Limnology and Oceanography (ASLO) annual meeting in June 2024.

LinkedIn profile

Dr. David G. Williams

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

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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

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

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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