GRADUATE PRE-PROJECT SYMPOSIUM

FRIDAY, APRIL 12, 2024

DEPARTMENT OF ENVIRONMENT AND SOCIETY

2024 GRADUATE PRE-PROJECT SYMPOSIUM

APRIL 12TH 1:30 P.M. - HUNTSMAN HALL 320

ABOUT THE SYMPOSIUM

One of the most difficult challenges for a new researcher is to learn how to convey complex, often unfamiliar ideas to a diverse audience of scholars in the space of a few minutes. Today's event offers Environment and Society graduate students a chance to practice making a presentation for a scientific meeting. Rather than waiting for the thesis or dissertation defense, this symposium is an opportunity for graduate students to present their ideas to an audience of peers and professors, at a time when they're just beginning to focus on a researchable problem.

THE PRESENTERS

We will hear from 7 Ph.D. and M.S. students in degree programs in Environment and Society and in Ecology. Each will describe how they propose to undertake the research that will form the basis for their thesis or dissertation. Some students are just beginning to determine how best to tackle their topic of interest. Others may have already started their research process, but still can benefit by further developing their ideas as influenced by the insights of their colleagues in the department, college, and university.

FORMAT OF PRESENTATIONS

Each student has prepared a 15-minute presentation, which will be followed with 5 minutes of questions and answers. Please use this opportunity to improve the work of your colleagues.

SCHEDULE

1:30 P.M.	CLAUDIA RADEL - OPENING REMARKS
1:35 P.M.	EMMA EPPERSON, M.S. ENVIRONMENT AND SOCIETY
1:55 P.M.	BAILEY HOLDAWAY, M.S. ENVIRONMENT AND SOCIETY
2:15 P.M.	LANE ARTHUR, M.S. ECOLOGY
2:35 P.M.	ANNA MCENTIRE, PH.D. ENVIRONMENT AND SOCIETY
2:55 P.M.	BREAK (15 MIN)
3:10 P.M.	SAVANNAH ATKINS, PH.D. ECOLOGY
3:30 P.M.	BRYN WATKINS, M.S. ENVIRONMENT AND SOCIETY
3:50 P.M.	JESSICA BRUCK, M.S. ECOLOGY
4:10 P.M.	CLOSING REMARKS

ABSTRACTS

EMMA EPPERSON

IIMPLICATIONS OF TOURISM AND CLIMATE CHANGE ON LOCAL OUTDOOR RECREATION IN AMENITY-ORIENTED COMMUNITIES

Outdoor recreation is a direct contributor to individual and community wellbeing. Changing environmental conditions, amenity migration, and an increase in tourism in the Intermountain West creates challenges to connections between outdoor recreation and wellbeing. Increased risk of extreme weather events, higher temperatures, and environmental degradation attributable to overuse and pollution place a strain on the wellbeing benefits of outdoor recreation, particularly in rural areas with stronger amenity orientations and longstanding outdoor recreation traditions. For my thesis, I plan to obtain a deeper understanding of how local outdoor recreation in amenity communities is influenced by tourism and climate change. A case study approach will guide this research. The first case study draws from a broader study of community wellbeing in Kittitas County in Washington, U.S., in which local leaders and community members shed light on the role of outdoor recreation and community wellbeing, alongside the challenges that threaten this connection. The second case study will focus on Springdale, Utah, a gateway community near Zion National Park, and will draw upon findings from the Utah Wellbeing Survey conducted in 2024 and additional place-based research and interviews. These two communities have different amenity settings but share similar experiences regarding demographic and environmental change. In addition to studying these two community settings, this research and engagement effort will highlight resources and strategies for amenity communities facing demographic and environmental challenges and track how leaders and residents in these case study communities respond. The latter inquiry will shed light on how amenity communities adapt and adjust to change through shared learning and connections with other communities.

BAILEY HOLDAWAY

RISK PERCEPTIONS AND WATER GOVERNANCE: EXPERIENCES OF LOCAL WATER MANAGEMENT ORGANIZATIONS IN THE GREAT SALT LAKE BASIN OF NORTHERN UTAH, UNITED STATES

The Great Salt Lake (GSL) located in Northern Utah, USA is experiencing declining water levels associated with climate change and upstream water consumption, particularly from agriculture. This decline has negative economic consequences for industries such as mineral extraction and brine shrimp harvesting, ecological impacts on migratory bird populations, and health risks due to exposed toxic dust on the lakebed. Thus, water governance and management in the GSL basin is a top priority locally and regionally. Local Water Management Organizations (LWMOs), which include irrigation companies, are on-the-ground entities that maintain water infrastructure and manage water delivery for agricultural and other stakeholders. These companies and their potential to impact water management make them important actors to study in the context of the drying GSL. This thesis will assess if and how these irrigation companies view the GSL levels as a risk, what water management adaptations are being considered or taken, and what barriers exist to said adaptations. We also seek to understand how the location and capacity of these companies may or may not affect risk perceptions and resulting decision-making. Systematic characterization of hundreds of irrigation companies in the GSL Basin resulted in a typology based on water flow rates and volumes of water managed that are tied to company-held water rights. This typology guided stratified sampling of irrigation companies from low to high flow/volume rights as well as GSL subbasin location. Qualitative research interviews will be conducted with irrigation companies in the GSL basin watersheds. It is hypothesized that considerable heterogeneity among irrigation companies will be found when it comes to perceiving and adapting to risk in general and concerning the risk of the drying GSL specifically. The findings may support concerted, multifaceted efforts to address challenges and risks related to declining lake levels and highlight the key role of LWMOs in addressing local-to-regional scale water governance and management. Findings may also highlight the feasibility of various water optimization and other efforts to direct flows to the GSL or generally conserve water in the irrigation arena.

LANE ARTHUR

EVALUATING THE SPATIAL AND TEMPORAL IMPACT OF MOUNTAIN BIKING AND OTHER RECREATION ON MULE DEER AND OTHER WILDLIFE ACROSS UTAH'S WILDLIFE MANAGEMENT AREAS: A MIXED-METHODS APPROACH

Parks and protected areas (PPAs) around the world are becoming increasingly important and increasingly popular. Through their ability to offer both biodiversity conservation and places for humans to recreate, these areas are important to the landscape as they serve multiple purposes. Although, challenges arise between preserving the landscape and offering opportunities for ecosystem services to occur sometimes causing conflicting management goals. Utah's Wildlife Management Areas (WMAs) are places where Utah's wildlife and recreational user groups can go to enjoy protected area lands. Recently, these areas have seen an uptick in recreational use that may hinder their management objectives. This study will examine the spatial and temporal effects of recreational use on Utah's WMAs and the wildlife that resides within. Additionally, this study will examine user perceptions and desires of WMAs. As recreational use of these lands continues to increase, it will be important to study the impact recreation has on the habitat and wildlife these areas are managed to protect. Understanding how recreationists view the use and purpose of these lands will give managers insight on how to shape messaging towards conservation of these lands as well as how to manage for more uses the public would like to see into the future. Using a mixed-methods approach, this study will examine the ecological and social components of recreation on Utah's Wildlife Management Areas.

ANNA MCENTIRE

UTAHNS' ATTITUDES AND VALUES ON GREAT SALT LAKE

When it comes to Great Salt Lake, are we talking past each other? The Future of Great Salt Lake Survey polled a statewide sample of Utah citizens on their attitudes about the lake and how they expect local government, state government—and themselves—to address challenges related to the lake and other water concerns. Survey results show how Great Salt Lake is a focusing point for broader discussions on managing water to help secure Utah's future. At the same time, there are significant differences in how citizens think about and talk about the lake. A lack of shared understanding can stymie efforts to create beneficial policies, but identifying and speaking to our shared values can assist in creating a unified approach to Great Salt Lake policy. I am conducting a content analysis of responses to open-ended questions from the survey. Respondents were asked to complete the sentence "The future of Great Salt Lake…," and their interpretations and responses varied widely, providing rich insight into their broader values and motivations. This work expands on analysis contained in Future of the Great Salt Lake Survey – A 202 Environment & Society Graduate Pre-Project Symposium3 USU Research Report, by Drs. Lisa W. Welsh, Joanna Endter-Wada, Karin M. Kettenring, and myself. This project will be part of an expanded investigation of how different institutions have communicated about Great Salt Lake during its water crisis.

SAVANNAH ATKINS

IMPLICATIONS OF GRAZING INTENSITY FOR DRYLAND SOIL CARBON STORAGE ON THE COLORADO PLATEAU

Drylands present a substantial opportunity for climate change mitigation because they cover more than 45% of terrestrial surfaces and are characterized by soils with a potential for long-term carbon storage. However, drivers of dryland soil carbon cycling remain poorly understood. In the United States, drylands cover 40% of landmass, of which, 90% are managed as rangelands. Domesticated animal grazing is historically associated with soil carbon loss, however, recent advancements in grazing management strategies have resulted in significant soil carbon sequestration in mesic systems. Applying these management strategies in drylands could assist in achieving lofty climate mitigation goals, but drylands are characterized by complex heterogeneric factors, making measuring and managing soil carbon stocks difficult.

Here, we aim to better understand the influence of grazing intensity on soil carbon stocks in southeast Utah by combining field sampling with Bureau of Land Management cattle grazing permitting and vegetation data from the Assessment, Inventory and Monitoring Program. We hypothesized that intermediate grazing intensity increases vegetation biomass through tillering and root production to stimulate carbon accumulation. Conversely, soil carbon gains will not be observed in low and high grazing intensity sites because these grazing strategies do not promote excess vegetation growth or inhibit plant growth through excess removal, respectively. Preliminary data suggests that grazing intensity has significant effects on soil carbon pools and that the effects of grazing intensity may be site-specific due to variations in vegetation class and microhabitats.

BRYN WATKINS

THE FRICTION OF GROWTH: HOW UTAH'S DIVERSE FARM COMMUNITY IS REACTING TO CLIMATE AND ECONOMIC PRESSURES

Utah is a contradiction: the second driest state in the union which, nevertheless, has a robust history of agriculture. It also projects 66% growth over the next 50 years, during a period in which the climate is expected to grow 6°F hotter on average, resulting in measurably different conditions for those who grow food." Accordingly, we must understand the way Utah's agricultural industry might sustainably navigate growth to ensure the resiliency of our economies, ecologies, and cultures amid the coming changes. For my project, I propose to examine growth pressures within Utah's agriculture on two scales. In my first chapter, I will probe commodity crop farmers' perspectives on development friction in the Great Salt Lake Basin. As aridification threatens livelihoods, human health, and delicate ecosystems, the exchange of water-intensive hay farming for houses offers an alluring solution to the water crisis. My semi-structured interview process will highlight the ways in which farmers are embedded in historical systems of culture and economy through their relationships to water and land; simultaneously, it will give shape to the development pressures farmers face as Utah's population swells. In my second chapter, I will probe artisan farmers' perspectives on future growth and economic participation. Given the tension between the steady state that equilibrates sound ecology and the globalized capitalism which encourages profit-orientation, the future of local agriculture may depend upon a certain philosophical reconciliation between the two. Using a quantitative survey, I will seek to better understand growers' tolerance for trade-offs angled toward a future that may require them. By weaving together the narratives and challenges of these two farming communities, my work seeks to provide a comprehensive analysis of how agriculture in Utah can evolve in response to projected demographic and climatic changes. This thesis aims to chart a course for the future of food systems in a rapidly transforming state, highlighting the critical role of farmers—regardless of scale—in navigating and shaping a transition towards sustainable growth.

JESSICA BRUCK

A CLASSIFICATION OF VISITORS AND SITES ACROSS RECREATION AREAS IN THE ROARING FORK VALLEY, COLORADO, USA

To provide a diverse range of opportunities to visitors, land managers frequently apply zoning frameworks to identify unique recreation opportunities present on a landscape. A foundational framework within recreation management literature is the Recreation Opportunity Spectrum (ROS). This planning framework was designed to connect the biophysical, managerial, and social characteristics of a setting with compatible recreation opportunities (Brown et al., 1978; Clark and Stankey, 1979). Currently, there are few studies that empirically evaluate the connection between the desired social experience and the biophysical and managerial characteristics of a setting; there also exist few studies that examine the application of the ROS framework across a variety of sites, primarily focusing on applications in wilderness or front country settings. The fourteen sites used for this analysis span across a range of urban-proximate to wilderness areas in the Roaring Fork Valley (RFV) in Western Colorado. First, my research will identify key motivations for recreation in the RFV to derive visitor typologies and evaluate patterns of spatial behavior across sites. Additionally, this research will build upon existing zoning research to empirically test the relationship between visitor motivations (i.e. social) and the managerial and biophysical characteristics of these settings. The aim of this research is to provide a better understanding of the relationship between the desired visitor experience and a variety of recreation settings to inform sustainable management strategies throughout the region.