
GRADUATE PRE-PROJECT
SYMPOSIUM
FRIDAY, APRIL 10TH
1-5 P.M. HH 130

DEPARTMENT OF ENVIRONMENT AND SOCIETY

2026 GRADUATE PRE-PROJECT SYMPOSIUM

APRIL 10TH 1:00 P.M. - HUNTSMAN HALL 130

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 11 Ph.D. and M.S. students in degree programs in Environment and Society and 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

1:00 P.M.	CLAUDIA RADEL, DEPARTMENT HEAD - OPENING REMARKS
1:05 P.M.	AHAMED ZAKARIAH, PH.D. ENVIRONMENT AND SOCIETY
1:25 P.M.	ELLIE STANKIEWICZ, M.S. ENVIRONMENT AND SOCIETY
1:45 P.M.	MARTHA ROSE DAWSON, M.S. ENVIRONMENT AND SOCIETY
2:05 P.M.	MAXIMO LAWLOR, M.S. ENVIRONMENT AND SOCIETY
2:25 P.M.	TAYLOR PELTIER, PH.D. ECOLOGY
2:45 P.M.	REFRESHMENT BREAK
3:00 P.M.	CHANDRA RAI, PH.D. ECOLOGY
3:20 P.M.	LANDON RASMUSSEN, M.S. ENVIRONMENT AND SOCIETY
3:40 P.M.	SYDNEE JENSEN, M.S. ENVIRONMENT AND SOCIETY
4:00 P.M.	RAY KAHLER, PH.D. ENVIRONMENT AND SOCIETY
4:20 P.M.	YARA GHABAYEN, M.S. ENVIRONMENT AND SOCIETY
4:40 P.M.	SARAH KOENIGSBERG, PH.D. ENVIRONMENT AND SOCIETY

ABSTRACTS

AHAMED ZAKARIAH

TOURISM'S RIPPLE EFFECT: BALANCING SOCIOECONOMIC AND ENVIRONMENTAL CHALLENGES IN GATEWAY AND NATURAL AMENITY REGIONS

Tourism is a major development force in gateway and natural amenity regions (GNARs), generating economic opportunities while simultaneously intensifying social and environmental pressures that undermine long-term community resilience. This study synthesizes the literature on tourism's ripple effects in North American GNARs through a systematic literature review, designed to identify primary impacts, secondary consequences, and planning responses. The review identified 17 recurring impact characteristics across environmental, social, and economic dimensions, alongside 61 secondary consequences that reveal how tourism-related changes propagate across community and landscape systems. Economic effects were most frequently reported as positive particularly regarding employment, entrepreneurship, tax revenue, and infrastructure investment. Yet these gains were consistently accompanied by social and environmental trade-offs, such as housing unaffordability, migration pressure, congestion, cultural commodification, pollution, waste generation, and wildlife disturbance. The findings demonstrate that tourism impacts in GNARs rarely remain isolated; instead, they interact through reinforcing pathways that intensify governance challenges, service strain, and ecological vulnerability. Sustainable tourism in GNARs thus depends not only on maximizing visitation but also on strengthening housing, mobility, infrastructure, and governance systems to equitably distribute benefits and burdens. These insights position integrated landscape and community planning as essential for sustaining both destination viability and local wellbeing.

ELLIE STANKIEWICZ

A MICROARCHAEOLOGICAL STUDY OF THE HUMAN ACTIVITY AND ENVIRONMENTAL RELATIONSHIPS OF RURAL ASSYRIAN CONSTRUCTION

Earthen construction materials are physical representations of intertwined human activities and environmental conditions that are widely used across the globe. By examining their composition and context within archaeological sites, relationships where this past interconnection are otherwise inaccessible. This study is of the mudbrick construction material of Qach Rresh, an archaeological site in northern Iraq, dated to the end of the Assyrian and post- Assyrian Periods (ca. 700-400 BCE). Joining the NSF-funded Rural Landscapes of Iron Age Imperial Mesopotamia (RLIIM) project, my work will answer questions surrounding what daily rural lives looked like in activity and environment. This study has three aims: to determine the extent to which microarchaeological methods can be beneficial to studies of mudbrick material in Northern Iraq; to increase understanding of rural daily life in the heartland of the end of the Assyrian Empire; and to provide a baseline of environmental conditions at the time of rural agricultural center constructions. I will use microscopic techniques on mudbrick samples of three different buildings (inc. Buildings A, B, and C) to answer questions of sediment makeup and microremain inclusions. Using techniques such as grain size sorting and FTIR (Fourier Transform Infrared Spectroscopy), I will determine where they sourced their resources, how internally consistent mudbrick composition is (indicating whether builders were independent or of one teaching), and if either depended on the purpose of the building. Human activities, such as agriculture, animal management, and dung fuel use can be determined by examining and quantifying micro-remains such as phytoliths and dung spherulites within the mudbricks. If climate markers are present, they will indicate environmental conditions near the site during its initial construction. This study is needed as microscopic analyses have been sparse in Northern Iraq, while these techniques are becoming standardized archaeologically. Overall, this study will examine previously inaccessible past relationships between human activity and the environment in rural Assyrian agricultural centers.

MARTHA ROSE DAWSON

IMPROVING WILDLIFE AGENCY RESPONSE TO INCREASED RECREATION ON UTAH'S PUBLIC LANDS

Human-wildlife interactions are increasing in frequency across the United States, partly due to a rise in recreation on public lands. In the state of Utah, a rapidly growing human population combined with a recreation-driven economy has amplified visitation to parks and protected areas, placing pressure on wildlife habitat across the state. State wildlife agencies are primarily responsible for the conservation and management of wildlife and their habitats; however, recreational use of lands managed by these agencies has expanded beyond their original mandate. As recreation intensifies, there is a dearth of knowledge regarding how state wildlife agencies should manage their lands for both wildlife protection and increasing human use. The purpose of this research is to address this gap in the data and knowledge that state wildlife agencies are using to support their management decisions. Using a mixed-methods approach, semi-structured interviews with selected state wildlife agency staff combined with various forms of spatial data (trail counters, user-created recreation data, GPS-collar data) across Northern Utah can inform how state wildlife agencies can improve their capacity to address human-dimension objectives. Increasing the use of social science by wildlife management agencies is critical for sustaining both wildlife health and recreation economies in rapidly growing states like Utah.

MAXIMO LAWLOR

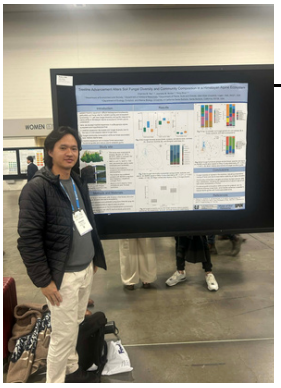
UNDERSTANDING CROSS-BOUNDARY COORDINATION TO ADDRESS HYDROLOGICAL HAZARDS AFTER WILDFIRE

Post-wildfire hydrological hazards such as flooding and debris flows are becoming increasingly common across the western United States. These hazards are a significant threat to water resources, infrastructure, and downstream communities which typically prompt risk mitigation and rehabilitation efforts from governmental, private, and non-profit entities. There is a limited understanding of how government and private entities coordinate rehabilitation of burned areas across complex land ownerships, which has increased the importance of effective post-fire mitigation efforts. This patchwork of land ownership complicates decision making, funding allocation, and implementation of flood mitigation strategies. This research investigates the extent to which agencies and local entities coordinate across land ownerships to address post-wildfire flooding hazards, and whether policy or financial contexts impact these collaborative rehabilitation efforts. The first thesis chapter is a qualitative case study for the 2024 South Fork and Salt Fire in Ruidoso, NM. The second thesis chapter takes five focus groups throughout the state of Utah. Focus groups will be held for the 2018 Dollar Ridge Fire, 2021 Pack Creek Fire, 2021 Parley's Canyon Fire, 2022 Jacob City Fire, and 2025 Forsyth Fire. Each location across both chapters experienced post-fire hydrologic events and activated multiple entities to combat future post-fire hazards. These studies will produce cross-jurisdictional best practices for at-risk communities, implications for policy makers and planners, and future research directions.

TAYLOR PELTIER

USING A SOCIAL-ECOLOGICAL SYSTEMS APPROACH TO UNDERSTAND HUMAN-BLACK BEAR INTERACTIONS

As black bear (Ursus americanus) populations recover across North America, human-bear interactions are also increasing. In Michigan's northern Lower Peninsula, a growing bear population coupled with increasing tourism and changing demographics, has contributed to escalating conflict between people and bears. My dissertation is focused on understanding the social and ecological drivers of human-bear conflict in this region. First, I am using semi-structured interviews with key informants to explore how people view and live with black bears in the area. Second, I will deploy a large-scale, probability-based survey to residents to quantitatively characterize attitudes and acceptance of bears. Finally, I will integrate social survey data with spatial estimates of bear density to identify where coexistence challenges and opportunities may emerge across the landscape. This research aims to inform black bear management strategies that foster coexistence and advance approaches for integrating social and ecological data in human–wildlife interaction scholarship.



CHANDRA RAI

SOCIAL-ECOLOGICAL DYNAMICS OF FOREST EXPANSION INTO ALPINE RANGELAND SYSTEMS OF BHUTAN

Alpine rangelands are critical for pastoral livelihoods yet are increasingly undergoing regime shifts driven by forest expansion, climate changes, and governance transitions. This study develops an emergent social–ecological systems (SES) model of Himalayan alpine rangelands, grounded in the lived experiences of yak herders and perspectives of government officials. Using a qualitative abductive approach, we conducted unstructured interviews with 30 yak herders and 9 government officials across three communities in Laya, Naro, and Merak, Bhutan. Findings indicate that forest expansion is perceived to reduce pasture availability, while climate variability, wildlife predation, and livestock disease further threaten livestock productivity and livelihood security. Rangeland allocation based on yak population under user-right certification following nationalization was viewed as improving fairness, however, herders raised concerns over insufficient rangeland, tenure security, and reduced management autonomy. Livelihood responses differed across communities: Laya and Naro households maintain diversified strategies, whereas Merak households rely more on yak farming with hybrid breeding. Government interventions, including grass seed and infrastructure subsidies, buffer livelihoods but increase dependence and raise concerns about long-term sustainability and future resilience. Government interventions, including grass seed and related infrastructure subsidies, were perceived as buffering support, although herders expressed concern regarding their long-term sustainability. The resulting SES model reveals complex feedback among ecological change, property-rights, and livelihood strategies that generate both positive and negative social and ecological outcomes. Overall, the findings underscore the need for the governance approaches that enhance rangeland management to sustain pastoralism while enhancing ecological sustainability.

LANDON RASMUSSEN

MAPPING GLOBAL PROFESSIONAL PERMACULTURE PATHWAYS: FROM EDUCATION TO LIVELIHOOD

Permaculture has become an influential design framework within regenerative agriculture, ecological restoration, and community resilience movements. It is an ethics-based design framework centered around earth care, people care, and fair share alongside a set of operational principles. Each year, thousands of individuals globally complete Permaculture Design Certificate courses (PDCs). Despite the global reach of permaculture education, very little research has examined how graduates translate this training into viable professional livelihoods. This study investigates professional permaculture pathways through a mixed-methods approach including both qualitative and quantitative research methods. Interviews with experienced practitioners have already been conducted and a global survey (already approved through USU's Institutional Review Board) regarding permaculture professional pathways is being administered this spring. The interviews with educators and practitioners from multiple regions around the world were transcribed using Sonix software and provide insight into the historical development of permaculture education, institutional structures, and emerging challenges within the movement. Our research team is currently in the process of developing a codebook for the qualitative analysis, which will occur using NVivo software. Preliminary interview takeaways suggest that permaculture rarely functions as a discrete profession. Instead, practitioners integrate permaculture into a range of existing occupations, including farming, ecological design, education, community development, and entrepreneurship. Professional pathways are typically nonlinear and hybrid, emerging through mentorship networks, communities of practice, and iterative experimentation with livelihood strategies. Economic sustainability often depends on diversified income streams or reduced consumption models aligned with permaculture teachings and ethics. The study proposes a conceptual model of professional permaculture pathways in which education, social networks, professional identity formation, and livelihood experimentation interact to shape practitioner trajectories. By mapping these patterns globally, this research contributes to understanding how permaculture education translates into professional practice and identifies opportunities for strengthening post PDC mentorship, professional development, and institutional support systems.

SYDNEE JENSEN

THE ENVIRONMENTAL AND SOCIAL IMPACTS OF AI DATA CENTERS IN THE ARID WEST

Artificial intelligence, or AI, is the latest, and arguably one of the most powerful and useful advancements in human technology to date. To keep up with the demand of AI, data centers are being built across the country in states like West Virginia, Texas, and most recently Utah. Utah is the second driest state in the country, and building AI data centers could be detrimental to our already limited water resources. However, the real cost of AI data centers is difficult to estimate at a local scale. I will be focusing specially on the 4000-acre AI data center in Delta, Utah to create a local case study understanding of the impact hyperscale AI data centers have on dryland ecosystems. Additionally, I will use this information to inform how locals in Delta view AI data centers and their perceived risk in terms of the climate change impacts it could cause.

RAY KAHLER

SIMULATINGGROUNDWATER BANKRUPTCYIN ENDORHEIC BASINS: AN AGENT-BASED SOCIO-ECOLOGICALSYSTEMS APPROACH

Water resources in endorheic (closed) basins are stressed by overuse. These basins comprise 20-25% of the world's landmass and are home to over one billion people. Typically, water shortages in literature and public discourse are attributed to cyclical weather patterns, water crises, drought, and climate change. However, with increased water needs and continued use of water resources, these conditions are better described as "groundwater bankruptcy." This implies a structural imbalance between water availability and water use, rather than only hydraulic and weather-related causes. This is not to diminish the effects of climate-related factors, but rather to recognize the structural causes of water availability in endorheic basins. This research examines water use in endorheic basins using an agent-based modeling (ABM) framework. The research focuses on a representative basin, Utah Water Rights Area 73, the Cedar Valley endorheic basin, in southern Utah. The study will evaluate the Socio-Ecological System (SES) of governance, hydrology, and stakeholder interaction on water supply in the basin. The model will be developed in NetLogo and will incorporate game theory decision-making rules to simulate agent behaviors. The research goal is to show SES interactions regarding groundwater use and how changes to decision-making can improve transparency and more equitable water management in waterlimited areas.

YARA GHABAYEN

THE WATER-INTENSITYOF WELL-BEING: AN INTERNATIONALCOMPARISON

The world has moved beyond a water crisis and into a state of global water bankruptcy. Water systems are interconnected through trade, migration, and geopolitical dependencies. Unequal trade systems frequently displace the burdens of water demand onto vulnerable regions, undermining environmental sustainability and human well-being. Despite the significant advances in exploring the relationship between Carbon Intensity and well-being and Energy use and well-being, the specific role of water consumption remains underexplored. Water Intensity of well-being (WIWB) introduces a sustainability metric that is comparable across countries, by combining an environmental and human well-being measure into one indicator. We hypothesize that, like energy and carbon-intensity of wellbeing, measures of well-being increase with water footprint, but reach a saturation point of diminishing marginal returns, where an increased unit of water consumption does not result in an increase in well-being. To test this hypothesis, the thesis employs statistical analysis and regression modeling, utilizing quantitative data from the World Bank and The Water Footprint of Nations. This allows us to examine direct water consumption alongside the indirect, or “virtual, ” water embedded in agricultural and industrial production, accounting for both internal and external water footprints to highlight the role of trade. The analysis then turns to how these footprints correspond with different well-being indicators such as GDP, the Human Development Index, and life expectancy. The resulting comparative analysis provides deeper insight into the global water dynamics that underpin effective sustainability strategies.

SARAH KOENIGSBURG

POND RULES: AN ETHNOGRAPHICEXPLORATION OF BEAVER REWILDING AND RIVERSCAPE RESTORATION THROUGH THELENSESOFCRITICALPHYSICAL GEOGRAPHY, MULTISPECIESJUSTICE, AND THE RHETORICALECOLOGIESOF MULTI-MODALSTORYTELLING

Across North America, the climate change and biodiversity crises are further exacerbating our long-standing challenge to sufficiently remediate the deleterious impacts upon riverscape health caused by past and present anthropogenic degradation. Our go-to band-aid of form-based, engineered approaches to riverscape restoration are proving unable to keep pace with this triage of past, present, and future stressors. Meanwhile, a paddle-tailed, buck-toothed rodent with an obsessive work ethic has been inspiring a different kind of place-based restoration approach, one that supports ecosystem integrity, multispecies wellbeing, and systemic resiliency. In recent years the field of beaver-based restoration (BBR) has been rapidly gaining momentum as a legitimate nature-based solution to ameliorate the impacts of climate change. Beavers' ecosystem engineering via dam-building, tree-felling, and canal-digging precipitate habitat heterogeneity and process resilience that benefit human, physical, and ecological systems simultaneously. The data show: it's time to embrace a riverscape restoration that centers partnering with rather than overpowering the more-than-human world. The challenge of implementing nature-based solutions, however, arises from the same multidisciplinarity that makes them effective—our human systems are inextricably intertwined with the diversity of biophysical systems. Advancing our application of BBR at a meaningful scale will require active and collaborative participation from myriad communities of practice. Our newly formed North American Beaver Knowledge Network (the result of a National Science Foundation, Dynamics of Integrated Social-Ecological Systems, Research Coordinated Network grant) will bring together researchers, managers, restoration practitioners, policymakers, Tribes and First Nations, students, stream-side landowners to assess the current state and future direction of beaver management, science, and relations, at both regional and continental scales. Our task at hand is to integrate and synthesize beaver-related research, policy, management practices, cultural beliefs, and relations of kinship, ultimately facilitating knowledge transfer, identifying gaps, and establishing a framework for improved communication across geopolitical and sociocultural boundaries.