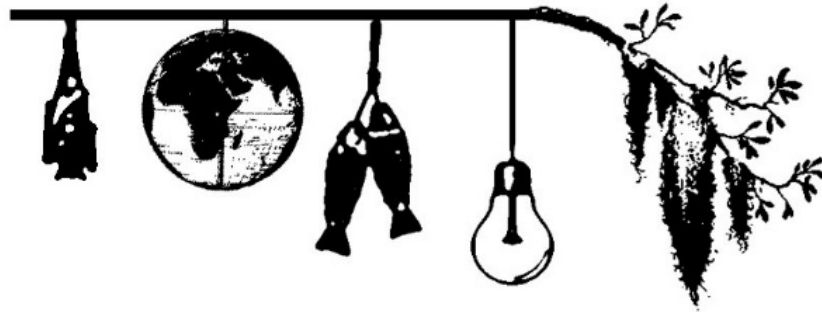


S I C 2019



6th Annual

**Symposium on
Integrative Conservation**

presented by the graduate students of the

Integrative Conservation Ph.D. program

at the

University of Georgia

Miller Learning Center 348

February 1st, 2019

ICON Integrative Conservation PhD Program

TRAINING AGILE SCIENTISTS TO ADDRESS
21st CENTURY SOCIO-ECOLOGICAL CHALLENGES

Welcome to the 6th annual Symposium on Integrative Conservation (SIC). SIC is organized and hosted by the graduate students of the Integrative Conservation (ICON) Ph.D. program at the University of Georgia (UGA). A central goal of SIC is to cultivate connections and conversations among ICON students and faculty and to promote the continued cross-disciplinary engagement of students throughout their tenure in the program.

An equally important objective of SIC is to facilitate dialogue about complex environmental issues within the broader academic community at UGA. In this way, SIC serves as a showcase of the ICON program itself, which seeks to prepare students to lead the way in innovative conservation problem-solving by developing cross-disciplinary skills and knowledge. Such training necessitates engagement with the insights, perspectives, and methodologies of multiple disciplines. SIC is intended to enhance this training by providing a space for the exchange of ideas between students and faculty interested in integrative conservation research and practice.

For today's symposium there are four total sessions. Two of these sessions feature traditional, 15-minute presentations, one session features five-minute speed talks, and one session features mixed-media highlights from the field. We are thrilled to host our keynote speaker, Dr. Kiran Asher, Professor of Women, Gender, and Sexuality Studies at the University of Massachusetts—Amherst.

Over the course of the day we will hear from 22 student presenters, all students in the ICON Ph.D. program. The presentation topics cover a wide range of disciplines and methodological approaches, and include both research talks and science communication talks. We appreciate your attendance and hope you find SIC to be an intellectually stimulating and exciting experience. Further information about the ICON Ph.D. program can be found at <http://icon.uga.edu>.

Schedule

8:50 **Opening Remarks**

9:00-10:45 **Session 1—Traditional Talks**

- 9:00-9:15 The Impacts of Agricultural Windbreaks on Avian Communities and Ecosystem Services Provisioning in the Bellbird Biological Corridor, Costa Rica
Katherine Brownson, Cody Cox, Steve Padgett-Vasquez
- 9:15-9:30 Socio-Ecological Resilience of Drinking Water Systems in Puerto Rico
Jessica Chappell
- 9:30-9:45 Towards a Political Ecology of Rights: Translation, Hybridity, and Scale Across an Indonesian REDD+ Project
Walker DePuy
- 9:45-10:00 Questioning Assumed Trade-Offs in Agave Use by Bats and People in Northeast Mexico, and Implications for Bat Conservation Efforts
Kristen Lear, Laura German, Meredith Welch-Devine, Jeffrey Hepinstall-Cymerman, Elizabeth King
- 10:00-10:15 Embracing the Complexity of a City to Predict Dengue Hotspots
Michelle Evans
- 10:15-10:30 Landscape Disturbance Impacts on *Attalea butyracea* Palm Distribution in Central Panama: Implications for Chagas Disease Transmission
Caitlin Mertzlufft, M. Madden, N. Gottdenker, S. Foster, J. Velasquez-Runk, A. Saldaa, S. Tanner, J. Calzada, X. Yao
- 10:30-10:45 Georgia Shrimp Fisheries: A Complex Socio-Ecological System
Bryan Bozeman, Denzell Cross, Angela Hsiung, Spencer Kellum, Suneel Kumar, Micah Miles, Kristen Morrow, Alec Nelson, Cydney Seigerman,

10:45-11:00 **Coffee Break**

11:00-12:00 **Keynote Speaker**

Antelopes, Iguanas and Other Fauna: Retrospective Fieldtrips Through the Busy Traffic of Nature-Cultures
Dr. Kiran Asher, Professor of Women, Gender and Sexuality Studies, University of Massachusetts—Amherst

12:00-2:00 **Catered Lunch & Department Tours**

1:15-2:00 **Prospective Student Q&A**

2:00-2:40 Session 2—Highlights from the Field

- 2:00-2:10 Southern Stream Fish: Communicating Science via Audio and Web Media
Bryan Bozeman
- 2:10-2:20 Herpetofauna and Urban Civic Ecology - Case Studies on Conservation Impact
Micah Miles
- 2:20-2:30 A Conservation Lens: Southern Streams and Iconic Islands
Alec Nelson
- 2:30-2:40 Manning the Mangroves: Revealing Local Attitudes and Gendered Nuances Towards Mangrove Forests in a Protected area in India.
Dina Rasquinha

2:40-3:10 Session 3—Speed Talks

- 2:40-2:45 Small-scale Fisheries Governance Through Multiple Lenses: the Search for Well-being, Justice, and Sustainability in a Brazilian Marine Protected Area
Emily Horton
- 2:45-2:50 Collaboration, Narratives, and Shaping Forest Systems in the Southern Appalachians
Jonathan Hallemeier
- 2:50-2:55 A Framework for Exploring Aquatic and Riparian Connectivity - Case Study of the Chiricahua Leopard Frog in the Cienega Creek Basin
Akanksha Sharma
- 2:55-3:00 An Interpretative Representation of Scientific Knowledge Production and Use in Water Management Decisions in Ceará, Brazil
Cydney Seigerman
- 3:00-3:05 A Symbolic Landscape Aesthetic: Framing Iconic Species through Participant Photography
Sarah Horsley
- 3:05-3:10 Social Network Analysis and Georgia Fisheries: a Closer Look at Research Collaborations in ICON 8002
Bryan Bozeman, Denzell Cross, Angela Hsiung, Spencer Kellum, Sunell Kumar, Micah Miles, Kristen Morrow, Alec Nelson, Cydney Seigerman,

3:10-3:25 Coffee Break & Q&A for Speed Talks

3:25-4:40 Session 4—Traditional Talks

- 3:25-3:40 Collaborative methods in the more-than-human world: Doing Participant Observation with the Indus River
Suneel Kumar
- 3:40-3:55 Race and Nature: The Importance of a Critical Understanding of Race for Ecologists
Jeffrey Beauvais
- 3:55-4:10 Human-Animal Relations: Views on Domestication, Ferality, and Zoonoses
Sebastian Ortiz
- 4:10-4:25 Network Effects on Andean Bear Conservation
Rhianna Hohbein
- 4:25-4:40 Preserving Preuss's Red Colobus (*Piliocolobus preussi*): an Ethnoprimateological Analysis of Hunting, Conservation, and Changing Perceptions of Primates in Ikenge-Bakoko, Cameroon
Alexandra Hofner

4:40-5:00 ICON Student Awards

Please join us for dinner at 6:00 pm—stay tuned for details on location!

A social at Creature Comforts Brewery will follow dinner.

ABSTRACTS

Session 1

9:00-9:15

The Impacts of Agricultural Windbreaks on Avian Communities and Ecosystem Services Provisioning in the Bellbird Biological Corridor, Costa Rica

Katherine Brownson¹, Cody Cox², Steve Padgett-Vasquez³

¹*Odum School of Ecology*, ²*Warnell School of Forestry and Natural Resources*, ³*Department of Geography*

The Bellbird Biological Corridor (Corredor Biológico Pájaro Campana) seeks to increase elevational connectivity between Pacific slope cloud forests and coastal mangroves. Large-scale tree-planting efforts in the region have been used to promote connectivity, especially among farmers wanting to plant windbreaks to protect their crops and cattle from the region's intense summer winds. Windbreaks can provide habitat and corridors to facilitate the movement of forest birds through open pastures, in addition to providing other ecosystem services. However, there has been limited research quantifying the impacts of these relatively fine-scale changes in land use. Here, we seek to determine the impact of windbreaks on avian communities and on the provisioning of multiple ecosystem services across the landscape. We focused our analysis on higher-elevation (>600 M) area of the Guacimal watershed within the corridor due to the prevalence of windbreaks in this area. We first digitized the windbreaks in our study area using satellite imagery. We then conducted dependent double-observer avian point counts at 215 sites and analyzed beta diversity to determine whether avian communities in windbreaks resemble forest or pasture ensembles. We also modeled the changes in ecosystem services provisioning generated by the windbreaks using the Ecosystem Services Inventory and Identification (ESII) tool. Avian communities in windbreaks were not significantly different from pasture communities ($p=0.98$), but were significantly different in composition from forest communities ($p<.001$). However, this result may be influenced by the small pasture size and prevalence of remnant trees in pastures throughout the study area. We found that the windbreaks have generated significant improvements in air Nitrogen removal, air temperature regulation, and BTU reductions at the site-scale, but have not generated significant improvements in other ecosystem services. Taken together, these results suggest that windbreaks are generating modest ecosystem services benefits at the site scale, but do not have broader effects on species composition or ecosystem services.

9:15-9:30

Socio-Ecological Resilience of Drinking Water Systems in Puerto Rico

Jessica Chappell

Odum School of Ecology

A lack of reliable, predictable, and sustainable freshwater supply often occurs in many developing countries, although population growth, inefficient management, and climate variability are increasingly threats in developed countries as well. Drinking water systems are typically designed for an expected range of precipitation; however, unanticipated variability or nonstationary relative to historical observations could both lead to system failure as a result of water shortages or inadequate design. While drinking water is inherently a social issue, water scarcity situations have ecological implications as well. While streamflow generally acknowledged as crucial to maintain stream ecological function, regulations protecting flow regimes have been slow to implement and challenging enforce, especially during times of water scarcity. The dependence on surface water for drinking water supply and the reliance of stream ecosystems on flow creates a tightly coupled socio-ecological system in which the survival of both depends on the quantity, timing, and quality of water in streams. We use Puerto Rico as a case study to examine the resilience of the social and ecological systems in response to low stream flow. We also examine bidirectional feedbacks between these systems as they related to resilience of each. Puerto Rico represents a unique system to evaluate socio-ecological resilience to freshwater scarcity, given prior studies demonstrating the vulnerability of stream ecosystems and drinking water supplies to drought. Additionally, recent droughts and hurricanes have both led to prolonged periods of water supply shortages and significant ecological impacts. Preliminary research indicates low resilience of the social system to freshwater scarcity due to rigid governance structures and lack of adaptive capacity of infrastructure. Conversely, the ecological system has naturally high resilience; however, drinking water extraction has the capacity to lower ecological resilience, which could have reverberating long-term consequences for the social system. Climate change is expected to exacerbate these challenges due to increased frequency and magnitude of drought episodes. This study integrates diverse bodies of knowledge on the resilience of socio-ecological systems and examines tight coupling and feedbacks between these systems. Understanding current socio-ecological resilience will help freshwater managers prepare for, cope with, and adapt to future disturbances.

9:30-9:45

Towards a Political Ecology of Rights: Translation, Hybridity, and Scale Across an Indonesian REDD+ Project

Walker DePuy

Department of Anthropology

Conservation today utilizes hybrid governance arrangements to advance multiple agendas, from climate change mitigation to biodiversity conservation to green development. How local and indigenous rights are protected amidst these efforts, however, remains a critical question. Focusing on a landscape-scale Indonesian REDD+ program, this paper interrogates how rights-based mechanisms are influenced by and influencing such hybrid governance regimes. This research illustrates how the political is often elided in pursuit of rendering community rights (including informed consent and land tenure) technical and scalable for conservation. This raises

substantive questions regarding the politics of translation around rights, as well as how to pursue more effective and just conservation practice.

9:45-10:00

Questioning Assumed Trade-Offs in Agave Use by Bats and People in Northeast Mexico, and Implications for Bat Conservation Efforts

Kristen Lear¹, Laura German², Meredith Welch-Devine², Jeffrey Hepinstall-Cymerman¹, Elizabeth King³

¹*Warnell School of Forestry and Natural Resources*, ²*Department of Anthropology*, ³*Odum School of Ecology*

The Mexican long-nosed bat (*Leptonycteris nivalis*) is a nectar-feeding bat that is listed as endangered in both Mexico and the United States, as well as by the International Union for Conservation of Nature. It is thought that the species' decline is in part due to a loss of floral resource availability, specifically agave plants (*Agave* spp.) upon which the bats rely during their long-distance migrations. Agaves are important cultural and economic resources for farmers and communities throughout Mexico, and the current conservation paradigm assumes that there is a clear trade-off between bat and human use of agaves. Specifically, it is assumed that all agave harvest is detrimental to the bats because it reduces available food resources. This assumption is the basis for ongoing conservation efforts in Mexico. In this study, I took a critical look at this underlying assumption to interrogate whether it holds true in northeast Mexico, a region critical to the survival of the Mexican long-nosed bat. Within the states of Nuevo Leon and Coahuila, I worked in 14 communities that harvest and use agaves to address three research questions: 1) What practices do people use to harvest and manage agaves? 2) To what extent has agave harvest and use persisted within communities? and 3) What are the implications for agave growth, reproduction, and demography of specific harvest practices and the intensity of agave harvest? I conducted semi-structured ethnobotanical interviews with agave harvesters in each community and found that the effects of harvest on agave growth, reproduction, and demography varied by practice and species of agave, with some species benefiting from increased harvest (through higher production rates of hijos (clonal offshoots)) and other species being negatively affected by harvest. In addition, communities varied in their reliance on agave harvest as a livelihood activity. These results illuminate key factors that preclude a straightforward trade-off between bat and human use of agaves and bring to light potential win-win opportunities for conserving the Mexican long-nosed bat. Finally, this study demonstrates the importance of questioning commonly-held assumptions within conservation and considering the local contexts of the systems to achieve more effective and equitable conservation outcomes.

10:00-10:15

Embracing the Complexity of a City to Predict Dengue Hotspots

Michelle Evans

Odum School of Ecology

Neglected tropical diseases impact over 2 billion people globally, and global health institutions often associate them with poverty or the Global South. However, in the case of the dengue, a mosquito-borne disease, the relationship between poverty-related indicators and disease outcomes is not consistent. In particular, recently developed urban areas are associated with high rates of dengue in the tropics. Within a city, mosquito abundances vary with the availability of larval habitat: standing water such as flower pots, water storage tanks, or poorly drained roads and canals. The distribution of these habitats is shaped by the socio-political context of the city. In this brief talk, I present a proposed project applying a feminist political ecology approach to the creation of urban mosquito environments, allowing for a more nuanced understanding of households' relations to water bodies and mosquitoes. This project aims to use a combination of GIS, sketch mapping, and interviews to describe the everyday landscape of water and mosquitoes. I will also discuss the struggle of reconciling (or not!) positivist-quantitative and feminist-qualitative approaches within a dissertation.

10:15-10:30

Landscape Disturbance Impacts on *Attalea butyracea* Palm Distribution in Central Panama: Implications for Chagas Disease Transmission

Caitlin Mertzlufft¹, M. Madden¹, N. Gottdenker², S. Foster³, J. Velasquez-Runk⁴, A. Saldaña⁵, S. Tanner³, J. Calzada⁵, X. Yao¹

¹Department of Geography, ²School of Veterinary Medicine, Department of Pathology, ³Geospatial Research, Analysis, and Services Program, U.S. Agency for Toxic Substances and Disease Registry, ⁴Department of Anthropology, ⁵Gorgas Memorial Institute

Chagas disease is a vectorborne zoonotic disease endemic to Latin America. In Panama, palm trees (*Attalea butyracea*) are the preferred habitat of the region's primary Chagas disease vector (*Rhodnius pallescens*). Close proximity of these palms to human residences is linked to increased risk of Chagas disease transmission. However, these palms thrive in disturbed habitats associated with human settlement and agriculture. This study examines the relationship between landscape disturbance and mature *A. butyracea* spatial distribution, density, and proximity to susceptible populations and vector movement corridors in a heterogeneous tropical region in Central Panama. Presence of *A. butyracea* does not guarantee corresponding presence of *R. pallescens*. However, as the vectors' preferred habitat, quantifying *A. butyracea* response to disturbance may provide new insight into Chagas transmission risks in changing landscapes. Our findings indicate a regional relationship between landscape disturbance and *A. butyracea* occurrence. We observe probable anthropogenic thinning of *A. butyracea* palms in agricultural, but not residential, settings. Even in heavily deforested regions, significant concentrations of mature palms remain in close proximity to human establishments. We concluded that the potential of *A. butyracea* palms as a source of infectious Chagas disease vectors should not be disregarded in this region.

10:30-10:45

Georgia Shrimp Fisheries: A Complex Socio-Ecological System

Bryan Bozeman¹, Denzell Cross², Angela Hsiung¹, Spencer Kellum³, Sunell Kumar³, Micah Miles¹, Kristen Morrow³, Alec Nelson¹, Cydney Seigerman³

¹Warnell School of Forestry and Natural Resources, ²Odum School of Ecology, ³Department of Anthropology

Black gill, a parasitic disease affecting shrimp along the Georgia coast, is a concern for shrimpers, government agencies, and researchers alike. However, the overall decline of shrimping on Georgia's coast reflects a multitude of factors, including the aging fleet of shrimpers, a decrease in the number of trawling licenses, and competition from foreign seafood imports. The 2017 ICON cohort began to explore the socio-ecological dimensions of black gill and the Georgia coast in collaboration with Georgia Department of Natural Resources (GA DNR) and University of Georgia's Marine Extension and Sea Grant. Literature-based research led to a deeper understanding of the ongoing issues along the Georgia coast, key to building an integrative research project. This work led to the opportunity to develop the social network analysis for an interdisciplinary research program along the Georgia coast in partnership with Georgia Southern University, Emory University, and UGA's Sea Grant/Marine Extension. Although there were initial challenges in identifying integrative contributions we could make to this project, we were able to expand our scope by developing network analysis tools that could provide a more holistic understanding of the socioecological networks that underpin the Georgia coast fishing industry.

Keynote Speaker

11:00-12:00

Antelopes, Iguanas and Other Fauna: Retrospective Fieldtrips through the Busy Traffic of Nature-Cultures

Dr. Kiran Asher

Professor, Department of Women, Gender, and Sexuality Studies, University of Massachusetts—Amherst

In this talk, I revisit my fieldwork in Asia and South America to examine how gender, race, history, and political economy are “present absences” in the fields of wildlife conservation and ecology. The first person narrative is not autobiographical but rather a methodological gesture to highlight the epistemological assumptions that obscure (however unintentionally) the partial nature of evidence and the unpredictable and contingent nature of research. It is also meant to highlight the conjunctural and far-from-seamless ways through which we gain insights into knotty problems of research and practice. I conclude by reflecting on the scientific and political implications of such “present absences” for environmental conservation and environmental justice.

Session 2

2:00-2:10

Southern Stream Fish: Communicating Science via Audio and Web Media

Bryan Bozeman

Warnell School of Forestry and Natural Resources

Science is routinely communicated using complicated language and concepts that are difficult for nonscientists to understand. Additionally, the research process often is not transparent, which may contribute to the public's distrust or disinterest. As scientists, we must confront both of these problems by communicating complicated scientific theories and concepts in plain language and illuminating the actual research process. I have designed a scientific communication project that aims to do just that. Southern Stream Fish is an audio documentary and webpage that will pull back the curtains on a real-world scientific research project and allow the general public to follow along as I investigate how streams, fish, and humans fit together in southern Appalachia. However, before my research begins in earnest, it is important that I receive feedback on this project so that its full potential may be realized.

2:10-2:20

Herpetofauna and Urban Civic Ecology - Case Studies on Conservation Impact

Micah Miles

Warnell School of Forestry and Natural Resources

Global urbanization can illicit many direct and indirect effects on ecological and social processes. Land use shifts can alter the abundance, composition, and behaviors of native wildlife populations while also reflecting the anthropocentric values and priorities of growing urban communities. Moreover, wildlife taxa that are more susceptible to the deleterious effects of urbanization and human development may be less visible within the urban ecosystem and therefore may warrant additional attention from urban residents to reach conservation goals. To this end, my proposed dissertation research asks: How do existing urban wildlife programs/organizations targeting herpetofauna contribute to the development of an ecologically informed public and in what ways? How might varying sites of learning or points of entry to urban wildlife ecology, focused on reptiles and amphibians, influence attitudes and beliefs towards conservation? Preliminary evaluation results from an ongoing collaboration with a confirmed site of urban civic herpetofaunal ecology will also be presented.

2:20-2:30

A Conservation Lens: Southern Streams and Iconic Islands

Alec Nelson

Warnell School of Forestry and Natural Resources

Science communication in the video medium presents a critical and approachable format in a highly-connected world. By providing viewers a lens into how research is done, we have the opportunity to grow public interest in and respect for science by improving our story-telling prowess. Based on my experience in short-form videos, I was thrilled to be able to continue my work through a series of video productions focusing on the research stories and process of integrative conservation research. With generous support from the Communication of Research

and Scholarship Graduate Student Grant, I worked with two ICON graduate students, Bryan Bozeman and Sarah Horsley to highlight their efforts to unite scientific understanding and applied outcomes in the conservation realm. Each video consists of interviews, voice-overs, and story-telling by the researchers in the context of their studies, guiding the viewer through the places and ideas most representative of their conservation study and practice. As a producer, I worked together with each individual to frame their topic and film and record the media, and edit each story into a four- to six-minute video format. In this way, we are bringing real stories of ongoing research to a broader audience and beginning conversations about what it means to do scientific work in a modern context.

2:30-2:40

Manning the mangroves: Revealing Local Attitudes and Gendered Nuances Towards Mangrove Forests in a Protected area in India

Dina Rasquinha

Department of Geography

Protected area networks, especially national parks and sanctuaries are widely used for forest and wildlife conservation. In India, such demarcated zones support a rich biodiversity of flora and fauna but are constantly in battle with acknowledging the rights and privileges of forest dwelling communities. A fence segregates spaces and a fine maintains boundaries. However, a fortress approach to conservation, based on the principle of excludability and seclusion undermines historic legacies of resource use, access and forest relations. Combining the Q- method with social interviews and participant observation, I investigate how exclusion impacts local values, priorities and knowledge towards mangrove forest conservation in Bhitarkanika Wildlife Sanctuary. Preliminary findings reveal differing viewpoints based on gender as well as social classes. It also suggests the significance of cultural and economic needs of local communities that dominate forest relations (despite the exclusion) which strongly impacts priorities for conservation.

Session 3

2:40-2:45

Small-scale Fisheries Governance Through Multiple Lenses: the Search for Well-being, Justice, and Sustainability in a Brazilian Marine Protected Area

Emily Horton

Department of Anthropology

Within the context of international fishery declines, thousands of marine protected areas have been created around the globe. Marine Extractive Reserves (MERs) are a type of marine protected area in Brazil that aim to ensure sustainable natural resource use and safeguard the livelihoods and culture of traditional populations. MERs employ a co-management framework, whereby governments and communities share power and responsibilities. On the one hand, this presents an opportunity to adaptively co-construct management approaches through processes of dialogue and learning that engage diverse perspectives. However, in environmental governance

and policy arenas, different framings of issues can privilege certain viewpoints and values while marginalizing others. This continues despite the recognition that multiple, partial perspectives can inform discussions on how to more equitably pursue well-being and conservation goals. Governance that is not responsive to localized socioecological conditions and needs, risks falling short of, or even undermining intended outcomes. This study engages multiple perspectives by drawing from the social sciences, natural sciences, and visual arts to explore the social and ecological dimensions of small-scale fisheries governance in Marine Extractive Reserve Cururupu.

2:45-2:50

Collaboration, Narratives, and Shaping Forest Systems in the Southern Appalachians

Jonathan Hallemeier

Department of Anthropology

This paper examines collaboration as a driver and expression of social-ecological system (SES) change in the southern Appalachians. Specifically, I explore the narrative dimension of SES change and argue that attention to narrative highlights the role of politics in collaboration and offers new methods for evaluating the outcomes of collaborative efforts. Drawing on four years of participant observation of collaborative meetings around the Nantahala-Pisgah National Forest plan revision, I examine how narratives of the forest are contested, hybridized, and disseminated. While the final draft of the forest plan and concrete landscape outcomes remain years away, I argue that these changing narratives point to subtler ways in which collaborative politics may be changing this SES by shifting the values and assumptions that underlie management.

2:50-2:55

A Framework for Exploring Aquatic and Riparian connectivity - Case Study of the Chiricahua Leopard Frog in the Cienega Creek Basin

Akanksha Sharma

Odum School of Ecology

Aquatic and riparian ecosystems are of critical importance in arid environments, supporting a diverse suite of resident and migratory species over different life stages. Ecological connectivity is an important property in the functioning of these ecosystems, and a subject of significant interest for research, management and conservation. Furthermore, stakeholders hold a variety of perceptions on aquatic and riparian connectivity, and connectivity of these ecosystems in arid landscapes is a relatively unexplored subject. I focused on these issues in the US portion of the Madrean Archipelago by combining qualitative methods to capture the diversity of perspectives among experts and quantitative spatial analysis to capture the variety of factors that influence aquatic and riparian connectivity. I synthesized available literature and the resultant expert perspectives into a Connectivity Component-Dimension Framework that deconstructs aquatic and riparian connectivity into connectivity components and their dimensions. Using GIS and regression analysis, I applied this framework to a case study of the threatened Chiricahua leopard frog (*Rana chiricahuensis*) in the Cienega Creek basin in Arizona and created connectivity

indices for this focal species. Some factors that emerged significant in this case study included elevation, fire hazard potential, and density of leopard frog sightings. This connectivity framework and the related indices provide customizable options for stakeholders to assess aquatic and riparian connectivity multidimensionally using readily available data. These tools can be used by stakeholders for exploratory analysis, assessment and visualization of aquatic and riparian connectivity, in arid landscapes, and beyond.

2:55-3:00

An Interpretative Representation of Scientific Knowledge Production and Use in Water Management Decisions in Ceará, Brazil

Cydney Seigerman

Department of Anthropology

Water management is highly contested and politicized throughout Brazil, where water distribution is heterogeneous and drought vulnerability variable. While periodic droughts have long characterized the semi-arid region of northeast Brazil, recent climate patterns have increased the stress on water resources. From 2012 to 2017, the northeast state of Ceará experienced the most severe drought recorded in the area. In Ceará, bulk water-allocation decisions are decentralized to the river-basin level. The State Meteorological and Water Resource Foundation (FUNCEME) and the State Water Management Company (COGERH) provide technical knowledge and allocation scenarios to river basin committees that guide water allocation decisions. The objective of the present research was to better understand how the scientific and technological knowledge provided by FUNCEME and COGERH is developed, shared, and incorporated into the water-allocation decision-making process in the Jaguaribe Valley-Fortaleza system. Participation in river-basin committee meetings in the Jaguaribe Valley of Ceará and semi-structured interviews with FUNCEME, COGERH, and river-basin representatives from May to July of 2018 highlighted the dependence on state-provided technical knowledge in allocation decisions, as well as the initial impacts of increased committee participation through the development of a “working group” to develop allocation scenarios. The presentation of this research is in the form of prose accompanied by movement phrases inspired by various conversations, observations, and encounters from pre-dissertation fieldwork conducted from May to July of 2018 in Fortaleza and the Jaguaribe Valley in Ceará, Brazil.

3:00-3:05

A Symbolic Landscape Aesthetic: Framing Iconic Species through Participant Photography

Sarah Horsley

Warnell School of Forestry and Natural Resources

Nature-based destinations often use features within the landscape to serve as symbolic representations within their marketing media, aiming to align with the motivations and preferences of the tourists. These landscape icons can also serve as important points of attachment and meaning-making for the people who visit or live around them. Because these

icons develop and are developed to represent ideas about the broader place, they may influence expectations and experiences people have in their setting. However, alongside these symbolic meanings, iconic natural features are still components of the physical landscape, providing ecological functions and subject to natural forces. Within my research, I will investigate how iconic landscape features operate within people's visions of a natural destination in tandem within how they understand the landscape as an ecosystem. Participants will be residents and long-term tourists (1.5 weeks or longer) of Jekyll Island, Georgia. I will ask participants to capture a set of images of landscapes or views they see as iconic of Jekyll Island over three days and then choose four images most representative of their vision of the island. I will then interview participants about each of the four images to understand the functional and symbolic meanings people ascribe to elements of the photos, how residents view those elements as components of the surrounding landscape and ecosystem, and what visual and sensory aspects of that scene are most important to the participant. Results generated from this study will help island managers understand which views are most important to people on the island, what specific features make them important, and the perceived ecological functions or importance, which will assist managers toward balancing tourist and resident landscape aesthetic preferences and ecosystem health on the island. Additionally, this study will contribute to the landscape aesthetics and environmental psychology literature by assessing how iconic elements can serve as a "pinch point" through which people value, interpret, and envision landscapes.

3:05-3:10

Social Network Analysis and Georgia Fisheries: a Closer Look at Research Collaborations in ICON 8002

Bryan Bozeman¹, Denzell Cross², Angela Hsiung¹, Spencer Kellum³, Sunell Kumar³, Micah Miles¹, Kristen Morrow³, Alec Nelson¹, Cydney Seigerman³

¹*Warnell School of Forestry and Natural Resources*, ²*Odum School of Ecology*, ³*Department of Anthropology*

As part of the ICON 8002 curriculum, the 2017 ICON cohort collaborated with Georgia Department of Natural Resources (GA DNR), University of Georgia's Marine Extension and Sea Grant, and Georgia Southern University to address socio-ecological issues along the Georgia coast. Through this collaboration, we developed social network survey questions and analysis tools that will be implemented in a broader research project assessing knowledge and relationships among fishers. These tools blend qualitative and quantitative social science research methods to explore social dynamics among fishers and regulatory agencies, providing robust analysis tools that will allow researchers to identify keyplayers in the fisheries social network. In this speed talk we will demonstrate the research tools we developed, showcasing the utility of randomized data to test quantitative data analysis tools in the project development stage and briefly discussing the challenges inherent in conducting remote, short-term collaborations.

Session 4

3:25-3:40

Collaborative methods in the more-than-human world: Doing Participant Observation with the Indus River

Suneel Kumar

Department of Anthropology

With the rise of Anthropocene, a proposed geological epoch in which human activities have aligned with geological forces in transforming the earth's functioning, have brought lives of human and nonhuman together in their uncertain futures. In such uncertain mutuality it becomes important to include other species, and things as well as entanglements of human and nonhuman in our analysis. But this poses methodological challenges that how to study nonhumans, especially nonliving entities ethnographically? In exploring this, scholars are experimenting with collaborative methods working across the disciplinary boundaries of natural and social sciences. Part of my PhD project is to explore such methodological imperatives while collaborating ecology (environmental flows) and anthropology to explore the Indus riverscapes. I propose to do participant observation with the river. In this paper, I briefly explain how various scholars have worked across disciplines to explore the human and nonhuman entanglement and finally will unpack how doing participant observation with the river could be and how such a method can contribute towards understanding of more-than-human world.

3:40-3:55

Race and Nature: The Importance of a Critical Understanding of Race for Ecologists

Jeffrey Beauvais

Odum School of Ecology

Race is one of the most tenacious categories of difference used to separate people, despite race not having a neat biological basis. The entrenchment of race as a concept did not occur in a vacuum but is juxtaposed with and reinforced by understandings of nature. From the early dominance of environmental determinism in naturalizing racial difference and justifying colonialism, to modern disparities in environmental amenities and burdens along racial lines, race and nature have long been entwined. Given that almost all ecosystems on Earth are affected in some ways by humans, ecologists can no longer ignore critical consideration of social systems and their impacts on the environment. In this talk I will briefly outline why ecologists need to be conscious of how the nature we study molds, and is molded by, understandings of race. By engaging with critical race theory, ecologists can gain more nuanced understandings of factors that influence their study systems, find avenues to apply their work, and avoid empowering regressive and oppressive concepts of race.

3:55-4:10

Human-Animal Relations: Views on Domestication, Ferality, and Zoonoses

Sebastian Ortiz

Warnell School of Forestry and Natural Resources

A growing human population continues to expand and human-wildlife interactions, as venues to connect with nature, become increasingly popular and diverse. Understanding human-wildlife

interactions as possible platforms for disease transmission is of interest for public and animal health as approximately 75% of all human emerging infectious diseases originate from wildlife. It is equally important to better understand human-animal relations as porous boundaries between culture and nature, and how they change with time, space and culture. Urbanization and agricultural practices can alter the behavior and ecology of animals, and cause the decline of many wildlife species; however, some species benefit from the resources found in human-altered urban/suburban and agricultural areas. This research seeks to better understand the sociobiological complexities behind human-animal interactions, as well as raccoon pathogens under diverse levels of anthropogenic influence and their associations. On one hand, we seek to expand current knowledge of the natural history of raccoon pathogen prevalence under diverse habitats. Simultaneously, we explore social dynamics surrounding human-animal relations such as cultural values of domestic, feral and wild animals, and attitudes towards wildlife & zoonotic diseases; therefore, gaining insight into how cultural values are embedded regionally, particularly in the southeastern US, in relation to feral cats and raccoons.

4:10-4:25

Network Effects on Andean Bear Conservation

Rhianna Hohbein

Warnell School of Forestry and Natural Resources

Weakness in management capacity is one of the most frequently cited barriers to conservation success in Colombia. In the Spectacled Bear Conservation Action Plan, Peyton (1999) suggested that before the implementation of research efforts, the first step for Andean bear management should be increasing institutional strength. Specifically, Peyton proposed that the environmental entities working on Andean bear conservation form strategic collaborations in order to more effectively use what limited resources were available. Using a social network analysis approach and data from semi-structured interviews completed in the Fall of 2018, I characterize the overall state of communication among these environmental entities and the extent to which they seem to be following this recommendation for collaboration. I aim to identify the effects these collaborative efforts (or lack thereof) may ultimately have on Andean bear conservation outcomes. Preliminary analysis of data gathered from 55 interviews with conservation practitioners revealed a conservation network involving over 140 distinct institutions. One international NGO held a position of particular importance in the network, having had more connections to other institutions than any other entity examined, while the Ministry of the Environment held a position of relatively low influence. Most interview participants acknowledged that levels of communication were not as high as they 'should be,' with many notable detriments to the networks' collective ability to effectively conserve Andean bears. This research helps to fill current knowledge gaps about when, where, and how collaborative efforts are most useful for conservation practitioners.

4:25-4:40

Preserving Preuss's Red Colobus (*Piliocolobus preussi*): an Ethnoprimateological Analysis of Hunting, Conservation, and Changing Perceptions of Primates in Ikenge-Bakoko, Cameroon

Alexandra Hofner

Department of Anthropology

The futures of nonhuman primate species and human communities in shared landscapes rely on our ability to engage with and understand the complex histories and multiscalar aspects of human–animal relationships. We use the Critically Endangered Preuss's red colobus (*Piliocolobus preussi*) as a case study to examine the important ways in which histories of multiscalar human–primate interactions play out in the village of Ikenge-Bakoko, Korup National Park, Cameroon. We contextualize ethnographic and catchment data from adult men (N = 32) and women (N = 31) within long-term diurnal primate monitoring datasets to better understand the relationships among hunting practices, local perceptions of diurnal primates, populations of *P. preussi*, and conservation management. Our data indicate a disconnect between local cultural definitions of “hunter” and Western assumptions as to the makeup and nature of this and other categories. We show that such contradictions can have negative outcomes for conservationists seeking to turn the science of establishing accurate off-take rates of prey species into practical management solutions. Using a single village as a focal point, we highlight the importance of an ethnoprimateological approach to understanding the intricate entanglements among conservation histories, subsistence strategies, and human and nonhuman primate lives. The application of ethnoprimateology is critical for twenty-first century primatologists who must navigate conservation concerns while also acknowledging and valuing the experiences of the human communities living alongside the primates we study.

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