



## Rocky Mountains Cooperative Ecosystem Studies Unit

### NEWSLETTER Fall 2023



#### University of Colorado Boulder Graduate Student Recognized with 2023 RM-CESU Student Award

Each year the RM-CESU acknowledges the outstanding contribution of student on a RM-CESU project. **The recipient of the 2023 Student Award is Airy Peralta, a PhD Student in Ecology and Evolutionary Biology at the University of Colorado Boulder**, for her work on the CESU project, ***Lagomorph Ladders, assessing a multi-host community and potential for spillover of Rabbit Hemorrhagic Disease at Great Sand Dunes National Park (GRSA)***. Leading this study for the Inventory and Monitoring Division of the National Park Service, Airy studied overlap in habitat use by rabbits, hares, and pikas in GRSA to characterize the potential for Rabbit Hemorrhagic Disease transmission among these taxa.

Airy was nominated for this award by advisor, Chris Ray, and Erin Borgman, Ecologist and Inventories Project Manager, NPS Inventory and Monitoring Program. In their nomination Ray and Borgman noted “that “by leading the data collection, analysis, and interpretation phases of this study, Airy introduced a cohort of post-graduate researchers to methods in park research management, while simultaneously increasing representation of researchers from diverse backgrounds. Airy is a first-generation

immigrant from Mexico who speaks English as a second language. Her leadership in this project inspired several crew members to remark on her exceptional skills in personnel and project management, and her boundless energy for scientific research.”

Two honorable mentions include: Noah Creany, currently a PhD candidate at Utah State University, who has contributed to three CESU visitor use projects with the National Park Service during his masters and doctoral work; and Dana Musto, who recently completed her M.Sc. at Colorado State University, where she assessed Bison herbivory on ecosystem processes within the Kaibab Plateau in Arizona.

**University of Utah Researcher Returns to Glacier National Park to Reassess Pika Populations:** Lucus Moyer-Horner was an undergraduate at University of Wisconsin when he got funding to study the pikas (*Ochotona princeps*) at Glacier National Park from 2007-2009. This summer, as a faculty member at the University of Utah we returned to reassess the status of the pika population, along with Park biologists and a cadre of citizen scientists. The population research includes monitoring talus fields in the park to look for pikas or signs they were there, like hay piles and pellets. He said back in the early 2000s that populations in the park were doing well. Now 15 years later, Moyer-Horner was back in the park this summer and reported that the pika populations are still robust. Over the intervening years Glacier National Park and the Glacier Conservancy have organized and funded “citizen science” pika surveys. The NPS Inventory and Monitoring Program has also collected long-term data on pikas in Glacier. To learn more about the park’s pika surveys, go to Glacier’s [Citizen Science web page](#).



### **Montana State University and the Center for Large Landscapes Conservation Release a Detailed Study of Wildlife Road Crossings in The Western US:**

In the western US, wildlife-vehicle collisions at kills large numbers of large mammals each year and cause hundreds of human fatalities and thousands of injuries. To help address this issue affecting both wildlife and people, the Center for Large Landscape Conservation, Montana State University's Western Transportation Institute, and David Theobald with

Conservation Planning Technologies have published the [results of the West-Wide Study to Identify Important Highway Locations for Wildlife Crossings](#). The study used updated collision and wildlife crossing structure economic cost values to highlight locations where the cost of building a crossing structure is less expensive than the cost of letting wildlife-vehicle collisions continue. *The citation for this report is: [Paul, K., J. Faselt, M. Bell, M.P. Huijser, D. Theobald, A. Keeley, and R. Ament. 2023. West-wide study to identify important highway locations for wildlife crossings. Center for Large Landscape Conservation, Western Transportation Institute – Montana State University, Bozeman, MT.](#)*

### **A Consortium of RM-CESU Colleges and Agencies Publish Information on Whitebark Pine and Climate in the Northern Rockies:**

Authors from Montana State University, Salish Kootenai College, USGS and USFS describe their work on the influence of climate on tree growth and resin duct morphology for whitebark pine growing on the Flathead Indian Reservation in northwestern Montana. The citation for this paper is: [Kichas N.E., et al., 2023, Increased whitebark pine \(\*Pinus albicaulis\*\) growth and defense under a warmer and regionally drier climate. \*Front. For. Glob. Change\*, 6:1089138](#). These researchers found increased radial growth and increased defense in response to regional warming and drying trends (i.e., increased temperature, reduced snowpack, drier soils). These results suggest that whitebark pine growth and defense were historically limited by short growing seasons. Regional warming and drying may enhance both growth and defense via an extended annual growing season in the high-elevation, energy-limited subalpine forests where many whitebark pine stands occur.

### **Grand Teton National Park Releases Annual Report:**

This [40-page report](#) provides a comprehensive overview of the actions and programs in Grand Teton National Park. Information presented in the annual report is from reference year 2022 and was compiled in 2023.

### **Fire information Portals Include Contributions from Multiple RM-CESU Partners:**

There are two USFS-funded Joint Fire Sciences Program fire information delivery sites available on-line: [Northern Rocky Mountains Exchange](#), which includes collaborators at USDA-Forest Service, University Idaho, University of Montana, Montana State University and Salish Kootenai College; and [Southern Rocky Mountains Exchange](#), run out of Colorado State University:



Early morning Jackson Lake, Grand Teton National Park.

**Article Published In *Ecosphere* Models Contributors to Nitrogen Enrichment in a High-Elevation Lake in Rocky Mountain National Park:** RM-CESU Partner Scientists from the National Park Service, USGS, and Colorado State University summarized a study at Loch Vale Watershed, Rocky Mountain NP in an article, [Baron et al., 2023, Marmots do not drink coffee: Human urine contributions to the nitrogen budget of a popular national park destination, \*Ecosphere\*. 2023;14:e4504.](#) This analysis indicates that most of the reactive nitrogen deposited in this subalpine watershed is attributable to air emissions and subsequent wet atmospheric deposition, but the 2% contribution from human waste is not insignificant.



Collecting eDNA on Rock Creek. Photo courtesy Holli Holmes

**University of Montana Graduate Student Partners with Montana Agencies to Study Population Changes in Harlequin Ducks:**

Holli Holmes, University of Montana, is leading a collaborative study funded by Glacier National Park, the U.S. Forest Service, Montana Fish, Wildlife and Parks (FWP) and several conservation nonprofits to figure out the best way to count this native species, the harlequin duck. Historically, biologists have relied on foot surveys, hiking miles up a stream looking for these ducks. The graduate project involves setting up remote cameras alongside streams, hiking miles up and down a stream looking for ducks and a newer technology called environmental DNA that detects whether harlequins have been in the stream. The results of this study will be used by

agency wildlife managers to estimate population changes in this native duck species. For more information, go to the [MTPR podcast](#).

**Collaborative RM-CESU Research Leads to a Publication on Elk Migration in the Greater Yellowstone:**

Authors from Utah State University, University of Wyoming, USGS, US Fish and Wildlife Service, National Park Service, University of California, Berkeley and State Wildlife agencies in Wyoming and Idaho put together an analysis of multiple data sets in the publication: [Zuckerman, G.R et al., 2023, Diverse Migratory Portfolios Drive Inter-Annual Switching Behavior of Elk across the Greater Yellowstone Ecosystem. \*Ecosphere\* 14\(5\): e4502.](#) To better understand the dynamics and drivers of ungulate migratory switching behavior, the authors investigated 14 years of movement data from 361 elk in 20 herds across the Greater Yellowstone Ecosystem. This extensive analysis found that the variety of ungulate migratory “switching behavior” may allow the herds to have greater resiliency to continuously changing environmental and anthropogenic conditions.

**STUDENT OPPORTUNITIES**

**University of Montana Graduate Assistantship – Reserved Lands Forest Inventory** UM’s Wilderness Institute invite applications for a funded graduate assistantship to investigate aspects of the Forest Inventory and Analysis (FIA) program in reserved lands (i.e., wilderness areas, national parks). This project will evaluate the severity, causes, and impacts of delaying or dropping FIA measurements in reserved lands, and investigate mitigating solutions.

This position is suitable for candidates with diverse disciplinary backgrounds and interests. Flexibility within the project exists for the graduate assistant to address, for example, questions informed by social science, analytical research on sampling designs and estimators, environmental data science, or park and wilderness management.

This is an exciting opportunity for a masters student to join The Wilderness Institute and the W.A. Franke College of Forestry and Conservation, University of Montana! [Learn more here](#): Submit materials by January 8, 2024 for full consideration.

### **University of Utah - Doctoral Graduate Assistantships in Parks, Recreation, and Tourism**

The Department of Parks, Recreation, and Tourism at the University of Utah is now accepting applications for consideration for doctoral research and teaching assistantships; January 15<sup>th</sup> is our priority deadline. Currently funded research assistants are working on projects with the American Camp Association (ACA), the National Outdoor Leadership School (NOLS), [Nature and Human Health – Utah \(NHH-U\)](#), Outward Bound International, the National Park Service, and the [Global Change and Sustainability Center \(GCSC\)](#). Additional opportunities are anticipated, and many positions offer a blend of teaching and research. Teaching assistants generally begin teaching in a mentored integrated block of core courses and progress to independent course instruction.

Research and teaching assistantship appointments involve 20 hours of work a week for 9 months and include a monthly stipend, tuition/fee remission (<http://gradschool.utah.edu/tbp/tuition-benefit-program-guidelines/>), and subsidized health insurance (<http://gradschool.utah.edu/tbp/insurance-information/>). Exceptional candidates may qualify for additional scholarship monies, additional months of appointment, and/or summer teaching or research opportunities. Travel support to present at professional conferences is available through the Department, the Graduate School, and student associations.

Positions are generally renewable for three or four years, during which time continual registration as a full-time student is necessary and progress toward Ph.D. completion is expected. Applicants must be admitted and enrolled in the doctoral program in Parks, Recreation, and Tourism at the University of Utah.

Interested applicants should complete an application with the Department and the Graduate School (<https://health.utah.edu/parks-recreation-tourism/degrees/phd>).

Additional questions and inquires can be directed to Dr. Jeff Rose, Interim Director of Graduate Studies, University of Utah, Department of Parks, Recreation, and Tourism, 250 S. 1850 East, HPER N 239, Salt Lake City, UT 84112; or emailed to [jeff.rose@utah.edu](mailto:jeff.rose@utah.edu).

For additional information and specific faculty and their research interests, visit [Department of Parks, Recreation, and Tourism](#).

### **FUNDING OPPORTUNITIES**

**2024 Western National Parks Association (WNPA) Request for Proposals** WNPA supports the acquisition of knowledge by providing grants in support of research that benefits the management, preservation, and interpretation of National Park Service (NPS) resources served by WNPA. The research grant program supplements research programs of the NPS. Grant proposals are reviewed annually by WNPA's Research Committee, which consists of board members and other volunteers with extensive backgrounds in science and other relevant experience. For fiscal year 2024 funding consideration, all proposals must be submitted through the [WNPA web portal](#) from October 2, 2023 through February 29, 2024 or until notice of allocated funding being exhausted, at which time the cycle will close.

### **JOB OPPORTUNITIES**

**Assistant Professor in Ecological Economics**, Colorado State University, Fort Collins, CO. (review begins 11.1.2023)

**Assistant Professor – Ecosystem Science & Management**, University of Wyoming, Laramie, WY.

**Assistant Professor of Environmental Data Science**, University of Colorado, Boulder, CO. (review begins 11.11.2023)

**Assistant Lecturer, Geographical Information Science and Technology Program**, University of Wyoming, Laramie, WY (review begins 11.11.2023)

**Assistant Professor in Human Dimensions of Natural Resources**, Colorado State University, Fort Collins, CO (review begins 11.13.2023)

**Assistant or Associate Professor – Sustainable Forest Management**, Washington State University, Pullman, WA (review begins 11.15.2023)

**Assistant Professor, Department of Native American Studies**, University of Montana, Missoula, MT (review begins 12.3.2023)

**Department Head – Geosciences**, Colorado State University, Fort Collins, CO. (review begins 1.12.2023)

For details on these job opportunities, visit the [Jobs Page](#)

If you would like to post an announcement in the next RM-CESU Newsletter or on the website, please send to [rmcesu@cfc.umt.edu](mailto:rmcesu@cfc.umt.edu).