



Rocky Mountains

Cooperative Ecosystem Studies Unit

Research, Education & Technical Assistance

NEWSLETTER

Winter 2019 -2020

RM-CESU NEWS & EVENTS

National Park Conservancy - Jerry O'Neal Student Research Fellowship -2020 Call



Applications are now being accepted for the **Glacier National Park Conservancy - Jerry O'Neal Research Fellowship** for work in Glacier National Park, Grant-Kohrs Ranch NHS, and Little Bighorn Battlefield NM. The fellowship aims to provide educational assistance for students seeking to understand natural and cultural resources issues and how these interact with human values. Special consideration will be given to proposals that address the following:

1. natural resource issues such as aquatic ecology, terrestrial ecology, fire ecology, invasive plants, and climate change
2. cultural resource issues, such as history and architectural studies, cultural landscape reports, ethnographic research and archeology
3. social science that informs resource management about a natural or cultural topic and/or that addresses visitor impacts to park resources

Competition is open to graduate students or superior upper division undergraduate students at RM-CESU universities and colleges only. Awards range from \$1000-5000. Applications must be submitted electronically by February 20, 2020. [Application Process](#)



Glacier National Park



Grant-Kohrs Ranch NHS



Little Bighorn Battlefield

RM-CESU Partner Scientists Analyze Long Distance Migration Data from Around the World

A team of international researchers pooled their long-range mammal migration data collected in large, natural areas, such as the Arctic and Mongolia, to determine which terrestrial animals have the longest migrations. Long-distance migrations are threatened around the world, yet are critical for the conservation of many iconic species.

This team of scientists included a number of RM-CESU partners from the National Park Service, the Wildlife Conservation Society and the University of Montana. Their analysis was published in [Nature- Scientific Reports](#). The NPS also published a summary of the findings in an [overview essay](#) on their web site,



Caribou have the longest terrestrial migration, but there is more to the migration story. Photo credit, Kyle Joly, NPS

The GPS collar data were used to calculate two metrics: round-trip migration distance (distance between the start and end of migration) and total annual movement (total distance the animal moved in a year). Caribou had the longest existing migrations, with the round-trip distances exceeding 745 miles (1,200 km). Surprisingly, some predators, such as the gray wolf, moved even longer distances annually, but not in a "migration pattern". The authors surmised that large herbivores migrated long distances to exploit low-quality food sources, while carnivores moved in response to prey migration movements.

Dr. Mark Hebblewhite, one of the co-authors and a vertebrate ecologist at the University of Montana, notes that "one of the most amazing aspects of this study is the simple fact that large mammals, from around the globe, need so much habitat to move. Seasonal migrations, predator-prey dynamics, and the need to obtain food drive these astonishing long-distance movements. Our study builds on a growing body of science that show human activity can negatively affect animal movements and populations, and our work emphasizes the need to maintain core habitats and connectivity to keep these animals on the move."

Yellowstone Science Journal Issue on "Vital Signs" Includes Contributions from a Number of RM-CESU Cooperators: The latest 2019 edition of [Yellowstone Science - Volume 27 Issue 1](#) is titled, *Vital Signs - Monitoring Yellowstone's Ecosystem Health*.

There are numerous articles by scientists from the National Park Service, the NPS-Inventory and Monitoring Network, the US Geological Survey and Montana State University. Articles range from the status of Whitebark Pine in the Greater Yellowstone Ecosystem (GYE) to climate and fire severity trends in the park. There are short pieces on birds, bats, fish, insects and other indicator species found in the Greater Yellowstone Ecosystem. And there are articles that go beyond "traditional" inventory and monitoring methods to include important parameters such as the acoustical environment (with an [online library](#) found at the Yellowstone NP web site: and a



Whitebark pine trees on Mt. Washburn August 2015; photo credit, Diane Renkin

[natural sound archive](#) found at Montana State University). Many of these collaborations were facilitated through the RM-CESU agreement and cooperative agreements between the NPS and the USGS.

Andrew Ray of the NPS Inventory and Monitoring Network is the guest editor for this collection of articles. He stresses the importance of consistent and repeated monitoring to guide management decisions and to determine if management actions have the desired effects on ecosystem integrity. This issue of *Yellowstone Science* highlights the importance of vital signs monitoring that informs park resource condition, with some current examples: (1) the use of climate data to predict seasonal snowpack that dictates the use of roads for over snow recreation, (2) the use of water quality information to delist Soda Butte Creek from the inventory of Montana Impaired Waters sites, based on an effective clean-up of historic mining sites in the watershed, (3) coordinated, long-term monitoring of grizzly bears and whitebark pine has helped to shape our understanding of the status of populations of these iconic species across the GYE, and how to maintain these species using adaptive management approaches.

CALENDAR:

March 8-13, 2020: 85th North American Wildlife & Natural Resources Conference, Omaha, NE. Conference attendees include the administrators of federal, state and provincial wildlife and other natural resource agencies, college and university program leaders, heads of leading private conservation organizations, and other managers, scientists, researchers, officials and students of natural resources. The conference is a regular gathering of professionals to learn and exchange ideas, through a formal program, related meetings and other scheduled business, social and educational events.

March 10-12, 2020: 19th Annual Crown Managers Partnership Forum - Fire in the Crown of the Continent, Cranbrook, BC.

March 19-26, 2020: Symposium on Science and Stewardship to Protect and Sustain Wilderness Values: 11th World Wilderness Congress, Jaipur India.

April 22-26, 2020: Society for American Archaeology 85th Annual Conference, Austin, TX. SAA's Annual Meeting brings together the archaeological community to share ideas, best practices, and state of the art knowledge; meet and network in interest groups, panels, symposia, and committees; and to celebrate their field.

ASSITANTSHIP/TRAINING/COURSE OPPORTUNITIES

Wilderness Management Distance Education Course at the University of Montana - [NRSM 404 Wilderness in the American Context and NRSM560 American Wilderness Philosophy and Policy](#) This course provides a broad perspective of what wilderness is and how the idea developed, and exposes students to some of the differing values, ethics, and expectations of wilderness held by society. It offers an account of the origins of the wilderness idea, tracing the beginnings of the conservation movement from the Greek philosophers to today. In this course students will examine the early history of wilderness preservation that ultimately led to federal protection in the Wilderness Act and subsequent legislation, including how each agency applies these laws. **Registration Deadline: January 22, 2020; Course Dates: January 27, 2020 thru May 15, 2020.**

The University of Montana Wilderness Institute seeks to fill a PhD assistantship to work on a funded project entitled, "Ecosystem Response to Fire in the Wilderness." This project will measure vegetation and fuels data across sites that burned in the last 40 years in order to assess the potential for fire-caused changes to forest structure and function, including the possibility of conversions to non-forest. This project is a collaboration with the Aldo Leopold Wilderness Research Institute. The position will be supervised by Dr. Andrew Larson. [Find out more.](#)

JOB OPPORTUNITIES

For details, visit [Job Opportunities](#)

Post-Doctoral Researcher Assoc will investigate the genomic mechanisms determining the adaptive potential of sagebrush (*Artemisia tridentata*) to drought, heat stress and herbivory, EPSCoR, Boise State University (screening begins 1/30/2020)

Assistant or Associate Professor of Native American Studies (Tribal Geographic Information Systems and Water Resource emphasis) and Director of the Elouise Cobell Land and Culture Institute, University of Montana, Missoula, MT (screening begins 1/9/2020)

Assistant Professor in Insect Physiology, Washington State University, Pullman, WA (screening begins 1/2/2020)

Assistant Professor/Associate Professor of Watershed Analysis, Montana State University, Bozeman, MT (screening begins 12/20/2019)

Assistant Professor, Environmental Management Systems with a focus on rangeland management and sciences, Utah State University, Logan, UT (screening begins 12/16/2019)

Assistant Professor in Rangeland Ecology and Management, Colorado State University, Fort Collins, CO (screening begins 12/15/2019)

Assistant Professor in Applied Forest Ecology/Silviculture, Colorado State University, Fort Collins, CO (screening begins 12/15/2019)

Assistant Professor in Zoology and Physiology, University of Wyoming, Laramie, WY (screening begins 12/15/2019)

Assistant Professor/Associate Professor of Remote Sensing, Montana State University, Bozeman, MT (screening begins 12/15/2019)

Assistant Professor/Associate Professor of Environmental Systems Science, Montana State University, Bozeman, MT (screening begins 12/9/2019)

Assistant Professor in Forest Ecophysiology, Washington State University, Pullman, WA (screening begins 12/9/2019)

Project Coordinator - Planetarium, University of Wyoming, Laramie, WY (screening 12/9/2019)

Assistant Professor of Outdoor Recreation and Wildland Management, University of Montana, Missoula, MT (screening begins 12/2/2019)

Instructor in Environmental Engineering, University of Colorado Boulder, Boulder, CO (screening begins 12/1/2019)

If you would like to post an announcement in the next RM-CESU Newsletter or on the website, please contact the RM-CESU Coordinator at rmcesu@cfc.umt.edu.