



Rocky Mountains Cooperative Ecosystem Studies Unit

NEWSLETTER Fall 2021

RM-CESU NEWS & EVENTS

Whitebark Pine Ecosystem Foundation Encourages Participation in the High-Five II Virtual Conference, October 5-7, 2021 A comprehensive series of virtual presentations, posters and virtual events related to the ecology of five-needle pines in western North America will be held in early October 2021. Registration is [now open](#). Over the three days, 100 speakers will share their research and management expertise on all six high elevation pine species in subjects as varied as genetics, tree culturing, wildlife interactions, and disturbance ecology. Here is the [current meeting schedule](#). Presenters include an array of RM-CESU partner scientists from USGS, NPS, USDA-FS, BLM, University of Montana, Montana State University, and University of Colorado Denver, among others.

Save The Date, May 15-18, 2022 for the next Biennial Science Conference on the Greater Yellowstone Ecosystem The Planning Committee of the 15th Biennial Scientific Conference on the Greater Yellowstone Ecosystem (GYE) is pleased to announce the next conference in this series, ***Expanding the Scope of Science Together- the Next 150 Years***. The conference will be held May 15-18, 2022 at Montana State University in Bozeman, Montana. Abstract submissions and scholarship applications will be accepted in December 2021. Check the [conference website](#) regularly for additional information as it becomes available.

Rocky Mountains CESU Partners Contribute to On-Line Book about Bighorn Sheep and Mountain Goats in the Rockies Mountain goats and bighorn sheep populations, both found in the wildlands of the Greater Yellowstone Ecosystem, are the subject of a new book with chapters written by university and agency partners of the RM-CESU.

Bighorn sheep are native to this area, and mountain goats are not. Wildlife managers in Wyoming, Montana and Idaho have collaborated with Federal agency scientists to bring these species back into balance in places like Yellowstone and Grand Teton NPs and US Forest Service lands.

The contrasting histories and opposite trajectories merge in a new book: *Greater Yellowstone's Mountain Ungulates: A contrast in management histories and challenges*, Editors P.J. White (NPS), Robert A. Garrott (Montana State University), and Douglas E. McWhirter (Wyoming Game and Fish Department). This book is a compilation of chapters by



different scientists and managers, including a number of studies facilitated through the RM-CESU agreement over the years.

In the 1940s and 1950s, managers relocated mountain goats from western Montana and introduced them into the Absaroka, Beartooth and Madison ranges. Here they spread out into the Greater Yellowstone and competed with resident bighorn sheep. Basic biology, ecological history and management options are laid out in the various chapters.

The book is available for [download as a PDF in three parts](#). It is also available in hard copy through online booksellers.

Authors of the various chapters include both professionals and students affiliated with: National Park Service, USDA- Forest Service, US Geological Survey, Wyoming Game and Fish Department, Idaho Department of Fish and Game, Montana Fish Wildlife and Parks, Colorado Parks and Wildlife, Montana State University, and University of Wyoming. Some of the funding for these studies was made possible through the Rocky Mountains CESU.

Scientists from USGS, Montana State University, and University of Wyoming are Among the Authors of the report: GREATER YELLOWSTONE CLIMATE ASSESSMENT Past, Present, and Future Climate Change in Greater Yellowstone Watersheds On June 23, 2021 Montana State University released an assessment report on climate change impacts in the Greater Yellowstone. The Authors of the report include: Steven Hostetler, Cathy Whitlock, Bryan Shuman, David Liefert, Charles Wolf Drimal, and Scott Bischke. [MSU summary of the report and press releases](#) and the [full report](#).

Temperature significantly increased and snowfall decreased in the Greater Yellowstone Area since 1950 because of climate change, and these trends will likely continue through the rest of the century. The report also found that by the end of the century, the GYA could see:

- Annual precipitation increase by 9-15%, but the combination of elevated temperatures and higher evaporation rates will likely make future conditions drier in summer.
- Reduced soil moisture in the summer months, which will be an additional stress on plant communities that could make drought and wildfires more common.
- Forty to sixty more days per year exceeding 90 degrees Fahrenheit in Bozeman, Montana, and in Jackson, Pinedale and Cody, Wyoming, if there is little to no mitigation of future emissions.

Scientists with the U.S. Geological Survey, Montana State University and the University of Wyoming studied climate change in the Greater Yellowstone Area from 1950 to 2018. They evaluated how these changes could progress by 2100 based on various greenhouse gas emission scenarios and found that average GYA temperatures increased by 2.3 degrees Fahrenheit and could increase an additional 5-10 degrees Fahrenheit by 2100.

Researchers from University of Montana and University of Wyoming Focus Publications on Wildfire and Climate To the casual observer, it seems obvious that fire activity is dramatically increasing in the western United States. This study by researchers from the University of Montana and University of Wyoming quantifies that increase as measured against the historical record. The study focused on subalpine forests that have historically

burned less frequently. Using a "unique network of 20 paleofire records", the authors place current rates of fire activity in subalpine forests in the context of climate and fire history going back 2000 years. They conclude that current rates of burning are 22% higher than the maximum rate seen in the historical record. The journal citation is: P. E. Higuera, B.N. Shuman, and K.D. Wolf. 2021. Rocky Mountain subalpine forests now burning more than any time in recent millennia. [Proceedings of the National Academy of Sciences of the United States of America. 118 \(25\) e2103135118](#)

A second recent journal article summarizes work by fire ecologists from the University of Montana: K.D. Wolf, P. E. Higuera, K. T. Davis, and S. Z. Dobrowski. 2021. Wildfire impacts on forest microclimate vary with biophysical context. *Ecosphere* 12(5):e03467. [10.1002/ecs2.3467](#). To understand the impacts of wildfire on forest microclimatic buffering, the researchers monitored daily temperature and vapor pressure deficit (VPD) in 33 plots over the first two growing seasons following two wildfires that burned in western Montana in 2017: the Lolo Peak and Sunrise fires. Fire-induced changes in microclimate of the magnitude documented clearly have the potential to impact the establishment and survival of tree seedlings and likely other understory vegetation in mid-elevation forests. This study received funding through the Joint Fire Sciences Program.

Western Association of Fish and Wildlife Agencies Funds a Social Science Study at Colorado State University on "Bringing social values to wildlife conservation decisions" RM-CESU partner social scientists analyzed data obtained from a survey of 46,894 US residents, to develop a spatially explicit "sociocultural index" to inform decision making through an understanding of public values toward wildlife. Even though biological and physical factors are most often the basis for wildlife conservation decisions, social issues are now a major determinant of wildlife conservation policy and management. The article uses the case study of how sociocultural data can inform gray wolf (*Canis lupus*) recovery efforts in Colorado.

The authors of this article in *Frontiers in Ecology and the Environment* include three researchers from Colorado State University and one from Ohio State University. The citation for [this article](#) is: Michael J Manfredo, Richard EW Berl, Tara L Teel, and Jeremy T Bruskotter, 2021, *Bringing social values to wildlife conservation decisions*, *Front Ecol Environ*.

JOB OPPORTUNITIES

Planning and environmental coordinator, Bureau of Land Management, Winnemucca, NV (closes 10/7/2021)

Forestry technician (recreation), Forest Service, Mountain Rest, CA (closes 10/7/2021)

Trail projects director, Idaho Trails Association, Boise, ID (closes 10/8/2021)

Meteorological technician, Yellowstone National Park, WY (closes 10/10/2021)

Outdoor recreation planner, Bureau of Land Management, 3 vacancies in Oregon (closes 10/10/2021)

Planning and environmental coordinator, Bureau of Land Management, 3 vacancies in Nevada, (closes 10/13/2021)

Park ranger, Bureau of Land Management in Lakeview, OR (closes 10/15/2021)

Associate Professor of African American Studies, University of Colorado, Boulder, CO (screening begins 10/15/2021)

Associate Research Scientist (Geologic Analyst), University of Wyoming, Laramie, WY (screening begins 10/15/2021)

Grants and Contracts Specialist, College of Natural Resources, University of Idaho, Moscow, ID (closes 10/25/2021)

Assistant Professor-Outdoor Recreation and Tourism Management, University of Wyoming, Laramie, WY (screening begins 11/15/2021)

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 contact the RM-CESU Coordinator at rmcesu@cfc.umt.edu.