Rocky Mountains Cooperative Ecosystem Studies Unit

Research, Education & Technical Assistance

NEWSLETTER

March - April 2017

RM-CESU NEWS & EVENTS

2017 Jerry O'Neal National Park Service Student Fellowship Awardees Announced

The Jerry O'Neal National Park Service Student Fellowship, funded through the Crown of the Continent Research Learning Center at Glacier National Park, is named for the former deputy superintendent at Glacier NP, in honor of his dedication to science and research in the NPS. The Fellowship is for work in Glacier National Park, Grant-Kohrs Ranch NHS, or Little Bighorn Battlefield NM. The competition is facilitated through the Rocky Mountains CESU and is open to students at all of the RM-CESU universities/colleges. **This year's Fellowship recipients are:**

Caitlyn Florentine, PhD candidate – Glaciology, University of Montana, ***Topographic drivers and ice flow mechanics of glacier change in Glacier National Park*** Caitlyn's study aims to refine our understanding of ongoing glacier retreat by examine how local topographic effects (such as such as wind-drifting, avalanching, and shading) may boost small mountain glaciers mass balance. The study will also look at how glacier flow via the deformation of ice may act to mitigate continued retreat once glaciers are contained within cirques.

Katie Stevens Goidich, Masters candidate – Anthropology, University of Montana, ***Archaeology of Railroad Tourism in Glacier National Park*** The focus of Katie's project is a historical report on the relationship of the Great Northern Railway's (GNRR) with Glacier National Park highlighting GNRR contributions to Park tourism and infrastructure construction, GNRR's impact on cultural landscape, and GNRR's role in Park designation and development. A second part of the study is an archaeological site survey of two distinct GNRR sites and associated documentation in the form of evaluation for listing on the National Register of Historic Places.

As a requirement of their Fellowships, Caitlyn and Katie will provide a final project report and copies of any publications as a result of their research. In addition, they will prepare a one-page, illustrated project summary that will be featured in a future RM-CESU newsletter.

Successful 2017 Research Conference on Rocky Mountain National Park Science Held in Estes Park, CO

The Biennial ROMO Science Conference was held on March 1-2, 2017 at the Estes Park Municipal Building. The agenda and details of the meeting can be found at the **conference website**.

The objectives of the meeting included:

- To promote collaboration between the park and its partners
- To provide a forum for researchers and park staff to share discoveries
- To highlight the past, current, and future issues relevant to park management
- To creates opportunities for young professionals and scientists to engage with park staff and the public
- To encourage dialog between the park, the public, students, and scientists

There was considerable participation by Rocky Mountains CESU partners, both agencies (USGS, NPS) and universities and colleges (UNC, UC Denver, CSU, CU Boulder, Metro State University, and Utah State University). NPS Emeritus scientist, Kathy Tonnessen, was on the program committee for the meeting, and assisted with logistics on site. More than 200 people attended the meetings, including a number of local residents and park staff.

The meeting "kicked off" on March 1 with awards presented by ROMO Superintendent Darla Sidles including:

- Partnership Award – to the Rocky Mountain Inventory and Monitoring Network, NPS, for work with ROMO and the other five I&M parks to collect long-term data on resources;
- Stewardship Award – to Dr. Tom Hobbs, Colorado State University for long-term assistance to the park with the Elk and Vegetation Management plan;
- Citizen Science Award – to Richard Bray and Stephanie Mason for work on the butterfly monitoring project.

Dr. Tom Hobbs, CSU, receives the Rocky Mountain NP Stewardship Award from Superintendent Darla Sidles and Acting Chief of Resource Stewardship, John Mack at the ROMO Science meeting, March 1, 2017, photo by NPS/Ann Shonlau

Tom Hobbs, a frequent cooperator through the RM-CESU, gave the keynote address comparing population analyses for the lynx-reindeer, predator-prey dynamics in Sweden, and population estimates of Rocky Mountain NP elk populations during a 30-year period.

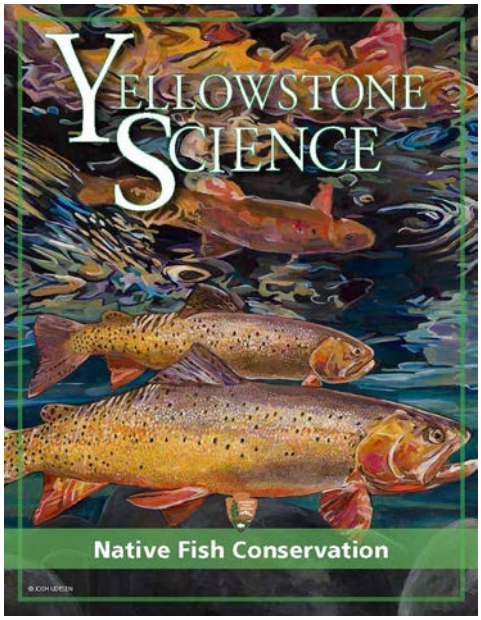
Oral and poster sessions during the Wednesday-Thursday meeting showcased work by students, faculty, educators, and resource managers on topics ranging from Visitor Use, Restoration of the Grand Ditch, Youth Relevancy and Public Engagement, Climate Change, Contaminants, and Wildlife Management.

Click on **Conference Proceedings** for proceedings and presenters' abstract.

For more information, contact the conference chair, Scott Esser, Ecologist, Continental Divide Research Learning Center, Rocky Mountain National Park, Scott_Esser@nps.gov

Restoring Native Fish to Yellowstone NP is the Focus of the Latest Issue *of Yellowstone Science*

The latest issue of Yellowstone Science (Volume 25, Issue 1) focuses on the efforts to restore native fish to Yellowstone National Park waterways. The articles provide opportunities to anyone who wants to learn more about the critical role native fish play in this dynamic ecosystem. These articles highlight the work of the NPS and partners as part of the Rocky Mountains CESU: NPS, USGS, USDA-FS, Montana State University, and the University of Wyoming.



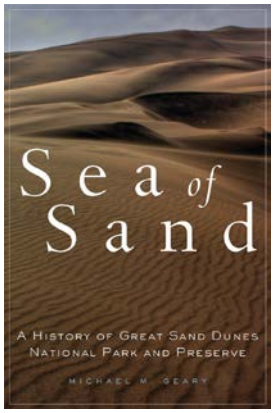
Yellowstone's senior fisheries biologist, Todd Koel writes, "Our goal is as bold as it is difficult: restore the ecological role of Yellowstone's native fish species." Through innovative management and careful science, Yellowstone Science explains the park's fisheries conservation story, including progress made and continuing challenges.

Modern fisheries management places an emphasis on restoring native fish populations including Yellowstone Cutthroat trout, Westslope Cutthroat Trout, and Arctic Grayling. Through construction of fish barriers, the use of fish toxins to remove non-natives, and reintroduction of native fish, this issue of the journal examines the successes of the native fisheries program and the questions that still linger. Are there alternative methods that might be more effective for lake trout removal than gillnetting? How can the spread of additional aquatic invasive species such as the zebra mussel be prevented?

Several articles focus on restoration of cutthroat trout in Yellowstone Lake, in particular, eradication of non-native lake trout that were found in Yellowstone Lake in 1994. In the article, "Suppressing Non-native Lake Trout to Restore Native Cutthroat Trout in Yellowstone Lake," fisheries biologists Pat Bigelow, Phil Doepke, Brian Ertel, Chris Guy, John Syslo, and Todd Koel discuss the history of a project that has removed more than 3.2 million lake trout from Yellowstone Lake (1994-2016) through gillnetting and angler catch.

Lake trout pose a significant threat to native fish populations as they not only consume cutthroat trout, but live long lives in areas of the lake that make them largely unavailable to species that once depended on cutthroat as a food source. "Non-native Lake Trout Induce Cascading Changes in the Yellowstone Lake Ecosystem" by Todd Koel, Jeff Arnold, Lisa Baril, Kerry Gunther, Doug Smith, John Syslo, and Lusha Tonstad discusses the effect one species, lake trout, has had on Yellowstone Lake, the heart of the region's ecosystem.

To download articles from this issue, click on ***Yellowstone Science***.



Book on Administrative and Environmental History of Great Sand Dunes National Park and Preserve by RM-CESU Partner Published by University of Oklahoma Press

Coinciding with the 100th anniversary of the National Park Service, the Public Lands History Center at Colorado State University has announced the publication of *Sea of Sand: A History of Great Sand Dunes National Park and Preserve*, written by local Fort Collins historian and Colorado State University alumnus Michael M. Geary. Published by the University of Oklahoma Press as Volume 2 in the Public Lands History series, *Sea of Sand* guides readers on a fascinating historical journey through over 10,000 years of human history at Colorado's Great Sand Dunes National Park and Preserve, home to the tallest sand dunes in North America. The book also explores the more recent legislative

effort led by an unprecedented coalition of local, state, and federal agencies, including The Nature Conservancy and the National Park Service, to secure national park status for the Great Sand Dunes. Click on **Book Information** for more details.

Michael M. Geary wrote this book as part of his degree requirements at Colorado State University, under the direction of Dr. Mark Fiege. This work was done through the Rocky Mountains CESU, with funding from Great Sand Dunes and the NPS RM-CESU. The author, Michael Geary, is a writer, researcher, avid historian, and long-time resident of Fort Collins who has also written *A Quick History of Grand Lake* (Western Reflections, Inc., 1999). For more information, click on the **Public Lands History series**.

PARTNER NEWS & EVENTS:

Montana State University: **MSU paleontologist leads expedition that unearths new species of ancient iguana-like lizard** A Montana State University paleontologist is part of a team that discovered a new iguana-like lizard that roamed the earth 75 million years ago, alongside dinosaurs such as tyrannosaurs and bird-like troodons.

David Varricchio, associate professor of paleontology in MSU's Department of Earth Sciences in the College of Letters and Science, led the expedition on Montana's Egg Mountain that unearthed two nearly complete fossils of a Late Cretaceous iguanomorph found in a nesting site. Read more: **Ancient Lizard**

University of Wyoming: **UW Student's Research Shines New Light on Mountain Pine Beetles** Bark beetle epidemics have prompted many studies over the years, but the role of parasitoid wasps and other beneficial natural enemies of the mountain pine beetle is not well understood because of the difficulties in studying insects that live under the bark of trees.

For the past two years, University of Wyoming entomology master's degree student Lawrence Haimowitz has been studying which natural enemies are present in Wyoming to help better understand their role. Read more: **Mountain Pine Beetles**

UW to Serve as Repository for Ancient Mammal Fossils Found in Natural Trap Cave Nestled just beyond the Big Horn Mountains lies an ancient treasure trove -- one of the largest groups of Ice Age mammal bones found in North America. And the ancient fossils, located in a natural trap cave, will soon be under the curation of the University of Wyoming, which will serve as a federal repository for the fossils.

Julie Meachen, an assistant professor of anatomy at Des Moines University who is leading the new excavation of mammal fossils in the trap cave, asked Mark Clementz, a UW associate professor of geology and geophysics and director of the UW Geological Museum; and Laura Vietti, collections manager for the Geological Museum, about UW serving as a repository for the material. The request was approved by the Bureau of Land Management (BLM), which manages the site.

"We were asked because we are already a well-established federal repository for material from the region, as well as because part of our mission is to keep as much material from Wyoming in Wyoming as we can," Clementz says. Read more: **Ice Age Mammal Bones**

Rocky Mountain Research Station: **Don't Bust the Biological Soil Crust: Preserving and Restoring an Important Desert Resource** Biological soil crusts are a complex of microscopic organisms growing on the soil surface in many arid and semi-arid ecosystems. These crusts perform the important role of stabilizing soil and reducing or eliminating water and wind erosion. One of the largest threats to biological soil crusts in the arid and semi-arid areas of the western United States is mechanical disturbance from vehicle traffic and grazing. The spread of the

annual invasive cheatgrass has increased the fuel load in areas that previously would not carry a fire, posing a potentially widespread and new threat to this resource. Read more: **Science You Can Use Bulletin -Jan/Feb 2017**

Calendar of Events:

March 28, 2017: Why Public Lands Matter, Boise State University, Boise, ID. This Conference is designed to look at current public lands management practices, the various voices in support and dissent, and potential stakeholder collaboration toward forward-looking best practices designed to manage, protect, and preserve our public lands for the generations to follow. **Conference Website**

April 2-7, 2017: The 19th George Wright Society Conference on Parks, Protected Areas, and Cultural Sites, Norfolk, VA. **Conference Website**

April 24-25, 2017: Environmental Justice and Sustainability in the Anthropocene, Colorado State University, Fort Collins, CO. The symposium will bring together over 100 academics and practitioners from more than 30 countries. Environmental Justice is a central component of sustainability politics during the Anthropocene – the current geological age when human activity is the dominant influence on climate and environment. **Symposium Website**

September 17-20, 2017: 14th Biennial Conference of Science & Management on the Colorado Plateau & Southwest Region, Flagstaff, AZ. his year's conference will continue to be a forum that brings together resource managers and research scientists to discuss the new findings, information needs, and possible solutions to the challenges confronting the lands, resources, and cultures of the Southwest. Global change, energy development, and human population growth in the Southwest affect water availability, natural systems, and the social character of the region. **Conference Website**

September 17-20, 2017: Pathways 2007, Rocky Mountain National Park, CO. **Pathways** is a conference and training program designed to address the myriad of issues that arise as people and wildlife struggle to coexist in a sustainable and healthy manner. We invite you to join us in this critical wildlife conservation effort. Our mission is to increase professionalism and effectiveness in the human dimensions of fisheries and wildlife management field. Conference is hosted by Colorado State University, in partnership with the US Fish and Wildlife Service in Rocky Mountain National Park, Colorado. **Conference Website**

January 8-11, 2018: Pathways Africa, Windhoek, Namibia, Colorado State University and The Cheetah Conservation Fund are co-hosting the 2018 Pathways Africa Conference and Training (Namibia) in partnership with the Large Carnivore Management Association of Namibia and the Namibia Nature Foundation. **Conference Website**

STUDENT OPPORTUNITIES

Registration now is open for 2017 summer field ecology courses at the University of Montana's The courses range from resource management and conservation to studying the ecology of lakes, streams, forests, mountains, aquatic microbes and more. Two- and four-week courses begin June 26, and they continue in two-week blocks through Aug. 18. Find out more on the **FLBS website**.

Graduate (M.S.) Assistantship at Colorado State University: Boreal Toad Recruitment and Disease Dynamics This M.S. project involves investigating factors influencing boreal toad recruitment dynamics and comparing population vita rates among populations at difference stages of exposure to the amphibian chytrid fungus

(*Batrachochytrium dendrobatidis, Bd*). The project is collaboration among Colorado State University faculty, the U. S. Geological Survey (USGS), and Rocky Mountain National Park (ROMO) biologists. The graduate student with help coordinate long-term monitoring efforts, conduct annual field surveys, design targeted studies to explore factors contributing to reproductive failure, and analyze existing long-term monitoring data. Specific focus will be on early-stage survival probabilities (e.g. tadpoles and 1st year survival) and vital rates for populations at different phases of *Bd* exposure from long-term mark-recapture data. Apply by: March 27, 2017, or until suitable candidate is found. See **Application Details**.

FUNDING OPPORTUNITIES

Bureau of Reclamation Seeks Applied Science Project Applicants for Southern Rockies & Desert Landscape Conservation Cooperatives The Bureau of Reclamation is seeking applicants for applied science projects for the Southern Rockies and Desert Landscape Conservation Cooperatives (LCC). Proposed projects are expected to deliver new capabilities that address priority resources identified and shared by Reclamation and partners involved in the Southern Rockies and Desert LCCs.

Approximately $800,000 in federal funds will be available (up to $100,000 per project). Projects must be completed within two years and recipients must provide at least a 50-percent cost-share of the total project costs. **Application information:** View funding opportunity at **www.grants.gov** by searching for opportunity number BOR-DO-17-F024. **Current closing date for applications:** May 16, 2017

JOB OPPORTUNITIES

For details, visit Job Opportunities

Research Faculty – watershed nutrient management, Plant, Soil, and Entomological Sciences, University of Idaho, Moscow, ID (closes 4/7/2017)

Research Specialist, Plant, Soil, and Entomological Sciences, University of Idaho, Moscow, ID (closes 4/3/2017)

Natural Resources Educator, Montana State University, Bozeman, MT. This positon will be full time for 20 weeks beginning in May and will work with the Gallatin County Natural Resources Extension Agent on a variety of project. (Closes 3/26/2017)

Post-Doc (agricultural economics, rangeland ecology and management, animal science), Ecosystem Science and Management, University of Wyoming, Laramie, WY (closes 3/24/2017)

Assistant Professor in Wildland Resources, Utah State University – Uintah Basin Campus (screening of applications will begin 3/18/2017)

Lecturer in Fisheries and Ecology, Western State Colorado University, Gunnison, CO (screening of applications will begin 3/13/2017)

Permafrost Post-Doc, CIRES-National Snow and Ice Data Center, University of Colorado, Boulder, CO (posted 3/8/2017)

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.