RM-CESU NEWS & EVENTS

RM-CESU Announces the Annual Competition for Student and Project Team Awards: The Rocky Mountains CESU annually recognizes outstanding students and projects through an awards program.

The RM-CESU Student Award recognizes "above and beyond" accomplishments by students involved in Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU) projects. Nominations may be submitted by any representative of the federal agency that sponsored the RM-CESU project, or by the student's RM-CESU university.

The RM-CESU Project Team Award was established as a way for a Project Team (the academic institution and the federal agency) involved in Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU) projects to be recognized for their outstanding accomplishments.

Nominations for both Student Award and Project Team Award are due August 1, 2013. The Award winners will receive a citation and give a presentation on their project results at annual RM-CESU Fall Meeting in October. For nomination instructions, go to the RM-CESU web site at: http://www.cfc.umt.edu/cesu/WhatsNew.php. For more information contact Lisa Gerloff, RM-CESU Executive Coordinator, at 406-243-5346, lisa.gerloff@umontana.edu

2013 Winners Announced for John L. Cotter Award for Excellence in NPS Archeology

The John L. Cotter Award for Excellence in National Park Service Archeology Committee is pleased to announce the winning Project Award and Career Achievement Award. The project award goes to Darlene Hassler-Godwin and Justin Ebersole for their outstanding work at Harpers Ferry National Armory. The project, entitled "Archeological Investigation of the Armory Street, Harpers Ferry Armory, (46JF518) Harpers Ferry National Historical Park, WV 2011-2012" is commended for the high level of dedication and innovation of the individuals nominated for this honor. In addition to traditional field excavation, mapping, and lab processing and analysis, special attention was given to soil, ceramic and lithic analyses in order to gain a better understanding of the natural environment and climate during prehistoric periods represented by this site. Pollen analysis on soil samples, and starch and protein extractions on ceramic and lithic samples, confirm the presence of maize that was processed in the ceramic vessels, dated to about 900 A.D.

In addition to the identification of maize, one projectile point tested positive for protein residue. The oldest found in this excavation, this large, short-stemmed rhyolite point dates to the Late Archaic (c. 2,500-1,200 B.C.)
Analysts concluded from the proteins that the point was used on a member of the Perciformes (perch) order. This represents the first archeology project in Harpers Ferry designed to explore prehistoric deposits, and the first time protein analysis has been performed on lithic materials.

Another interesting outcome of this multi-faceted project was the historic component, which included tailrace tunnel mapping. This exploration revealed some fascinating construction features: the tunnel is not simply a single shaft, as depicted on historic maps, but comprised of two sections forming a "Y." The tunnels were constructed as a series of arched vaults that document the complex evolution of the tailrace system. Other discoveries include use of brick in transitional or curved areas of the vault, and in other locations corresponding directly with Artery shops. Darlene Hassler-Godwin and Justin Ebersole, and their student assistant, demonstrated the highest level of personal interest and exceptional research skills during this project. Congratulations to Darlene and Justin, and to Harpers Ferry!

The Career Achievement Award goes to Chris Finley (now retired) at Bighorn Canyon National Recreation Area, for his outstanding stewardship of the cultural history and values of Bighorn Canyon. Native peoples, mountain men, ranchers and homesteaders have all left their mark at the park, and no one is better at interpreting and protecting cultural remains than Chris. He is curious and endlessly knowledgeable, and most importantly loves to share what he knows with visitors, staff and students. As an adopted member of the Crow tribe, Chris has been a tireless advocate for promoting partnerships and collaboration between American Indian groups and the park. His devotion and passion for his work, particularly in documenting stone circles familiarly known as 'tipi rings,' are a source of pride and joviality to the Crow Nation and they have given Chris the affectionate nickname of "Lord of the Rings". Congratulations to Chris for his outstanding dedication to the cultural resources of Bighorn Canyon, and his vision of bringing Native American students closer to their own heritage through archeological investigations and stewardship practices!

National Park Service archeologists created the Cotter Award to honor the long and distinguished career and pioneering contributions of Dr. John L. Cotter to professional archeology in the National Park System. This unofficial award was established to inspire student and professional archeologists to continue Dr. Cotter's model of excellence in scientific archeology. The award recognizes the accomplishments of NPS staff or a partnership researcher in the execution of a specific project within a unit or units of the National Park System. For further information please contact Pei-Lin Yu, Cultural Specialist, Rocky Mountains Cooperative Ecosystem Studies Unit, Ph 406-243-2660 or peilin_yu@nps.gov.

Giri Receives 2013 Boyd Evison Graduate Fellowship Grand Teton National Park and the Grand Teton Association (GTA) are pleased to announce that Susma Giri has received the Boyd Evison Graduate Fellowship for 2013. Giri, the ninth recipient of an Evison Fellowship, is currently pursuing a Ph.D. degree in Ecology at the University of Wyoming in Laramie. She plans to use her fellowship award to study the altitudinal variation in energy reserves and parasite loads in bumblebees in the southern Greater Yellowstone Ecosystem (GYE). Specifically, she will test three hypotheses: 1.) Bumblebees at high altitudes escape pathogens and parasites, 2.) Bumblebees at high altitudes expend more energy to forage and provision nests, and 3.) Bumblebees infected by pathogens and parasites expend more energy, regardless of altitude.

The Evison Fellowship was established in memory of Boyd Evison after his death in October, 2002, and created to honor Boyd's extensive and dedicated service to both the National Park Service
(NPS) and the GTA. Evison retired in 1994 from an exemplary 42-year career with the NPS and soon after began a second career as executive director for the GTA—a non-profit park partner dedicated to aiding interpretive, educational, and research programs for Grand Teton National Park.

The Evison Fellowship program encourages scientific and conservation-related research in national parks. It invites highly motivated, graduate students to conduct research in Grand Teton and throughout the Greater Yellowstone Area; and it supports study leading to a master’s or Ph.D. degree in the biosciences, geosciences or social sciences. Upon program completion, Evison recipients provide a copy of their thesis to the GTA and often share their results through oral presentations to park staff and partners.

RM-CESU “SPOTLIGHT”

Do Tourists Bug Bacteria?
Effects of Human Presence and Fecal Contamination on Bacterial Distribution in Streams of Glacier National Park

Kelsie Delaney, Department of Microbiology, University of Wyoming

The bacterial biodiversity of a stream is vital to its ecological stability and functionality. Bacteria play an essential role in nutrient cycling, serving as the main source of nitrogen and carbon for higher order organisms, the removal of halogens and metals from pristine waters, detoxification of urine, primary production, and provide the base of stream food webs.

The project’s aim was to examine the effects of human presence on bacterial populations in the streams of Glacier National Park. A particular focus was placed on known point sources, such as pit toilets and campgrounds.

Sediment samples were taken approximately every 700m along the stream, with biofilm samples taken when present. Three streams were chosen, two with high human contact and one with none. Each sample underwent genetic analysis to identify bacterial abundance of normal flora versus levels of Escherichia coli, which is used as an indicator of fecal contamination.

There was found to be a strong connection between the levels of E. coli present in the stream a few kilometers past pit toilets and campgrounds. This spike in E. coli corresponds to a significant decrease in biofilm-forming bacteria and a slight increase in nitrogen-fixing bacteria. In areas of high E. coli concentration, the biofilms were very thick, discolored and unhealthy in their appearance and bacterial composition. The numbers for the biofilm-forming bacteria recovered with the decrease in E. coli after 1.5km, but the nitrogen fixers remained in high numbers down the entire stream continuum. Other bacterial species exhibited indifference to the increase in E. coli levels. These results support the hypothesis that the biodiversity of the stream bacteria can be affected by human pollution.

Kelsie Delaney is a recipient of the of a 2011 Jerry O’Neal National Park Service Student Fellowship. To read her full report, visit: http://www.cfc.umt.edu/CESU/Reports/NPS/UMT/2010/O%27neal_fellowships_11Delaney_report.pdf
Announcements:
Montana State University and University of Calgary: Dinosaur egg study supports evolutionary link between birds and dinosaurs. A small, bird-like North American dinosaur incubated its eggs in a similar way to brooding birds—bolstering the evolutionary link between birds and dinosaurs, researchers at the University of Calgary and Montana State University study have found.

Among the many mysteries paleontologists have tried to uncover is how dinosaurs hatched their young. Was it in eggs completely buried in nest materials, like crocodiles? Or was it in eggs in open or non-covered nests, like brooding birds?

Using egg clutches found in Alberta and Montana, researchers Darla Zelenitsky at the University of Calgary and David Varricchio at Montana State University closely examined the shells of fossil eggs from a small meat-eating dinosaur called Troodon.

In a finding published in the spring issue of Paleobiology, they concluded that this specific dinosaur species, which was known to lay its eggs almost vertically, would have only buried the egg bottoms in mud.

"Based on our calculations, the eggshells of Troodon were very similar to those of brooding birds, which tells us that this dinosaur did not completely bury its eggs in nesting materials like crocodiles do," says study co-author Zelenitsky, assistant professor of geoscience.

"Both the eggs and the surrounding sediments indicate only partial burial; thus an adult would have directly contacted the exposed parts of the eggs during incubation," says lead author Varricchio, associate professor of paleontology. Read more: http://www.ucalgary.ca/news/releases/april2013/dinoegg

University of Montana: Climate Change Holds Consequences For Camouflaged Wildlife The predicted decrease of winter snowpack due to climate change might inconvenience winter recreationists, but for mammals that change coat color during the cold months to blend in and survive, the consequences could be much graver.

L. Scott Mills, a professor in the UM College of Forestry and Conservation, will publish an article titled "Camouflage Mismatch in Seasonal Coat Color Due to Decreased Snow Duration" in the April issue of Proceedings of the National Academy of Sciences. The article details research on the snowshoe hare, one of 10 animal species worldwide that changes color from brown to white to match seasonal snow cover.

Mills and his colleagues studied wild hares for three years in western Montana. The study examined 148 hares weekly in the field to quantify their coat color, the extent of snow around them and the percent of mismatch between the hare and their background. Read more: http://news.umt.edu/2013/04/041513hare.aspx

University of Wyoming: UW launches center on law and energy resources Robert Nordhaus, one of the nation’s leading experts on energy law and policy, was the inaugural speaker Thursday, April 25, for the University of Wyoming’s new Center for Law and Energy Resources in the Rockies.

The Center for Law and Energy Resources in the Rockies (CLERR) provides a focal point for the many energy and natural resources activities at the UW College of Law. It offers an interdisciplinary approach for exploring the legal, social, economic, technological and political realities that affect energy and natural resources policy.
“Through speakers, conferences, symposia and similar activities, CLERR provides a platform for engaging in constructive and meaningful public policy debate and offers the opportunity for robust legal and policy research,” says Sam Kalen, the center’s director and UW College of Law associate professor. “CLERR builds on the College of Law’s strong academic programs in energy, environment and natural resources to provide a wealth of programs to prepare students to face the nation’s energy future.”

**USGS:** Kate Kendall, USGS, Glacier Field Station, to retire
Kate Kendall, a graduate of Montana State University, started with the National Park Service in 1974 in Washington DC, worked in Yellowstone National Park on the Interagency Grizzly Bear Study Team (1977-1982), and then joined the Glacier National Park staff in 1982. Her affiliation changed during her 31 years as a biologist in Glacier National Park (transferred to the National Biological Survey in 1993-1996 then the US Geological Survey 1996-2013) but her dedication to the park and science never changed and her research has made significant contributions to the knowledge of bears and whitebark pine in the park and the intermountain region. She plans to work part-time in emeritus status with USGS after retirement to see her research projects to completion.

**National Park Service:** Online Publication of *Park Science* volume 29(2)—Fall-Winter 2012-2013 is now available [http://www.nature.nps.gov/ParkScience/](http://www.nature.nps.gov/ParkScience/)

**USFS-Rocky Mountain Research Station:** RMRS 2008-2012 National Fire Plan Investments

**Calendar of Events:**

**June 4-8, 2013:** International Symposium on Society & Resource Management, Estes Park, CO. ISSRM is the premier scientific meeting for academic and government researchers, students, agency scientists, land managers, NGO representatives, and other individuals who are broadly interested in the human dimensions of natural resource management issues. Meeting sponsored by Colorado State University. [http://www.issrm2013.iasnr.org/](http://www.issrm2013.iasnr.org/)

**July 7-9, 2013:** Council on Forest Engineering Annual Meeting, Missoula MT. Sponsors include University of Montana’s College of Forest and Conservation and Montana State University Extension Forestry. [http://www.umt.edu/ce/cps/forestengineering/](http://www.umt.edu/ce/cps/forestengineering/)

**August 15-16, 2013:** Clyde Martz Summer Conference - Arizona v. California at 50: The Legacy and Future of Governance, Reserved Rights, and Water Transfers, University of Colorado School of Law, Boulder, CO. The 50th anniversary of the Supreme Court’s historic decision in Arizona v. California arrives next summer. While the case was an important landmark in the still-evolving relationship between these two Lower Basin states, it remains most salient today by the way it codified federal rights and responsibilities, especially in the areas of federal (including tribal) reserved rights, the role of the Interior Secretary in Lower Basin water management, and the ability of Congress to allocate/reallocate water. It also modified the Upper Basin/Lower Basin relationship in important ways, especially regarding the treatment of Lower Basin tributaries. Moving forward, several types of potential management innovations in areas such as governance and water transfers will hinge on the framework outlined, in part, by this decision. [http://www.colorado.edu/law/research/gwc/events](http://www.colorado.edu/law/research/gwc/events)
TRAINING AND COURSE OPPORTUNITIES

July 29 - Aug 2, 2013: Sediment Transport in Stream Assessment and Design, Logan, UT. Cost: $1850 ($1600 Early Bird Special if Registered Before June 1st). This course is intended for those who wish to understand and apply the principles of sediment transport to alluvial channel assessment and design. Principles of open channel flow and sediment transport are combined with watershed-scale, hydrologic and sediment source analysis to place channel assessment and design in the appropriate context. Threshold and alluvial channel design methods are presented along with guidelines for assessing and incorporating uncertainty. The course balances advance reading, lecture, field work, and hands-on exercises for estimating sediment supply, calculating sediment transport rates, and forecasting channel response to water and sediment supply. This course is intended for participants who are familiar with basic principles of river geomorphology. https://cnr.usu.edu/streamrestoration/htm/course-information

The Arthur Carhart National Wilderness Training Center presents Wilderness in the Courts, a series of webinars presenting wilderness case law on several topics, including:

- Inholding Access, May 15, 2013 at 12:30 pm (ET), and
- Wildlife Management, August 27, 2013 at 12:30 pm (ET).

For further information and to register for any or all of the above webinars, see https://www306.livemeeting.com/lrs/8002989786/Registration.aspx?pageName=wdz5q4vk6k8r2nf

JOB OPPORTUNITIES

Postdoctoral Fellow - Immunology and Infectious Diseases, Montana State University, Bozeman, MT (screening will begin 5/22/2013)

Two 18-month Land Rehabilitation and Maintenance Field Assistant positions, Center for Environmental Management of Military Lands (CEMML), Fort Hunter Liggett, CA (closed 5/12/2013)

Geologist, Kootenai National Forest, Trout Creek, MT (closes 5/17/2013)

3 Post-Doctoral Research Associates, Wyoming Center for Environmental Hydrology and Geophysics (WyCEHG), University of Wyoming, Laramie, WY (Screening of applications will begin on 5/1/2013)

For details on job opportunities visit http://www.cfc.umt.edu/cesu/Postings/Jobs.php

MEETINGS OF INTEREST

June 16-20, 2013: 9th North American Forest Ecology Workshop, Bloomington, IN. The conference will allow forest ecologists, silviculturists, wildlife biologists, and other forest researchers and managers from Canada, Mexico, Central America and the United States to gather and exchange current research and management approaches within the backdrop of the US central hardwood forests. http://nafew.org/

July 21-25, 2013: 26th International Congress for Conservation Biology, Baltimore, MD. The biennial International Congress for Conservation Biology is recognized as the most important global meeting for conservation professionals and students. The theme of the 26th ICCB is "Connecting systems, disciplines and stakeholders" and the meeting will be aptly located along the shores of the Chesapeake Bay in Baltimore’s Inner Harbor. Chesapeake Bay is the world’s most productive estuary and the region is rich in cultural and historical heritage and conservation challenges and success stories. http://www.conbio.org/mini-sites/iccb-2013

September 16-19, 2013: 12th Biennial Conference of Research on the Colorado Plateau, Northern Arizona University, Flagstaff, AZ. Resource managers, scientists, citizens, and students are invited to attend and participate in this solution-oriented conference that addresses some of the most pressing natural and cultural resource management issues facing the Southwest and virtually every other region in North America. http://nau.edu/Merriam-Powell/Biennial-Conference/Welcome/


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](mailto:rmcesu@cfc.umt.edu).