Two Students Selected for Jerry O’Neal National Park Service Student Fellowship

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. This year’s Fellowship recipients are:

Elena Nikolaeva, PhD candidate – Resource Conservation, University of Montana, Exploring knowledge, perceptions and benefits of a “peace park” designation in Glacier National Park

Elena’s study will help gain a deeper understanding of the meaning and possible benefits of the “peace park” designation and its implications for the broader community of park managers, visitors, local residents and other stakeholders at local to global scales. A deeper analysis of the symbolic value of peace and its impact on different aspects of environmental, social and economic performance, including implications of the “peace park” status for sustainable tourism development is planned.

Andrew Spencer, M.S, Hydrological Engineering, Montana Tech, Relationships between irrigation fluctuations and ground or surface water temperatures, Grant-Kohrs Ranch

Through this study, Andrew will determine if irrigating practices affect the temperature in groundwater and surface water in the Clark Fork River (CFR) and/or its tributaries. This will be determined using temperature tracers to detect fluxes within the hyporheic, streambed and saturated zone environments. Secondary objectives include determining baseline temperature fluctuations along the CFR, delineating zones of losing and gaining reaches along the CFR in GKR and identifying the important parameters along each gaining/losing reach.
UM professor publishes book on Tribes of the Glacier NP area
Sally Thompson highlights Blackfeet and Kootenai history by sharing cultural legends, hunting techniques, games, and seasonal travels in what is now Glacier National Park in her recently published book *People Before the Park: The Kootenai and Blackfeet Before Glacier National Park* The book is a collaboration between Missoula author and anthropologist Sally Thompson, the Kootenai Culture Committee, and the Pikunni Traditional Association, and was completed in 2015. The book is available through the Montana Historical Society Press, at https://mhs.mt.gov/pubs/press

Sally Thompson, an anthropologist (Ph.D., University of Colorado, 1980), has spent over thirty years working with the native tribes of the West, from the Rio Grande to the Susitna and from the Columbia Bar to the mouth of the Missouri.

In 2008 Sally received funding from the National Park Service through the Centennial Challenge fund source to collect and review existing information held by Glacier National Park on the history of Native American presence and their current relationships and associations with the area now designated Glacier National Park, including, archeological and ethnographic reports, historic photographs, maps, administrative correspondence, and oral interviews. This project was facilitated through the RM-CESU agreement.

WEBINAR: Inter-LCC Greater Sage-grouse Research Projects: Results and Applications to Inform Landscape-scale Management
Date and Time: April 4, 2016 2-4 pm Mountain / 1-3 pm Pacific
Hosts: Great Northern and Southern Rockies LCCs

In 2012, Region 6 of the US Fish and Wildlife Service (USFWS) obtained Inter-LCC Science Funding to support original research and development of decision support tools to further landscape-scale conservation of Greater sage-grouse within and across the four Landscape Conservation Cooperatives (LCC) comprising the birds’ range. USFWS partnered with Western Association of Fish and Wildlife Agencies (WAFWA) to deliver this program. WAFWA convened a panel of LCC, state, and university experts in sage-grouse and sagebrush systems that facilitated the research proposal process to fund the highest priority projects. In this webinar, principal investigators funded through this effort will present project results, discuss availability of underlying data or model outputs, and current and potential application of findings.

If you would like to register this webinar, visit
https://attendee.gotowebinar.com/register/448019475768786946

RM-CESU “SPOTLIGHT”

*Colorado State University, Cooperative Institute for Research in the Atmosphere (CIRA), Continues to Support the National Park Service mission to protect air quality in Class 1 areas nationally*

A recent final report has been delivered by the Cooperative Institute for Research in the Atmosphere (CIRA) at CSU for the project titled: *Assistance for Visibility Data Analysis and Image Display Techniques*. This is a continuing project between the National Park Service, Air Resources Division and CSU through the Rocky Mountains CESU.
There is a comprehensive listing of activities and products for CIRA found at [http://www.cira.colostate.edu/](http://www.cira.colostate.edu/). Visibility research and monitoring information can be found at [http://vista.cira.colostate.edu/improve/](http://vista.cira.colostate.edu/improve/).

The Cooperative Institute for Research in the Atmosphere was established in 1980 at CSU to serve as a mechanism to promote cooperation between University scientists and students and those in the National Oceanic and Atmospheric Administration (NOAA). CIRA has since expanded and diversified its mission to coordinate with other Federal agencies, including the National Aeronautics and Space Administration (NASA), the National Park Service (NPS), the U.S. Forest Service, and the Department of Defense (DoD). CIRA is a multi-disciplinary research institute within the College of Engineering (CoE).

Dr. Jenny Hand at CIRA has served as the principal investigator on this project for many years and is a specialist in scientific understanding of the causes of visibility impairment and atmospheric loading to ecosystems. This atmospheric sciences project is designed to assist the NPS and other land management agencies in their affirmative responsibility to protect air quality in parks and wilderness areas. The visibility data and analyses produced by this project are directly used by the US Environmental Protection Agency (EPA) and state and local air quality management agencies to implement the Clean Air Act Amendments. Similarly, data and analyses produced under this task agreement on atmospheric deposition are informing the NPS agencies about the role of regulated and non-regulated pollutants in atmospheric deposition and their effect on ecosystems, with an emphasis on Rocky Mountain NP, Grand Teton NP and the parks of the Bakken region (Theodore Roosevelt NP, Fort Union Trading Post NHS, Knife River Indian Villages NHS).

CSU directly benefits from this project in both the research and teaching functions of the university. This project has produced many various peer-reviewed publications and enhances the university's position as a leader in disseminating credible scientific information. The university research staff benefit by their collaboration with NPS scientists, who are leaders in the field of aerosol and visibility science, monitoring in remote environments, and assessing which sources of air pollution lead to air quality degradation. The CIRA and NPS scientists working on this project interact with university students on dissertation and thesis projects. NPS scientists and university research staff also communicate research to other academic and public audiences through departmental seminars and participation in national and regional science meetings. This provides a unique opportunity to communicate with students and young scientists on the importance of applying their research results to policy relevant issues.

A key element of the project is to interpret and display this scientific information for the general public, enhancing their understanding of issues that can affect their enjoyment of the natural world. CIRA and NPS scientists participate in outreach efforts in elementary and secondary schools, encouraging young students to pursue science projects.

Some of the significant results of this ongoing project, as reported for the August 2014–August 2015 period include:

- **Aerosol research**: The CSU and NPS researchers examined the visibility particle data (PM 2.5 microns) and discovered a recent increase in spring dust levels in the Southwestern US (see graphic). The cause of this increase could be climate-related, due to droughts, increased winds and patterns of large scale circulation (El Nino).
• Nitrogen deposition studies: There was continued analysis and modeling of data collected during two special studies conducted by CSU and NPS at Rocky Mountain NP (RoMANS II) and at Grand Teton NP (GrandTReNDS) to determine both wet and dry deposition of nitrogen species from the air, with consideration of the sources of those pollutants. High levels of ammonia and ammonium nitrate particles in both parks can be traced to agricultural activity adjacent to the parks.

• Evaluation of the impacts of oil and gas development in the Bakken shale region: A field study in the northern Great Plains was carried out in 2013-2014 to help managers understand the air quality impacts of the significant growth of oil and gas development and associated urban growth in this area. Monitoring near the north unit of Theodore Roosevelt NP showed elevated concentrations of black carbon and nitrogen and sulfur dioxide.

• Development of public outreach products: The NPS and United States Forest Service (USFS) use a number of air quality and other datasets to assess air quality issues affecting NPS and USFS resources. The primary activities by CSU this year was to provide data inventories, data processing and data displays for government, academic, and public use through an unrestricted website called the Federal Land Manager Environmental Database website (http://views.cira.colostate.edu/fed/). CSU also provided direct assistance to parks concerned about the health effects of forest fire smoke (Glacier, Grand Teton and Mount Rainier NPs).

For a comprehensive listing of reports and experimental results related to visibility in National Parks, go to http://www.nature.nps.gov/air/studies/visstudy.cf

PARTNER NEWS & EVENTS

Boise State University: New Ph.D. in Ecology, Evolution and Behavior Approved The Idaho State Board of Education unanimously approved the creation of a Ph.D. in Ecology, Evolution and Behavior at Boise State University. The new interdisciplinary program will capitalize on current undergraduate and master's programs in biology and raptor biology that were identified as among the university's strongest in the school's recent program prioritization process. The new Ph.D. program is slated to begin in fall 2017. See more at http://news.boisestate.edu/update/2016/02/18/new-ph-d-in-ecology-evolution-and-behavior-gets-state-board-approval/
Utah State University: Colorado River Conservation Efforts 'Too Disjointed' says USU Scholar Environmental protection of the Colorado River would be much more effective if existing multiple basin conservation programs treated the 1,450-mile-long river as a single, integrated system.

That’s the conclusion of a newly released report, "Prioritizing Management and Protection of the Colorado River’s Environmental Resources," by the Colorado River Research Group, which includes Utah State University professor Jack Schmidt.

“We need a basin-scale strategy, rather than the incomplete patchwork of largely uncoordinated efforts that’s currently in place,” says Schmidt, professor in USU’s Department of Watershed Sciences. “With an integrated effort, we can meet water supply needs and have a much healthier and restored river.” See more at http://www.usu.edu/today/index.cfm?id=55583

University of Colorado Boulder: Fires, drought in changing climate affecting high altitude forests Large, severe fires on the West followed by increasing drought conditions as the planet warms are leading to lower tree densities and increased patchiness in high-elevation forests. See more at http://www.colorado.edu/news/releases/2016/03/21/fires-drought-changing-climate-affecting-high-altitude-forests

University of Montana/NRCS: USDA Partners with UM to Develop Sage Grouse Management Map Partnering with the University of Montana and other entities, the United States Department of Agriculture’s Natural Resources Conservation Service (NRCS) has created a new map through the Google Earth Engine, as part of their ongoing Sage Grouse Initiative. See more at http://newwest.net/2016/02/23/usda-partners-unveil-sage-grouse-management-map/

University of Wyoming: UW Economist Makes Case for Inclusive Green Economy The global problems of environmental degradation and income inequality will continue to worsen without international efforts to transition to a more inclusive green economy, a University of Wyoming economist argues.

Ed Barbier, the John S. Bugas Professor of Economics and Finance in the UW College of Business, makes that case in an article published in One Planet, the flagship journal of the United Nations Environment Programme. See more at http://www.uwyo.edu/uw/news/2016/03/uw-economist-makes-case-for-inclusive-green-economy.html

JOBS OPPORTUNITIES

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

Postdoctoral Fellows - Open Pool, Department of Biology, Colorado State University, Fort Collins, CO (closes 4/30/2016)

Geologist, Bureau of Land Management, Winnemucca, NE (closes 4/8/2016)
Range Technician, Bureau of Land Management, Fort Stanton, NM (closes 4/7/2016)

Supervisory Civil Engineer (Hydraulics)/Hydrologist/Geologist, Bureau of Reclamation, Boise, ID (closes 4/5/2016)

Lecturer in Biology (Environmental), Western State Colorado University, Gunnison, CO (screening begins 4/4/2016)

Outdoor Program Coordinator, Boise State University, Boise, ID (closes 4/3/2016)

Postdoctoral Fellow – Mountain Social-Ecological Systems Participatory Modeling, Natural Resource Ecology Laboratory and Department of Ecosystem Science & Sustainability, Colorado State University, Fort Collins, CO (closes 4/1/2016)

Assistant Professor Landscape Architecture, University of Idaho, Moscow, ID (screening to begin 3/31/2016)

Seasonal Architectural Historian, Center for Environmental Management of Military Lands (CEMML) and will be located at Fort Wainwright in Fairbanks, Alaska (closes 3/31/2016)

Archeologist, Natural Resources Conservation Service, Portland, OR (closes 3/29/2016)

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.