



FY2022 Annual Report

**Rocky Mountains Cooperative
Ecosystem Studies Unit**

Cooperative Ecosystem Studies Units (CESU) Network is a national consortium of federal agencies, academic institutions, and other partners, organized around biogeographic areas. The CESUs were established to provide research, technical assistance, and education to federal resource and environmental managers.

The **Rocky Mountains Cooperative Ecosystem Studies Unit** has been operating since 1999 and was one of four original pilot CESUs established through a competitive process. The partnership has grown steadily and is now comprised of 10 Agencies and 29 Non-Federal partners. Members of the RM-CESU are the following:

- ❖ University of Montana-host 1999
- ❖ University of Idaho 1999
- ❖ Montana State University 1999
- ❖ Salish Kootenai College 1999
- ❖ Utah State University 1999
- ❖ Washington State University 1999
- ❖ University of Wyoming 2002
- ❖ Colorado State University 2004
- ❖ University of Colorado Boulder 2002
- ❖ University of Colorado Denver 2002
- ❖ University of Northern Colorado 2006
- ❖ University of Calgary 2007
- ❖ Metropolitan State University of Denver 2011
- ❖ Little Big Horn College 2012
- ❖ Northwest College 2013
- ❖ University of Utah 2013
- ❖ Chief Dull Knife College 2014
- ❖ Blackfeet Community College 2014
- ❖ University of Waterloo 2014
- ❖ Wildlife Conservation Society 2014
- ❖ Boise State University 2015
- ❖ Western Colorado University 2015
- ❖ University of Denver 2017

- ❖ Front Range Community College 2017
 - ❖ Western Association of Fish and Wildlife Agencies 2018
 - ❖ Center for Large Landscape Conservation 2018
 - ❖ The Ember Alliance 2020
 - ❖ Smithsonian Institution 2020
 - ❖ Wildlife Restoration Foundation 2020
- USDI**
- ❖ Bureau of Land Management 1999
 - ❖ Bureau of Reclamation 2004
 - ❖ Fish and Wildlife Service 2009
 - ❖ Geological Survey 1999
 - ❖ National Park Service 1999
 - ❖ Bureau of Indian Affairs 2017
- USDA**
- ❖ Forest Service 1999
 - ❖ Natural Resources Conservation Service 2004
- DOD**
- ❖ US Army Corps of Engineer- Civil Works 2008
 - ❖ Office of Deputy Under Secretary of Defense (Installations and Environment) 2009

The mission of the Rocky Mountains CESU is to improve and disseminate the knowledge base for managing natural and cultural resources in the rapidly changing social, cultural, and environmental landscape of the Rocky Mountain Region, and to extend its expertise to national issues where appropriate.

RM-CESU PROJECT ACTIVITY FOR FY2022

This year, Rocky Mountains Cooperative Ecosystems Studies Unit's (RM-CESU) partners **executed 91 task agreements (TAs)/modifications (Mods) obligating \$19,335,655 to new projects (\$8,507,581/68 TAs) and adding funds to existing projects (\$10,828,074/23 Mods)**. A complete listing of projects may be found on the RM-CESU Project List for FY2022 on the web site at <http://www.cfc.umn.edu/cesu/projects/default.php> (look under **Annual Reports**).

Table 1: RM-CESU Activity by Agency Partners for FY22 and comparison with the previous 4-year average.

FY22	RM-CESU	BIA	BLM	BOR	DoD	NPS	NRCS	USFWS	USGS	USACE	USFS
# Of TA/Mods	91	0	17	0	16	32	0	8	10	3	5
Funding (in millions)	\$19.3	0	\$1.1	0	\$11.2	\$3.6	0	\$1.1	\$0.96	\$1.0	\$0.34
4-yr Ave.											
# Of TA/Mods		0	12	1	16	58	0	8	19	2	1
Funding (in millions)		0	\$1.3	\$0.02	7.2	\$6.2	0	\$1.2	\$1.4	\$1.1	\$0.02

Seven of the ten agencies had activity this fiscal year (Table 1). A couple interesting observations jump out when comparing FY22 activity to the last 4-year average activity. First, the FY22 activity for the National Park Service has dropped significantly in both number of TA/Mods and funding amount. A potential explanation may be that in May of 2022, the RM-CESU NPS Research Coordinator position became vacant and RM-CESU NPS projects may have been inadvertently executed under one of the other NPS-Intermountain Region's CESUs, Colorado Plateau and Desert Southwest. It is also possible that not all Washington Office agreements using the RM-CESU were reported to the host office. The second observation is a slight jump in the US Forest Service (USFS) use of the CESU. In the current National CESU Memorandum of Understanding, the authorities and the agreement vehicle for the National Forest System and State and Private Forest have been identified and principal investigators who are familiar using the CESU agreement in project work with the other federal partners, have been encouraging their USFS cooperators to use the CESU mechanism.

NPS executed the most (35%) agreements/mods followed by the Bureau of Land Management (BLM; 19%) and the Department of Defense (DoD; 18%; Figure 1.). At fifty-eight percent, the DoD has obligated the most funding through the RM-CESU followed by the NPS (18%; Figure 2). Other consistent federal users of the CESU include US Fish and Wildlife Service (USFWS), and US Geological Survey (USGS).

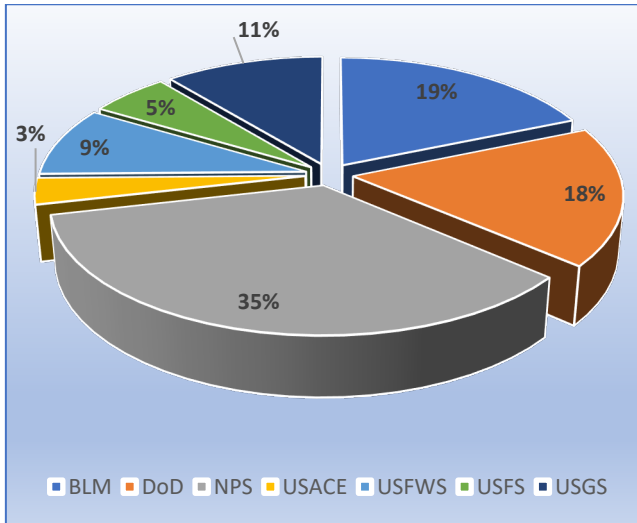


Figure 1. Percentage of TAs/Mods by Agency FY2022

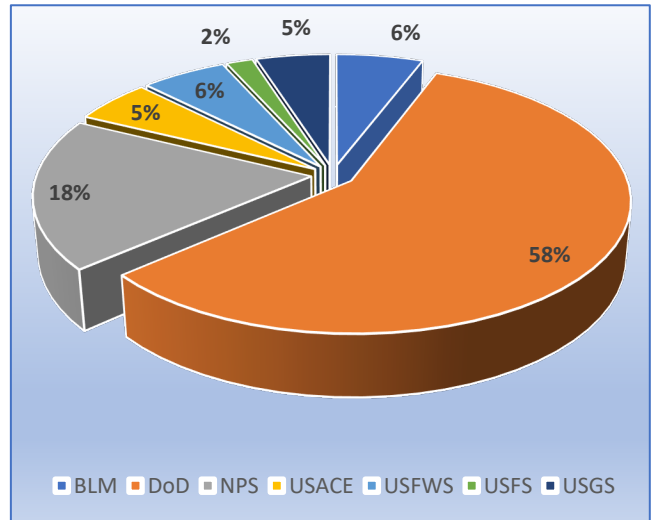


Figure 2. Percentage of Funds by Agency FY2022

Mean: \$212,425 Median: \$73,724

Smallest Task Agreement: \$6,510 Bureau of Land Management/Montana State University; PI: David Varricchio; Dinosaur Bones of the Frontier Formation from Southwest Montana

Largest Task Agreement (mod): \$2,786,000 Department of Defense/Colorado State University; PI: David Jones; Natural Resources Ecosystem Management Activities for Pohakuloa Training Area and Keamuku Maneuver Area, Island of Hawaii

CESU projects provide needed research, technical assistance, and education to our federal partners and cover the disciplines of natural resources, cultural resources, social sciences, and interdisciplinary.

- The majority (63%) of RM-CESU projects provide technical assistance to our federal partners followed by research (26%) and education (11%; Figure 3). These are projects that are solving real time management issues and often engage students in the process. Many RM-CESU projects involve multiple functions (e.g., have a technical assistance and educational function).
- Regarding discipline, 60 of the 91 projects with obligated funds of \$11.3 million fall under natural resources (Figure 4). Nineteen projects at \$5.7 million are interdisciplinary, 8 projects at \$2.1 million are cultural, and four at \$30,000 are social.

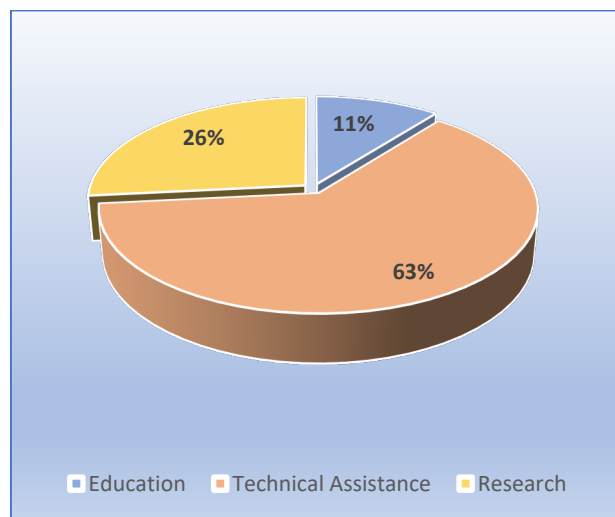


Figure 3. FY2022 Activity by Function

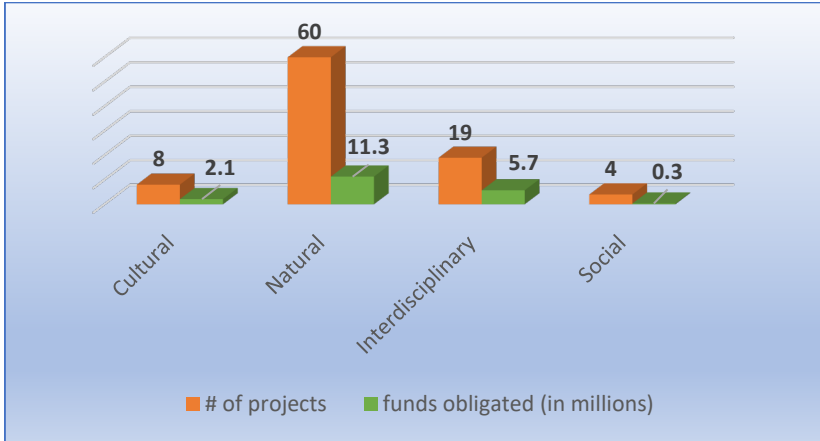


Figure 4. FY2022 Activity by Discipline

Nine of the twenty-nine non-federal members received at least one project this year (Table 2). In comparison with the previous 4-year average, a change to note is the increase in activity for the University of Montana (UM). That increase is partly due to a large USACE project (\$816,445) and the USFS starting to utilize the CESU agreement. The USFS executed 5 awards with UM contributing \$344,018.

Although total number of agreements/mods are down for

Colorado State University (CSU), CSU remains the recipient of the most CESU awards and funding - \$12.5 million in 33 task agreements/modifications with the BLM, DoD, NPS, and USGS. (Figures 5 and 6). Projects range from condition assessment of alpine lakes to vegetation recovery following wildfire across dryland National Parks to cultural resource management support at military installations.

Table 2: RM-CESU Activity by Non-Federal Partners for FY22 and comparison with the previous 4-year average

FY22	RM-CESU	BSU	CSU	CUB	CUD	MSU	UM	USU	UU	UWY
# Of TA/Mods	91	1	33	5	2	14	23	1	1	11
Funding (in millions)	\$19.3	\$.19	\$12.5	\$.66	\$.11	\$1.9	\$3.3	\$.09	\$.14	\$.40
4-yr Ave.										
# Of TA/Mods		2	55	4	6	15	16	3	1	10
Funding (in millions)		\$.13	\$12.2	\$.24	\$.33	\$1.2	\$1.6	\$.19	\$.03	\$.8

Boise State University (BSU), Utah State University (USU), and University of Utah (UU) each received one CESU award. The BSU award was with USACE to support Bob Reinhart’s work documenting the history of western towns inundated by dam construction. The NPS’s agreement with USU is examining visitor experiences related to cave and karst resources at Carlsbad Caverns National Park and Timpanogos Cave National Monument. The NPS partnership with UU is providing the NPS with GIS support in its National Trail Program.

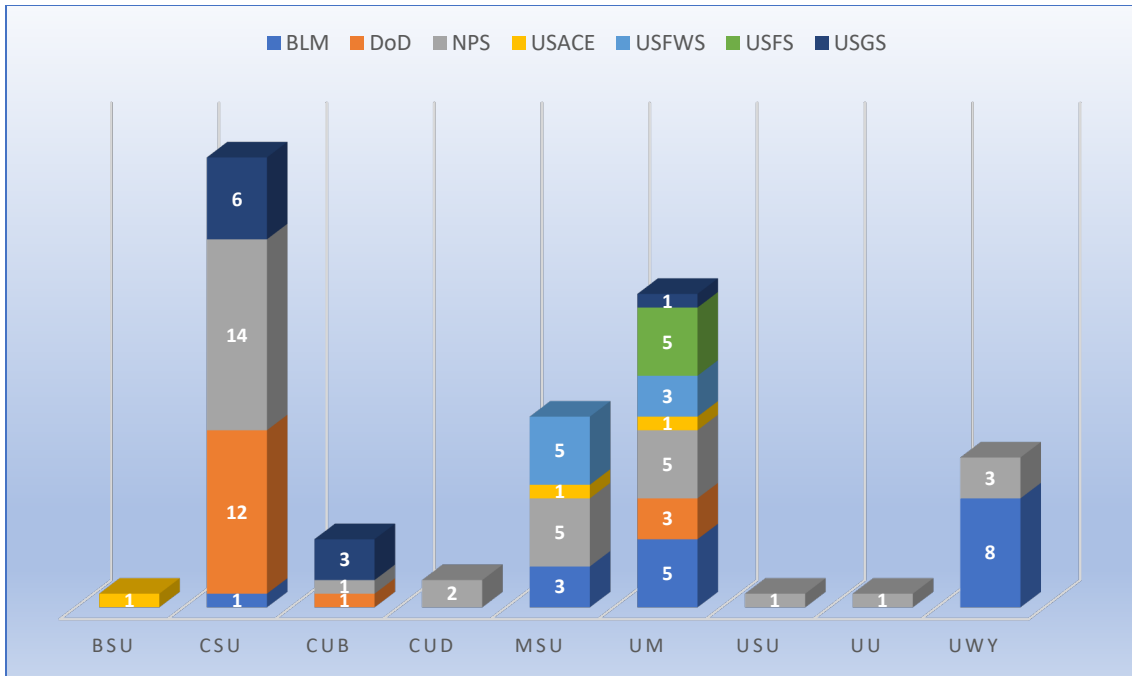


Figure 5. Distribution of TAs/Mods to Non-Federal Partners in FY2022

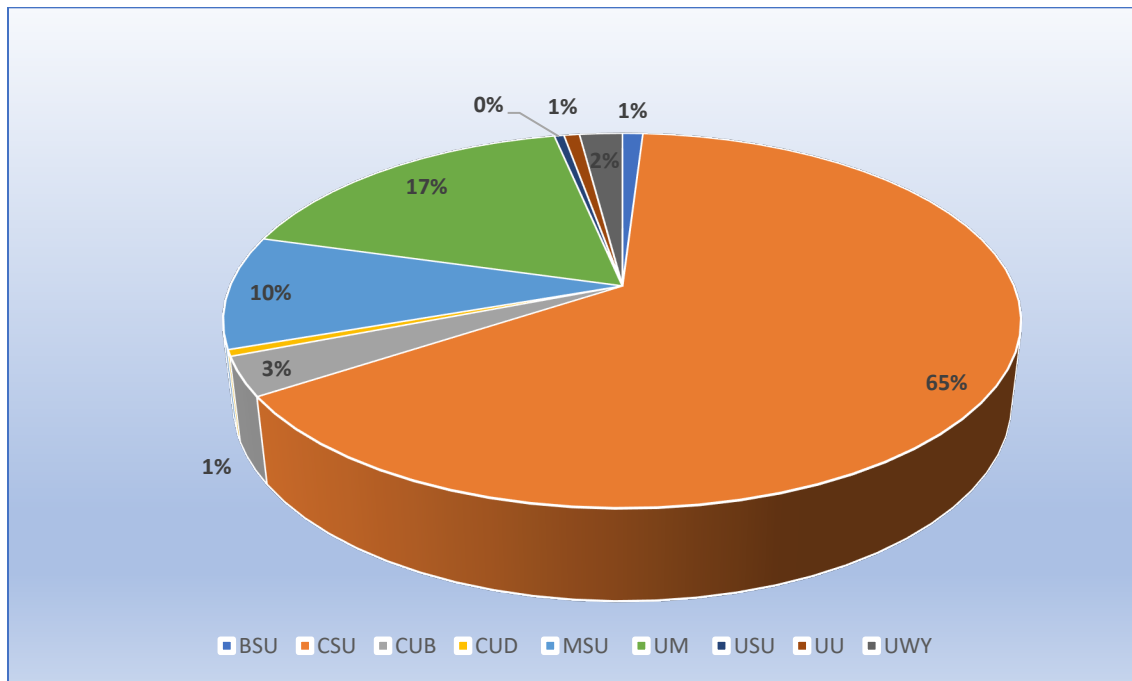


Figure 6. Distribution of funds to Non-Federal Partners in FY2022

Sixteen principal investigators receiving project funds in FY2022 were using the RM-CESU agreement for the first time and contributed \$1,718,679 to the RM-CESU total.

Student Participation

Based on project information available, we estimate 65-70% of RM-CESU projects have student participation. Student participation includes research work by graduate and undergraduate students, as well as internships, field schools and class participation in projects.

Glacier National Park Conservancy – Jerry O'Neal Research Fellowship

Since 2006 the Rocky Mountains CESU host office at the University of Montana (UM) has partnered with the Crown of the Continent Research Learning Center, Glacier National Park (GNP), to organize and administer the Glacier National Park Conservancy – Jerry O'Neal Research Fellowship to help fund student work on projects in Glacier National Park, Little Bighorn Battlefield National Monument and Grant-Kohrs Ranch National Historic Site. Funding for the fellowship is unique – leveraging dollars from the GNP Conservancy with CESU agreements between GNP and UM. The fellowship program is open to graduate students and superior undergraduates at universities and colleges across the CESU Network and awards range from \$1000-5000.



Anna Shampain

The 2022 Glacier National Park Conservancy – Jerry O'Neal Research Fellowship recipients are:

Anna Shampain, Ph.D., Candidate, Ecology, University of Colorado Boulder, is examining glacial meltwater as a source of organic pollutants and trace elements in high elevation lakes in GNP.

Brooke Bannerman, Ph.D., Candidate, Ecology, University of Montana, is exploring how wildfires influence mountain lake ecosystems in GNP.



Brooke Bannerman

RM-CESU ACTIVITY FY2018-FY2022

In the last five years of operation, the RM-CESU has facilitated **566 task agreements/modifications obligating 88.7 million dollars** to non-federal partners for project work with our federal partners (Figure 7).

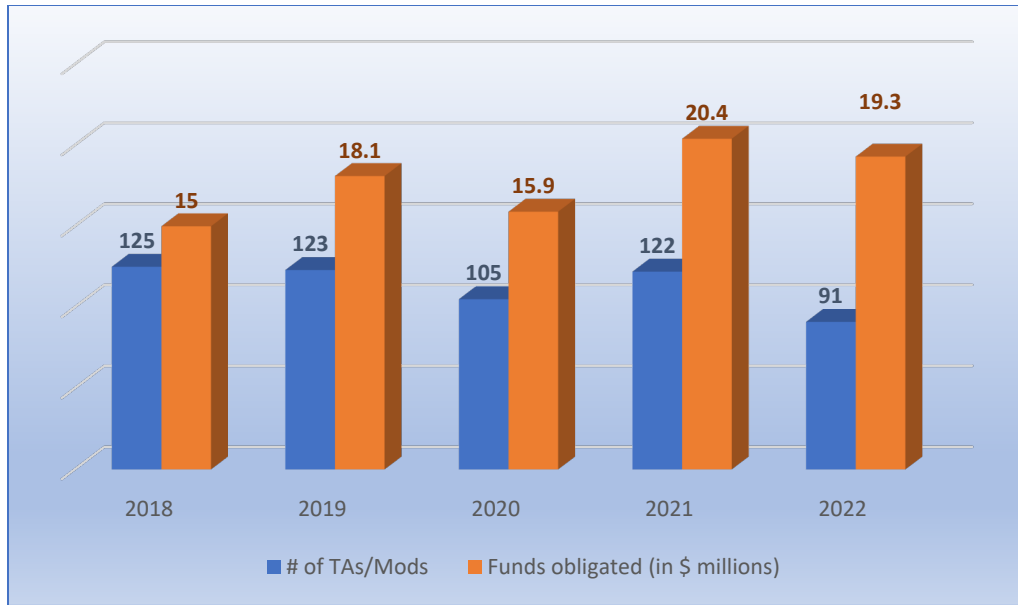


Figure 7. RM-CESU Activity FY2018-FY2022

RM-CESU Spring Online Seminar Series

The purpose of the series is to highlight the region’s best scientific talent and scholarship to help manage our public resources across social, cultural, economic, political, and environmental arenas.

Our 2022 seminar theme was ***Celebrating the Scientific and Scholarship Contributions of the RM-CESU Student Award Recipients, 2007 to Present.*** Our RM-CESU Student Award recipients have contributed to wetland monitoring protocols, oral history at parks, grouse conservation, and citizen science. Many of our recipients have gone on to careers in federal service and academia. In this series we recognized the work of our recent 2021 awardees as well as hearing from past recipients on their current contributions to science and scholarship.

- January:** 2021 Award Recipients; Scarlett Engle, Ph.D. Candidate-Anthropology, University of Colorado Boulder, ***Revitalizing the Exhibitions of Chapin Mesa Archaeological Museum***, and Jacob Oram, Ph.D. Student-Statistics, Montana State University, ***Ecological Statistics to Improve Whitebark Pine Monitoring in the Western U.S.***

Original Viewers: 17	YouTube Views: 41	Click here to view.
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- February:** ***Co-Creating Knowledge to Inform Restoration and Management in our National Parks.*** 2017 RM-CESU Student Award Recipient, Jeremy Sueltenfuss. Jeremy is now an assistant professor at Colorado State University, where he and his graduate students seek to understand the impacts we humans have on the natural world and how best to manage and/or restore those systems.

Original Viewers: 22	YouTube Views: 41	Click here to view.
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- March:** ***Ecology and conservation of declining avian populations: Examples from gamebirds*** 2016 RM-CESU Student Award Recipient, Gregg Wann. Greg is now a research ecologist with the USGS Fort Collins Science Center. In this presentations Greg shares his research on conservation issues in the

sagebrush and alpine biomes of western North America.

Original Viewers: 11	YouTube Views: 28	Click here to view.
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- **April: *Toxic Legacies: Environmental Cleanup in US West Mining Towns*** 2012 RM-CESU Student Award recipient, Dr. Nichelle Frank, studies the effects of US environmental and historic preservation movements on the cultural landscapes in intermountain mining towns.

Original Viewers: 10	YouTube Views: 37	Click here to view.
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UNIVERSITY OF MONTANA – HOST ACTIVITY AND ACCOMPLISHMENTS

- Developing Northern Rockies Internship Collaborative.
- Continued RM-CESU Spring Online Seminar Series.
- Facilitated RM-CESU Coffee Hour with Boise State University Faculty (CESU presentation and Q&A).
- Facilitated RM-CESU Coffee Hour with University of Wyoming Faculty (CESU presentation and Q&A).
- Facilitated a working group of University Authorized Organization Representatives (Sponsored Programs) and CESU directors who are drafting a CESU determination and aspirational document.
- Participated in CESU Network National Meeting.
- Participated in CESU Network Diversity, Equity, and Inclusion Working Group.
- Participated in monthly CESU Directors’ calls with Tom Fish, the National Coordinator.
- Maintained RM-CESU web site including posting meetings, project abstracts and reports, and CESU calls for statements of interests.
- Produced and distributed online RM-CESU Newsletter. The newsletters provide updates on CESU and partner activity, as well as announcements of funding, training, and job opportunities. Kathy Tonnessen, NPS-emeritus, is a regular contributor to the newsletter.
- Produced RM-CESU Annual Report and project lists.
- Facilitated communication and correspondence among existing and potential partners.
- Fielded partner questions regarding CESU policy and procedures.
- Coordinated RM-CESU Annual Student Award.
- Coordinated the Glacier National Park Conservancy - Jerry O’Neal Student Research Fellowship. This fellowship provides support for graduate students or superior upper division undergraduate students at RM-CESU universities and colleges conducting research in Glacier National Park.