



FY2021 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 (RM-CESU)** is one of 17 units in the CESU National Network. <http://www.cesu.psu.edu/>

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 25 Non-Federal partners. Members of the RM-CESU are the following:

❖ University of Montana-host 1999	❖ Boise State University 2015
❖ University of Idaho 1999	❖ Western Colorado University 2015
❖ Montana State University 1999	❖ University of Denver 2017
❖ Salish Kootenai College 1999	❖ Front Range Community College 2017
❖ Utah State University 1999	❖ Western Association of Fish and Wildlife Agencies 2018
❖ Washington State University 1999	USDI
❖ University of Wyoming 2002	❖ Bureau of Land Management 1999
❖ Colorado State University 2004	❖ Bureau of Reclamation 2004
❖ University of Colorado Boulder 2002	❖ Fish and Wildlife Service 2009
❖ University of Colorado Denver 2002	❖ Geological Survey 1999
❖ University of Northern Colorado 2006	❖ National Park Service 1999
❖ University of Calgary 2007	❖ Bureau of Indian Affairs 2017
❖ Metropolitan State University of Denver 2011	USDA
❖ Little Big Horn College 2012	❖ Forest Service 1999
❖ Northwest College 2013	❖ Natural Resources Conservation Service 2004
❖ University of Utah 2013	DOD
❖ Chief Dull Knife College 2014	❖ US Army Corps of Engineer- Civil Works 2008
❖ Blackfeet Community College 2014	❖ Office of Deputy Under Secretary of Defense (Installations and Environment) 2009
❖ University of Waterloo 2014	
❖ Wildlife Conservation Society 2014	

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 PROJECTS ACTIVITY FOR FY2021

This year, our RM-CESU partners **executed 122 task agreements (TAs)/modifications (Mods) obligating \$20,360,428 to new projects (\$13,924,941/74 TAs) and adding funds to existing projects (\$6,435,487/48 Mods)**. A complete listing of projects may be found on the RM-CESU Project List for FY2021 on the web site at <http://www.cfc.umt.edu/cesu/projects/default.php> (look under **Annual Reports**).

Table 1: RM-CESU Activity by Agency Partners for FY21

<u>FY21</u>	<u>RM-CESU</u>	<u>BIA</u>	<u>BLM</u>	<u>BOR</u>	<u>DoD</u>	<u>NPS</u>	<u>NRCS</u>	<u>USFWS</u>	<u>USGS</u>	<u>USACE</u>	<u>USFS</u>
<u># Of TA/Mods</u>	122	0	14	0	18	50	0	14	22	2	2
<u>Funding (in million)</u>	\$20.4	0	\$1.0	0	\$8.8	\$6.7	0	\$2.0	\$1.8	\$0.06	\$0.04

Seven of the ten agencies had activity this fiscal year (Table 1). National Park Service (NPS) executed the most (41%) agreements/mods (Figure 1) and is second (33%) behind Department of Defense (DoD; 43%) in terms of dollar amount obligated (Figure 2). Other consistent users of the CESU are the Bureau of Land Management (BLM), US Fish and Wildlife Service (USFWS), and US Geological Survey (USGS).

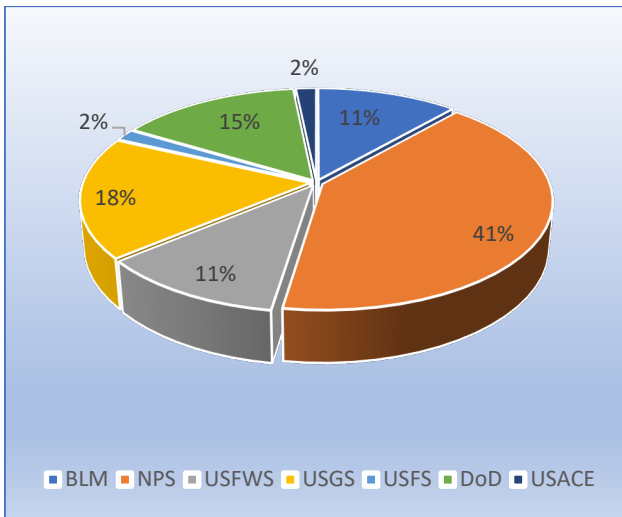


Figure 1. Percentage of TAs/Mods by Agency FY21

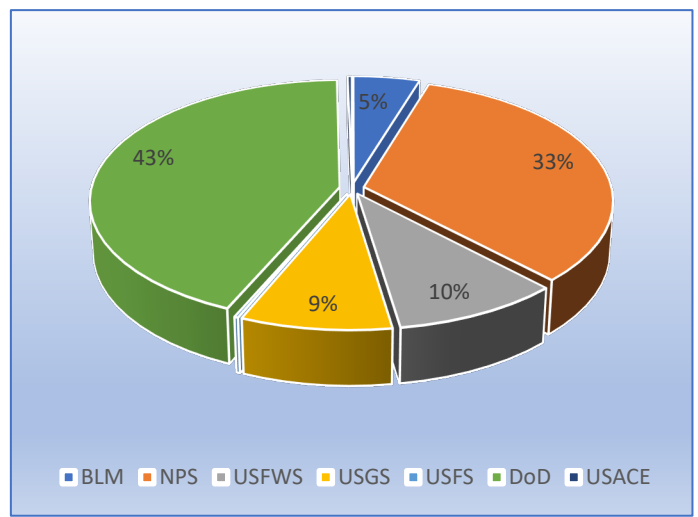


Figure 2. Percentage of Funds by Agency FY21

Mean: \$166,889	Median: \$68,000
<p>Smallest Task Agreement: \$5,000 National Park Service/University Montana PI: Erin Sexton; Crown Managers Partnership Transboundary Conservation Initiative: Implementing a Landscape Conservation Design Across the Crown of the Continent</p> <p>Largest Task Agreement (mod): \$3,284,150 Department of Defense/Colorado State University; PI: David Jones, Resources Ecosystem Management Activities for Pohakuloa Training Area and Keamuku Maneuver Area, Island of Hawaii</p>	

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

- The majority (64%) of RM-CESU projects provide technical assistance to our federal partners followed by research (23%) and education (13%; 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, 87 of the 122 projects with obligated funds of \$13.5 million fall under natural resources (Figure 4). Twenty-three projects at \$3.6 million are interdisciplinary, ten projects at \$2.5 million are cultural, and two at \$.08 million are social.

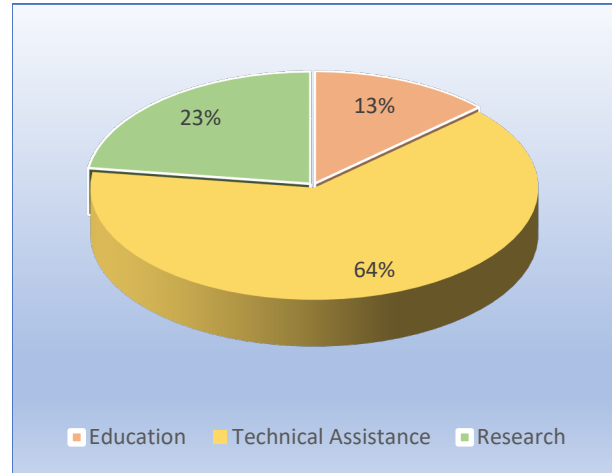


Figure 3. FY2021 Activity by Function

Ten of the twenty-five RM-CESU non-federal members received at least one project this year (Figures 5 and 6 on page 5).

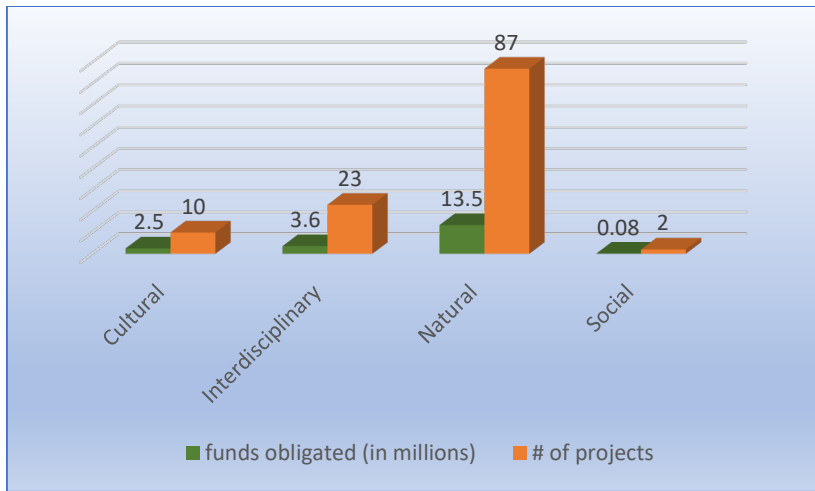


Figure 4. FY2021 Activity by Discipline

Seventy-five percent of CESU awards went to Colorado State University (CSU) - \$15.1 million in 60 task agreements/modifications with the BLM, NPS, USFWS, USGS, DoD, and USACE (Figure 5 and 6). Projects range from web-based video outreach of science and stewardship in national parks to projecting climatic and environmental conditions for habitat restoration and management to using citizen science and crowdsourcing to monitor progress of terrestrial and riparian restoration

Montana State University (MSU/23 TAs/Mods for \$ 1.7 million) worked with the most federal partners (BLM, NPS, USFWS, USGS, DoD, USACE, and USFS) through the CESU this year. The two USFS projects are supporting a noxious weed education campaign for Montana and research on improving the efficacy of *Puccinia punctiformis*, a host specific pathogenic rust fungus, as an integrated weed management tool for Canada Thistle .

Conservation partner, Wildlife Conservation Society (WCS), is partner on two new projects with the National Park Service totaling \$60,000. One project is an honoring NPS-Tribal partnerships at Wind Cave National Park and the other is providing cooperative technical assistance with bison genetic sampling and analysis.

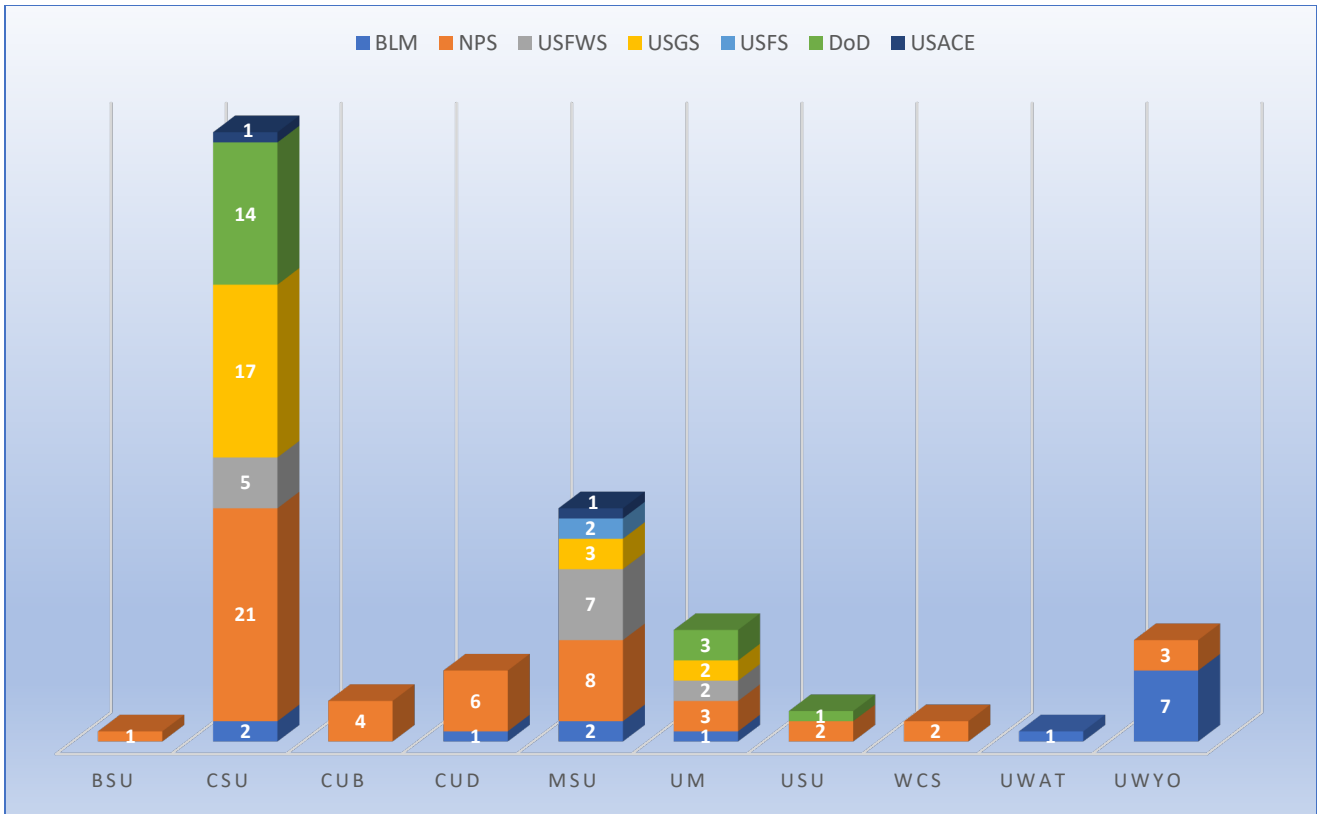


Figure 5. Distribution of TAs/Mods to Non-Federal Partners in FY2021

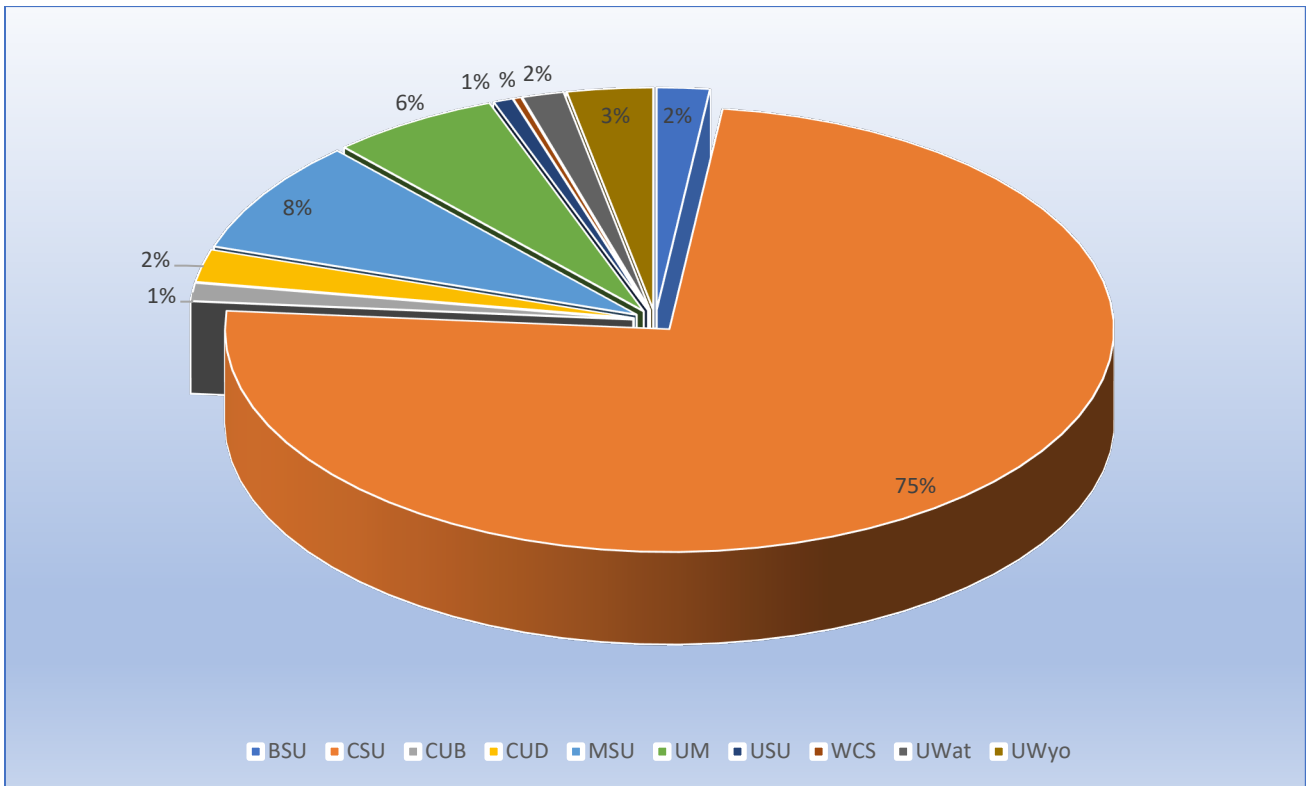


Figure 6. Distribution of funds to Non-Federal Partners in FY2021

Fourteen principal investigators receiving project funds in FY2021 were using the RM-CESU agreement for the first time and contributed \$1,025,735 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.

2021 RM-CESU Student Award

Each year the RM-CESU recognizes the outstanding contribution of student(s) on a RM-CESU project. The recipients of the **2021 Student Award** are **Jacob Oram**, Montana State University, and **Scarlett Engle**, University of Colorado Boulder.

Jacob, who recently completed his Masters in Statistics, was nominated for his contributions to the CESU project, ***Ecological Statistics to Improve Whitebark Pine Monitoring in the Western U.S. – May 2021 – present.*** In their joint nomination, Drs. Katherine Banner and Kathryn Irvine noted “Jacob’s original task was to produce a report that summarized status and trend estimates for blister rust prevalence in five needle pines on Wyoming BLM lands within the Greater Yellowstone Ecosystem.....His report went above and beyond to outline pros and cons of different decisions regarding monitoring protocols that provide exceptional educational value to MT-BLM as they finalize their sampling plan for 2022. He recognized an opportunity beyond the assigned written report and disseminated results via an interactive web application that pairs visualization with statistical findings at various spatial extents and taxonomic groupings.”

Scarlett is currently working on her Ph.D. in Anthropology. She was nominated by Kristy Sholly at Mesa Verde National Park for two exceptional products she produced, “Collaborating with Descendent Communities to Re-Imagine the Chapin Mesa Archeological Museum” (2019) and “Chapin Mesa Museum Exhibit Design Reference Guide” (2021) under the CESU project, ***Revitalizing the Exhibitions of Chapin Mesa Archeological Museum.*** Sholly emphasized, “Scarlett has directly contributed to us building better relations with the 26 associated Pueblos and Tribes to Mesa Verde National Park through these outreach efforts and ensuring tribal members feel included and listened to in the collaboration, participating in the tribal working group developing content for the exhibits, and during her summer internships at the park.”

You may view Jacob’s and Scarlett’s presentations by [clicking here](#).



2021 RM-CESU Student Award
Recipients: Jacob Oram and Scarlett

RM-CESU ACTIVITY FY2017-FY2021

In last five years of operation, the RM-CESU has facilitated **635 task agreements/modifications obligating 88.7 million dollars** to non-federal partners for project work with our federal partners (Figure 7).

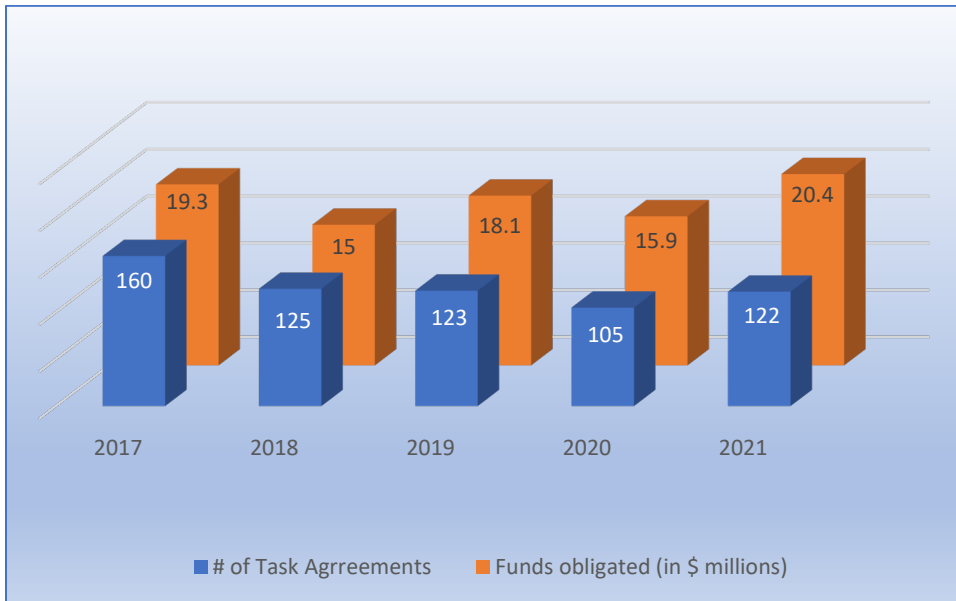


Figure 7. RM-CESU Activity FY2017-FY2021

NEW INITIATIVES

RM-CESU Spring Online Seminar Series

In the Spring of 2021, the RM-CESU launched its first 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 2021 seminar theme was *Justice, Equity, Diversity, and Inclusion: Opportunities through the Rocky Mountains CESU*. Justice, diversity, equity, and inclusion are critical issues that cross all aspects of science, scholarship, and resource management. The series explored how CESU partners are approaching these areas to foster positive outcomes:

- February 18, 2021: Cooperative Eco-Cultural Restoration of American Bison Led by Native Nations**
 The Wolakota Buffalo Range was formally established in October 2020 with 100 bison released onto the Rosebud Sioux Tribal Lands. Dr. Brendan Moynahan (Science Advisor, National Park Service), Wizipan Little Elk (CEO, Rosebud Economic Development Corporation), and Dennis Jorgensen (Bison Program Lead, World Wildlife Fund) joined efforts to discuss how partnership can simultaneously support conservation, cultural renewal, economic development, and food security and sovereignty.

Original Viewers: 98	YouTube Views: 204	Click here to view.
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- March 24, 2021: Yellowstone Center for Resources Native Student Internship Program**
 Dr. Elizabeth Horton (Park Archaeologist) and Jen Harrington (Native American Natural Resource

Program Director) presented on an unique partnership between Yellowstone National Park and the Native American Natural Resource Program in the Franke College of Forestry and Conservation, University of Montana, Missoula. Their internship program is designed for Native American college students (18-35) to gain hands-on experience in natural and cultural resource management and education with the Yellowstone Center for Resources (YCR), with the goal that students can use skills learned to enter resource management careers in the NPS or other federal agencies. They discussed the challenges and successful strategies implemented to increase student engagement and highlighted student internship experiences.

Original Viewers: 15	YouTube Views: 21	Click here to view.
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- April 23, 2021: A Conversation with BIPOC Students on Justice Equity, Diversity, and Inclusion (JEDI)**
 Whether faculty, staff, students, or agency managers and scientists, we must continue to evolve in promoting justice, equity, diversity, and inclusion across our academic, research, and management communities. In this conversation BIPOC (Black, Indigenous, and People of Color) students from RM-CESU universities voiced how they grapple with JEDI issues in their academic journey. Be prepared to consider the role we can all play on campus, at our work, and in the field in cultivating diversity that is supported by inclusive and equitable practices.

Original Viewers: 45	YouTube Views: 69	Click here to view.
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UNIVERSITY OF MONTANA – HOST ACTIVITY AND ACCOMPLISHMENTS

- Developed and launched RM-CESU Spring Online Seminar Series (see page 8 New Initiatives).
- 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 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 (see page 7 for 2021 awardee).
- 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.