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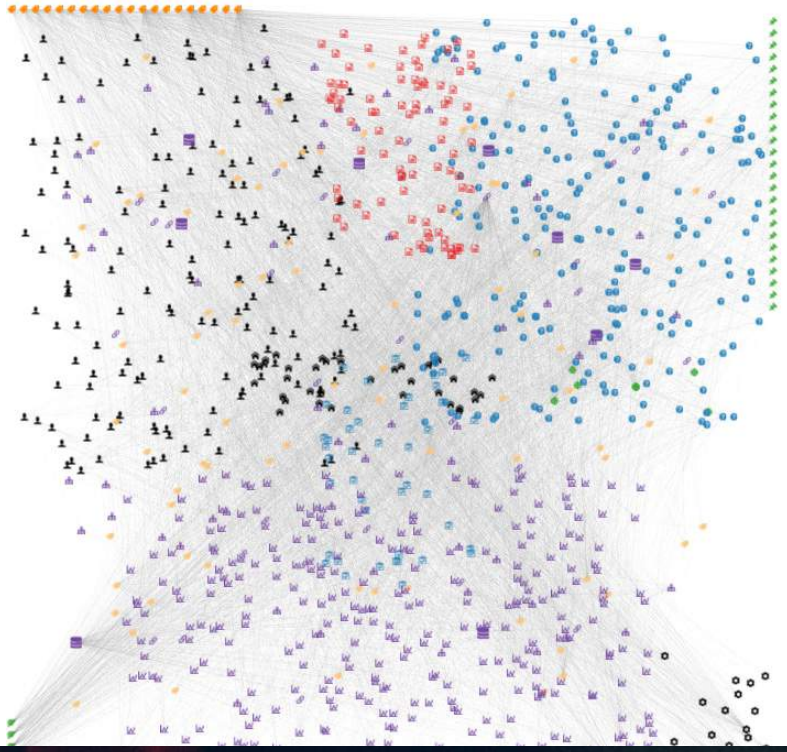
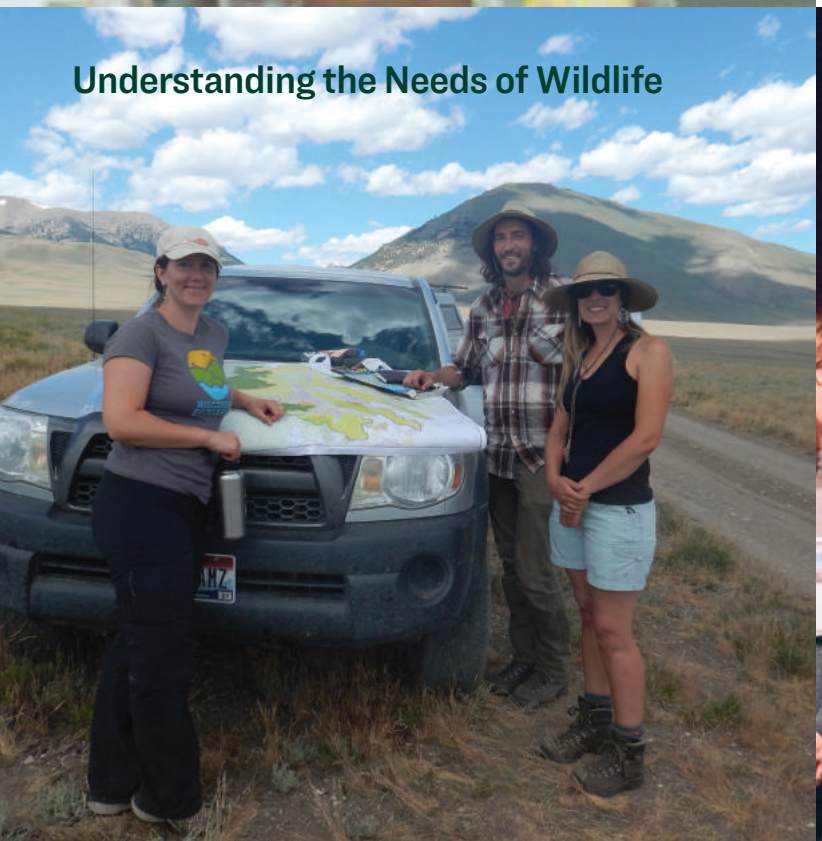
IDAHO NSF EPSCoR | WINTER 2017

EPSCoR Undergraduate Research

New Data Map Guides Collaborative Science





Understanding the Needs of Wildlife

Science Interacts with Community

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Idaho EPSCoR Office

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IDAHO EPSCoR

Message from the Director

Janet Nelson
Interim Project Director

Sometimes significant change can be subtle. In 2017 the American Innovation and Competitiveness Act became law, re-naming EPSCoR from the "Experimental" to the Established Program to Stimulate Competitive Research. The term "Established" partly reflects the history and still-unfolding story of the EPSCoR experiment.

Jurisdictions that receive less than 0.75% of total National Science Foundation (NSF) Research funding are currently eligible for EPSCoR. Idaho first became eligible for the program in 1987. That was the year USA Today became the first U.S. newspaper to publish a digital photograph on its front page. It was also a year that federally financed Research & Development (R&D) Expenditures at all of Idaho's three public universities reached $9.0 million.

A lot has changed in the world in 30 years, thanks in large-part to discoveries from science and engineering research. Much has changed in Idaho's academic research enterprise too, thanks in part to EPSCoR in Idaho. In FY2016 Idaho had three public research universities with combined federally financed R&D expenditures totaling $80.2 million. This amount is nearly 9 times greater than it was 30 years ago, and it represents growth that far outpaced the nation-wide average of 5.3 times over the same period.

Idaho has been particularly successful in winning more research funding from NSF, the funding agency for almost one quarter of all federally supported basic research conducted by America's colleges and universities. Idaho's share of NSF Research funding is now up to 0.29% (FY2014–16), compared to its 0.05% share in the late 1990s. While still below the threshold for EPSCoR eligibility, this is a significant increase. It is a result, in part, of focusing and leveraging NSF, state matching funds, and institutional resources; capitalizing on the inherent strengths and common priorities of each university; and forging inter-institutional partnerships.

The Established Program to Stimulate Competitive Research has an important role to play in driving continued growth in academic research in Idaho, preparing students for the workforce, and improving Idaho's quality of life, environment, and economy.

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On the Cover: *University of Idaho undergraduate Brianna Slothower researches the relationship between soil phosphorus and wildfire.*

2017 Idaho EPSCoR Annual Meeting Fosters Collaboration

By Rick Schumaker

More than 120 researchers, stakeholders, students and others from across Idaho met at the Idaho NSF EPSCoR Annual Meeting in October 2017. The event was held on the campus of Idaho State University in Pocatello, Idaho.

The Idaho NSF EPSCoR Annual Meeting provides an opportunity for participants and collaborators in Idaho's NSF EPSCoR Track-1 Research Infrastructure Improvement (RII) project to connect, communicate, and coordinate our research and education activities related to Idaho's program on Managing Idaho's Landscapes for Ecosystem Services (MILES). The program is based on strong collaboration among Idaho's public universities and participation of Idaho's 2-year and 4-year colleges.

The event included more than 40 research poster presentations by faculty and students and more than a dozen scholarly presentations to highlight recent research and accomplishments of the MILES award. It also included guided tours for the MILES Project Advisory Board of the Marsh Creek Watershed (featured in the Spring 2017 edition of "the Researcher") and collaborative research sites located at the Fort Hall Bottoms of the Snake River. As in the past, the Advisory Board conducted their annual external review of the MILES program's progress and provided constructive feedback and recommendations to participants and program leaders.

Invited speaker, Dr. Michelle Baker, Professor, Department of Biology and the Ecology Center, Utah State University, gave a keynote talk about complementary EPSCoR activities through iUtah (Innovative Urban Transitions and Aridregion Hydro-sustainability) focused on Utah's water future. In addition, National Science Foundation Program Director, Dr. Raffaella Montelli, remotely delivered a presentation about "Innovation, Entrepreneurship, and Translational Research" to promote work beyond the university laboratory to accelerate the benefits of NSF-funded, basic-research that is ready to move toward commercialization.

Workshops were also hosted as a way to provide new knowledge and skills to participants. Topics included "Implicit Bias in the Academy," "Mentoring for Inclusion," and "Tribal Engagement."

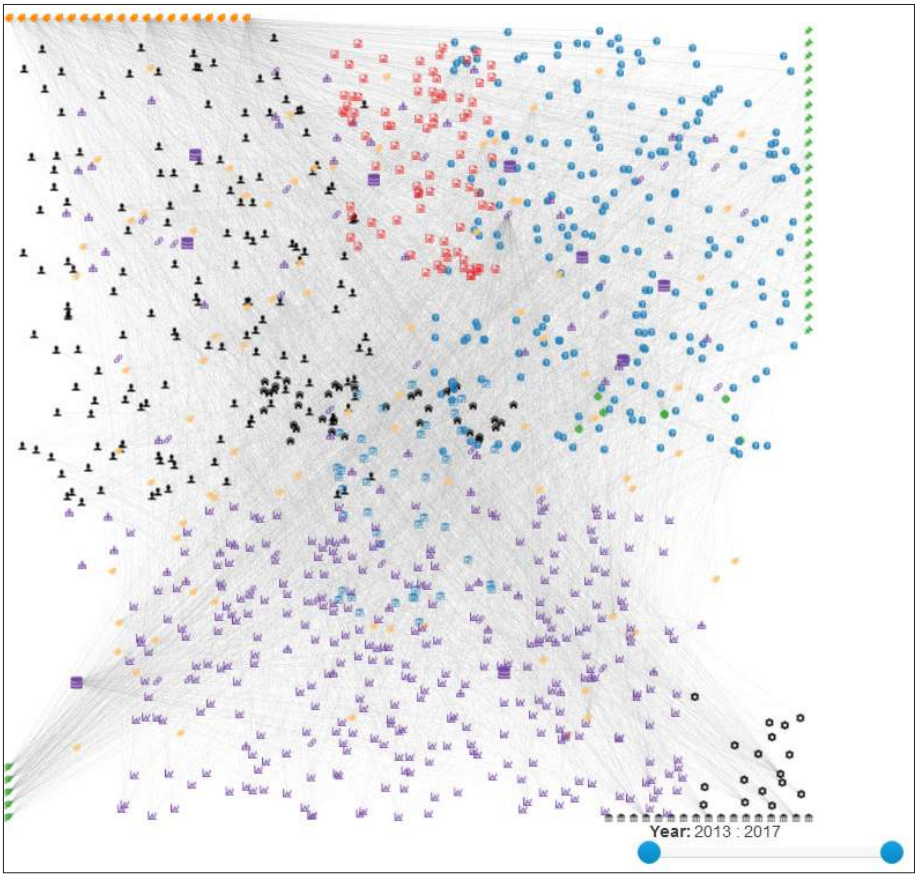
EPSCoR Meeting Poster Winners. From left to right, the first to third place winners: Carolyn Macek, graduate student, Idaho State University; Ana Flavia Costa da Silva, graduate student, Boise State University; Laticia Herkshan, graduate student, Idaho State University.

New Data Map Guides Collaborative Science

By Max Bartlett

The National Science Foundation (NSF) EPSCoR Track-1 award, Managing Idaho's Landscapes for Ecosystem Services (MILES), brings together hundreds of researchers connected in numerous ways. How might one view the complex and interconnected world of Idaho science? Carrie Roever, with the Northwest Knowledge Network, has a solution: a map.

The MILES Data Map, (**www.idahoecosystems.org/datamap**), allows users to see work connections between all MILES participants. Seeing all of these connections can be overwhelming. Fortunately, the Data Map allows users to search for particular institutions, data types, and even research topics and keywords.



The MILES Data Map, pictured here, illustrates the connections between hundreds of participants. The map can also display connections based on a range of variables.

Roever sees it as a method to foster inter-disciplinary collaboration.

"Because MILES has so many different disciplines, if you're new you might not know what people are doing," Roever says. The map allows researchers to find others working on similar subjects - even from another field.

The map also provides access to published papers and data that could be useful to other scientists. The Northwest Knowledge Network keeps its own metadata (information about the data) of Idaho research, and coordinates with Boise State's Scholarworks repository. They also link to an international data repository, DataONE.

"Data is the currency that keeps our projects going," Roever says. "Oftentimes, people like to keep it stored in a file box in case they need to use it again in the future. But that data is valuable to so many projects."

A single glance at the Data Map shows the myriad of ways in which Idaho researchers are working together with support from EPSCoR. As Roever puts it:

"This really demonstrates that we are achieving the goal of collaboration among disciplines and institutions."

STEM Action Center to Sustain Idaho STEM Pipeline

By Max Bartlett

The STEM Action Center will be taking over ownership and administration of the Idaho STEM Pipeline website (**www.idahostem.org**) and a transition plan has been established to ensure smooth and full transition by Spring 2018.

The "Idaho STEM Pipeline" was created in 2009 by Idaho EPSCoR to address the growing need in our Nation to prepare more students, teachers, and practitioners in the areas of science, technology, engineering, and mathematics (STEM). It was designed to serve as a user-friendly web portal for students, parents, teachers, and Idaho communities that provides information on various Idaho programs.

STEM Pipeline Goals:

- Increase statewide participation in Idaho STEM by providing coordinated information and educational "pipeline" opportunities.
- Increase access to STEM learning opportunities within Idaho for all students, including women and those from underrepresented groups such as Native-American, Hispanic-American, Asian/Pacific Islander, and African-American populations.
- Provide a statewide clearinghouse of STEM pipeline programs available to K-12 students and teachers, undergraduate, and graduate students in the State of Idaho.
- Provide a statewide clearinghouse of STEM pipeline programs available to Idaho community members.

The relationship established between Idaho EPSCoR and the STEM Action Center is not only valuable to sustain the Pipeline efforts, but also to future EPSCoR initiatives at a State level. Continued efforts will be made to align EPSCoR initiatives with State STEM initiatives. Efforts have already been made to incorporate STEM Action Center resources into future EPSCoR programs, particularly a new STEM mentoring web portal for students and faculty that will be instrumental in assisting Idaho EPSCoR with future mentoring initiatives.

**The STEM Action Center was created during a 2015 Idaho legislative session and House Bill 302 became law on July 1, 2015 (Idaho Code §67-823). This new law permits some flexibility in implementation which will allow the Center to develop unique grant, training, professional development and student opportunities aligned to Idaho's workforce needs from kindergarten through career.*

Science Interacts with Community

By Max Bartlett

"We might need to change the way we as scientists interact with the community."

That's Idaho State University graduate student - and MILES researcher - Jade Ortiz.

"We need to let community questions guide the specific research we're doing and have it be this kind of iterative, collaborative process," Ortiz says.

Ortiz, an ecologist, is referring to research she's done on the Portneuf River. She's been part of the Portneuf River Vision Project. Ortiz presented the project at the 25th NSF EPSCoR National Conference in Missoula, Montana.

The project is an inter-disciplinary collaboration between ecologists and social scientists. They seek to understand both the ecological issues of the Portneuf River and the way surrounding Pocatello relates to it.

"They're super disconnected from the river," Ortiz says.

With surveys of the community, the team wants to find ways to restore the river that would be feasible and have a large impact.

"We've had a working group that was composed of all different types of people, from agency to landowners to researchers and people from the city," Ortiz says. "They'd have these kinds of stakeholder meetings pretty regularly, but they'd also hold forums that anybody could attend."

Ortiz was one of three graduate students selected from EPSCoR projects around the country to present at the annual meeting. She presented in the "PechaKucha" style: twenty slides, each shown for twenty seconds.

"Basically the idea behind this style of presentation is that it's a flash talk with an emphasis on presenting research or any kind of narrative in a really concise, short fashion," Ortiz says.

Ortiz' education at ISU has been funded by Idaho EPSCoR.

Left to right: Jade Ortiz, representing Idaho EPSCoR; Gurshagan Kandhola, a graduate student representing the Arkansas jurisdiction; and Megan Jones, a graduate student representing the West Virginia jurisdiction.

Understanding the Needs of Wildlife and Humans Benefits Both

By Max Bartlett

Everyone knows Yellowstone National Park, famed for its geysers, grizzly bears, and gorgeous geography. But ecosystem managers are more concerned with the Greater Yellowstone Ecosystem. Stretching over parts of Wyoming, Montana, and Idaho, the ecosystem contains many public lands, and private ones.

"Increasingly, those lands are being developed," Jodi Brandt says. "Those are transforming from working landscapes to amenities landscapes."

Brandt is a professor with the Human-Environment Systems team at Boise State University. She's also part of a statewide team studying what's called the High Divide. It's a wildlife corridor through the Rocky Mountains, essential habitat for bears, elk, and more. They're not just looking at it as an ecosystem, but a social-ecological system. They want to understand not just the needs of the wildlife that rely on the Greater Yellowstone system, but the humans that live there too.

This new research grew out of Idaho's expanding expertise in social-ecological systems science catalyzed by the NSF EPSCoR MILES award. It involves scientists from all three of Idaho's public research universities, and it exemplifies their contributions to an issue of local and regional significance.

"Ranchers are a critical piece of this puzzle," Brandt says.

The team is surveying thousands of ranchers, asking them about their needs, their land use, and their relationship to local wildlife. The goal is to get ranchers engaged in wildlife-friendly conservation - and dissuade them from selling their land to developers.

"Ranchers tend to be conservative, but we're finding that doesn't necessarily mean they're anti-conservation," Brandt says. "Some ranchers really go out of their way, spend their own money to adopt conservation-friendly practices."

That means looking at the economic and social pressures that determine whether ranchers are willing to engage in conservation. It's a long, complex process. But Brandt is already seeing conservation successes.

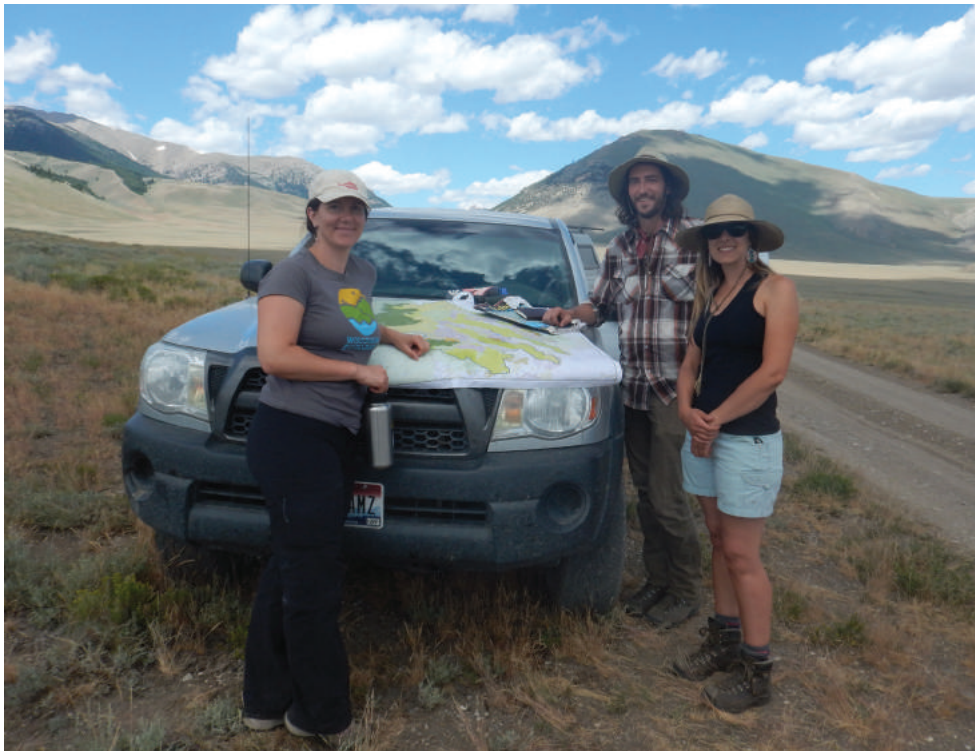
"There's a place in Montana, Big Hole Valley, where grizzly bears haven't been seen in 60 years," Brandt says. "We saw a grizzly last fall."

Of course, not everyone wants those grizzlies to come back. So the team is also studying wildlife conflicts.

"What we're trying to understand is human-wildlife coexistence," Brandt says. "How do we manage that new conflict? What kind of stakeholders welcome these grizzlies?"

Most of all, Brandt sees rural Idaho continuing to grow and change. That means new challenges for conservation. But Idahoans, Brandt says, value these ecosystems. And that may be the key to conserving the Greater Yellowstone Ecosystem.

"We want to do research that can solve problems and retain these things that Idahoans value so much, using our ability to do science and collect data and create new knowledge that benefits all Idahoans," Brandt says.



Postdoc Rose Graves and researchers from The Wilderness Society look over maps of wilderness values around Mackay, Idaho.

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Kudos

Kudos to MILES students **Anna Oetting, Kimberly Gerken, Ty Styhl**, as well as Idaho ESPCoR's own administrator, **Maria Horta-Vorse**, for winning the University of Idaho's "2017 Award for Excellence." The award is granted to undergraduate students excelling in their studies.

- **Anna Oetting** studies Wildlife and Fish Resources. She is currently working with Oreohelix, a land snail found across the West. She is partnering with Idaho Fish and Game and the U.S. Forest Service on her research.
- **Kimberly Gerken** is majoring in International Studies and Political Science. She has studied global networking systems, Peruvian religious factions, and is now working on research related to indigenous studies and sea turtle conservation.
- **Ty Styhl,** majoring in Ecology and Conservation Biology, was a MILES Undergraduate Research and Internship (MURI) student in 2016. He has interned with the National Institute of Health, and started a kestrel nest box program at the College of Western Idaho.
- **Maria Horta-Vorse** is pursuing a B.A. in Foreign Languages, with another in Spanish, as well as an Entrepreneurship certificate. She is planning to pursue a JD in International Business Law and Entrepreneurship.