



Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Rocky Mountain Research Station

RMRS-RN-89

August 2021

Intermountain Region–Rocky Mountain Research Station Science Partner Program: A Road Map to Connecting Forest Service Science and Management

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Clark, Nehalem C.; Little, Natalie J.; Kantor, Sylvia. 2021. **Intermountain Region–Rocky Mountain Research Station Science Partner Program: A road map to connecting Forest Service science and management.** Res. Note RMRS-RN-89. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 42 p. <https://doi.org/10.2737/RMRS-RN-89>.

Abstract

The USDA Forest Service Rocky Mountain Research Station (RMRS) and Intermountain Region (R4) are modeling an approach to how National Forest System management and science can work together in meaningful ways with tangible results. The R4–RMRS Science Partner Program actively cultivates relationships between research scientists and land managers to co-produce new knowledge and land management approaches. When scientists and managers develop solutions together, we strengthen the agency's ability to address the complex challenges facing our forests, grasslands, and the communities that depend on them. Through this “road map” we share what we are learning and chart a course for others who want to build on our experience in their own science-management partnership model.

Keywords: *collaboration, scientists, managers, science partner program, BeSMART microgrant, Rocky Mountain Research Station, Region 4, Intermountain Region, land management challenges, Forest Service Research and Development*

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COVER PHOTOS: *Background Photo:* Sawtooth groundwater dependent ecosystem. USDA Forest Service photo by Kate Dwire. *Inset photo:* Monarch tagging to determine migration patterns. Curlew National Grassland, Caribou-Targhee National Forest. USDA Forest Service photo.

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“Casual and collegial exposure of scientists to managers’ issues begins to give the scientists a better idea of the nature of the most persistent problems for managers. That casual and collegial exposure does not happen without time working on other things together. . . . A formal request for information is probably less effective than the informal one that is generated as people work on other problems together.”

*Charlie Luce
Research Hydrologist, RMRS*

*Monitoring for alpine pollinators.
USDA Forest Service photo by
Rose Lehman.*



INTRODUCTION

When it comes to science and management partnerships, intentional and strategic combinations are powerful and serve as excellent complements to informal relationships. Importantly, they provide stability and continuity through personnel changes due to movement and retirement. The USDA Forest Service Rocky Mountain Research Station (RMRS) and the Intermountain Region (R4) are modeling an approach to how science and management can work together in meaningful ways that yield tangible results.

Through the R4–RMRS Science Partner Program, we actively cultivate relationships between research scientists and resource managers to address high priority regional issues. When scientists and managers develop solutions together, we strengthen the agency’s ability to address the complex challenges facing our forests, grasslands, and the communities that depend on them.

Launched in 2016, the goal of the Science Partner Program is to co-create innovative and proactive solutions to land management challenges by pairing managers and scientists together before research takes place and before management decisions are made. The program creates opportunities to collaborate effectively by thinking through research and project questions at the outset. The partnerships continue to help National Forest System (NFS) managers improve science-informed decisions, establish collaboration networks in the science community, and inform management concerns to scientists at RMRS. In turn, RMRS scientists increase their awareness of current NFS issues and increase familiarity with NEPA, forest plan revision, and other agency processes.

We are evaluating and adapting this new model for the co-production of science-based management solutions as we go. Through this “road map” we want to share what we are learning and chart a course for others who want to shape on our experience in building their own science-management partnership model.

“What is the scientist role in forest planning? Our experience has been using our science partners as consultants or sounding boards.”

*Gina Knudson
Collaboration Specialist, Salmon-Challis
National Forest*



Working on the Quinn River transplant site. USDA Forest Service photo by Francis Kilkenny.



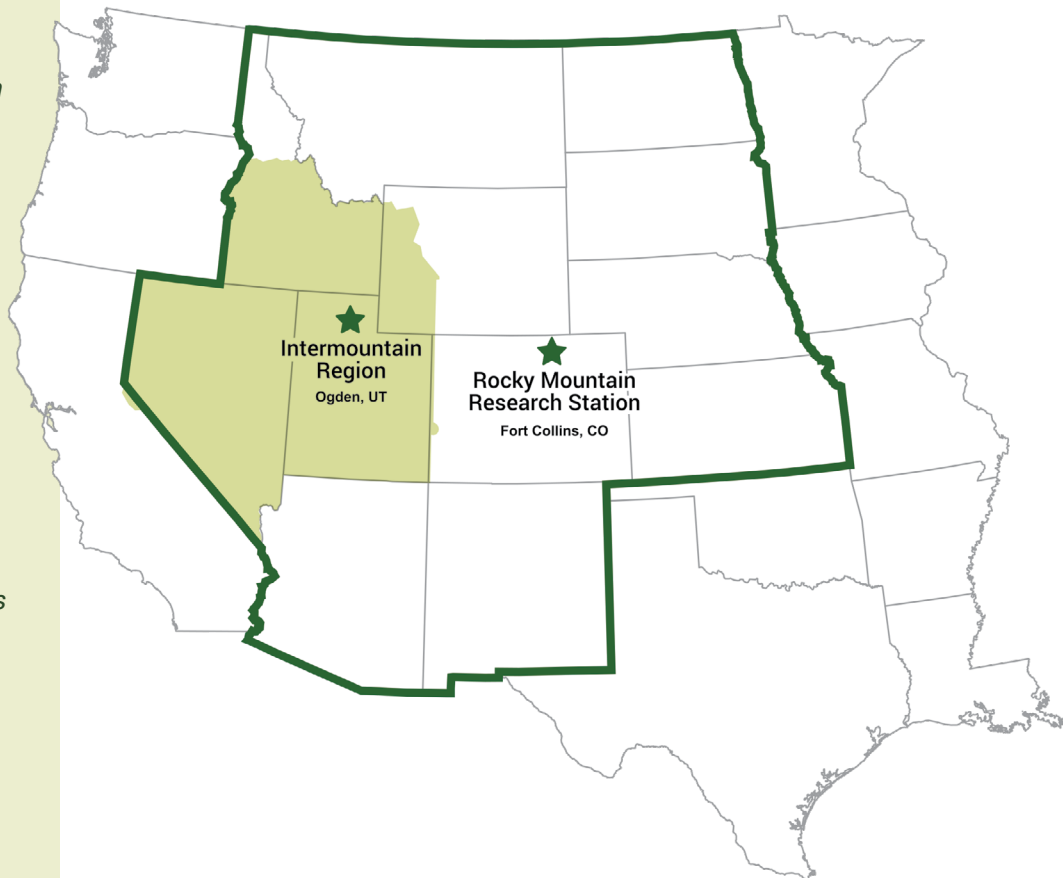
Reflection off Warner Lake. Warner Lake Campground, Manti-La Sal National Forest, Utah. USDA Forest Service Photo by Timothy Kennedy.

The Rocky Mountain Research Station overlaps a 12-state geography of the Intermountain West while the Intermountain Region of the National Forest System covers Nevada, Utah, southern Idaho, eastern California, and western Wyoming. The star depicts Station and Region headquarters locations in Fort Collins, CO and Ogden, UT, respectively)

BACKGROUND

Collaborations between Forest Service research and management are common but tend to be localized and personality oriented. Specific collaborations between scientists and managers often begin due to chance encounters and persist due to personal relationships and trust that develop during the collaborative process. Not surprisingly, these types of interactions tend to occur more in areas where forest and regional offices are near research station laboratories. While this is the inevitable consequence of proximity fostering both encounters and relationship-building, this pattern is exacerbated by the relatively small size of Forest Service Research and Development (R&D). For example, RMRS, which covers 12 States, has a wildlife program (Wildlife and Terrestrial Ecosystems) with only nine permanent full-time scientists. As such, Forest Service units distant from research laboratories may seldom encounter Forest Service scientists. Further, the aging workforce, particularly in Forest Service research, leads to frequent retirements that are destructive to personality-oriented collaborations.

The Intermountain Region (a.k.a. Region 4, R4) is particularly isolated due to the merger of the Intermountain Station with the Rocky Mountain Station in 1997. This merger eliminated the Intermountain Station headquarters that was located in the Intermountain Region (R4) (Ogden, Utah), reducing research presence. It was recognized



that to allow R4 to be better served by RMRS, the ad hoc process of collaboration would need to be augmented by more formal and institutional structures. The R4–RMRS Science Partner Program was conceived as a step in this process.

This Science Partner Program was conceived through a series of informal conversations between the regional planning group and station communications staff and scientists. Initially the goal was to support forest plan revision efforts in R4. The concept was supported by regional leadership in concept and with financial support through travel funding. In August 2016, a 2.5-day kickoff workshop was held in Utah to pair interested managers with scientists based on overlapping interests. These small pairings were organized by themes like range, restoration, water, and so on.

The second workshop was held in October 2017 in the Ogden area again, which offered proximity to the regional office and some RMRS duty locations. The meeting was 2.5 days. A highlight of this workshop was dedicated time for groups to create Science Partner Videos. There was also time for a poster forum where groups rotated and conversed with other groups about partner work.

The third in-person workshop was held in Ogden for 2 days in October 2018 (see Resource 1, page 33). There were components of the workshop that focused on best ways to integrate with the newer formed group, the Science Advisory Team, and how to continue to best move forward with science partners. A notable aspect of this workshop was a poster session with the R4 regional leadership team. This served as an excellent opportunity to share program highlights with forest supervisors and regional leadership. Several new partnerships resulted from this interaction.

The fourth workshop was a day long virtual workshop in February 2020. It included updates from science partner groups and open forum time for sharing overall experiences. Both R4 and RMRS were experiencing transition with management and decided that a virtual event was the best method of convening until there was more management position stability. Overall, there is clear consensus that the structure of science partners helps to build bridges and increase the effectiveness and efficiency of both R4 and RMRS.

Also worth noting was the R4–RMRS Chief’s Shared Learning and Leadership Engagement in November 2019 (formerly called the Chief’s Review), in which scientist-manager relationships were highlighted during the engagement kickoff event evening poster session. Here, science partner groups and others gave “lightning talks” to national leadership about unique mission area partnering in this geography.

“We could be more successful in integrating science into our forest planning process by planning ahead—developing that information over the years. But it’s hard to get leadership’s attention outside of forest planning for gathering the types of information that would in the end support our plans—long-term monitoring and inventories.”

*Mary Friberg
Wildlife Biologist, Salmon-Challis
National Forest*

STEPS TO GET STARTED

Process



Science partners during annual workshop. USDA Forest Service photo by Nehalem Clark.

1

Cultivate a shared vision and engagement by leadership and staff.

2

Be intentional – charter a program.

3

Assign co-leads from management and science organizations.

4

Identify knowledge gaps.

5

Match scientists and managers based on shared interests and geography.

6

Provide seed funding.

7

Foster ongoing accountability, communication, and feedback loops.

8

Share information, successes, and challenges.

HOW DOES IT WORK?

The process for co-creating knowledge with scientists and managers can be straightforward, but it takes commitment and effort. We begin by asking: Where are the knowledge gaps, and which ones will benefit most from a partnership approach? Then comes pairing the right scientists with managers who need some expertise—effectively matchmaking. Providing seed funding is helpful. Good communication and feedback are critical for staying on track and problem-solving along the way. Finally, we finish by celebrating and sharing successes. This last part is more important than one might think.

FOREST PLANNING: AN EXCELLENT PARTNERSHIP OPPORTUNITY

Integrating science early and throughout the forest planning processes boosts credibility among communities and stakeholders and can lead to a more robust plan. Partnership groups formed as part of the R4–RMRS Science Partner Program to support forest planning in the region include:

- Integrating climate change research into the Manti-La Sal Forest Plan.
- Socioeconomic assessment and forest plan revision on the Salmon-Challis National Forest.
- Ready-set-readiness: engaging science ahead of forest planning on the Bridger-Teton National Forest.

WHO IS INVOLVED?

Science Partner Groups

There are currently 15 science partner groups. Individual groups range in size from two to many. These small work groups always include at least one scientist and one manager. The work of a single group can take any form: from multi-regional, large scale monitoring protocol development to site-specific analysis. Many science partner groups are still collaborating that were initiated in 2016 while others have completed their work together. New science partner groups are forming each year as needs are identified.

“We are trying to figure out how to accomplish that goal of working across mission areas and sharing knowledge and expertise.”

*Amanda Egan
Program Manager, Region 4 State
and Private Forestry, Urban and
Community Forestry*

INTERCONNECTION WITH THE REGIONAL SCIENCE ADVISORY TEAM

Because RMRS overlaps four NFS regions (Regions 1, 2, 3, and 4), there was a need to establish stable science consulting bodies at a regional level. These interdisciplinary teams are made up of approximately 8-10 scientists and 8-10 regional staff who help identify research priorities and coordinate at higher programmatic and regional levels. In R4, the Science Advisory Team is envisioned as a complement to the Science Partner Program whereby regional science needs that are identified could be addressed by science partner group efforts.

Identify, Implement, Learn Strategy

Identify management issues or concerns that would benefit from additional research, synthesis or science-management collaboration.

The Science Advisory Team seeks input from leadership and specialists through the following means:

- Request for topics of pressing needs through a call letter.
- Participation in forest/program/specialist meetings.
- Ongoing needs solicitation via SharePoint.

The Science Partner Program supports:

- Existing and new dialogues with scientists and practitioners.
- Matching management needs with appropriate scientists.
- Implement research and synthesis/co-development projects.

The Science Advisory Team connects regional priorities and science needs with resources such as:

- The Science Partner Program.
- Collaborative Forest Restoration Program (CFLRP) funding opportunities.
- Other relevant national Forest Service funds and external grants.

“Connecting the science partner group with the science advisory group is something we would like to spend more time on.”

*Nehalem Clark
Science Delivery Specialist, RMRS*

The Science Partner Program connects scientists and managers at the project level and with potential funds by:

- Developing action plans to instigate partnerships working on specific projects to support management challenges or outcomes.
- BeSMART microgrants.
- R4–RMRS travel funds to encourage network building.
- Learn from research projects, share findings, and apply elsewhere.

The Science Advisory Team and Science Partner Program help science-manager partnerships disseminate research findings and provide resources to leadership and specialists who are looking to integrate best available science into management. Decision-makers and leaders reach out to scientists. Scientists understand management issues and provide feedback. Questions for future study are added to the list of research needs. Using a model to “co-develop knowledge” yields innovative management solutions.

WHAT HAS BEEN THE IMPACT?

Science and Management Outcomes

Since its inception in 2016, the Science Partner Program has delivered on the goal to develop innovative land management solutions in a number of ways. Science and management partner projects are developing new tools to monitor species, habitat, and resource conditions and to update forest plans. A few examples are:

- A **Goal Efficient Monitoring (GEM) framework** to create a detailed model of rare mesocarnivores across multiple regions in the Greater Yellowstone Ecosystem.
- A reliable **eDNA marker** for boreal toad (*Bufo boreas*) and sampling protocol that simplifies detection efforts by allowing a single sample to indicate presence across complex wetlands.
- A user-friendly **rangeland monitoring tool** that uses geospatial applications to help managers identify ecological and social indicators of vulnerability.
- A groundwater-dependent ecosystems **mapping framework** to systematically assess the type, condition, and location of wetlands across forests in Region 4.
- A database of **National Forest Climate Change Maps** (6,000 maps for 111 places) that show trends in precipitation, air temperature, snow, and stream flow for every individual national forest in the contiguous United States.
- **Public economic workshops** to engage members of the public in collaboratively designing desired socioeconomic and ecological conditions for forest planning.
- Significant **external funding** leveraged as a result of seed funding provided by BeSMART as highlighted by the Increasing Site Resilience and Biodiversity on the Curlew Grassland group.

For more about Group Outcomes see Science Partner Group Profiles on page 17.

Partner groups have produced general technical reports and published research in peer-reviewed journals. Some groups have expanded their efforts from an individual forest to multiple forests,

“It can take just one scientist connection to give a manager access to the incredible resources that Forest Service research can offer. Since Research is organized differently than the National Forest System, scientists can help communicate where to get the most current and relevant information and which scientist is best to contact for further resources or assistance. Building bridges through science partners creates and develops these important connections and networks.”

*Natalie Little
Regional Sustainability and Climate
Coordinator, Region 4*

regions, or the entire NFS (see the Climate Change Science Partner Group profile, page 20). Others have inspired spinoff projects. The quaking aspen partnership group published four journal articles and a general technical report about the step-by-step process for implementing a landscape-scale aspen restoration that was developed for the Intermountain Region.

“The Science Partner Program has helped build relationships that make the research arm feel more accessible to the forests. That leads to a big long-term payoff.”

*Gina Knudson
Collaboration Specialist, Salmon-Challis
National Forest*

In addition to creating publications, partner groups share knowledge with peers and stakeholders through workshops, presentations, websites, and videos. Many have developed guidelines for using newly created tools as well.

Programmatic Outcomes

Sharing what we’ve learned with others across the agency and beyond has been a foundational goal of the Science Partner Program since its inception. Our annual partner workshop is a key mechanism to facilitate information exchange among groups and with regional and station leadership, and to evaluate the program model as it evolves. Additional knowledge-sharing mechanisms include conference and workshop presentations (National Silviculture Conference, regional leadership, Washington Office presentations, etc.), developing a web presence for the program, and creating an engaging series of short videos about the Science Partner Program. Web pages have been viewed nearly 6,000 times. YouTube videos have been watched more than 3,300 times, and social media impressions numbered more than 9,000.



Science partner groups created short YouTube videos to share this model with others. This video series and more is posted on the RMRS website: <https://www.fs.usda.gov/rmrs/region-4-science-partner-program>.

This Science Partner Program Road Map is another important outcome—as a mechanism for sharing what we have learned with other regions and stations interested in developing or adapting pieces of our program. The basic elements of the R4–RMRS Science Partner Program are highly portable to other locations and organizations.

Our Model Creates Strong, Positive Feedback Loops

We have learned that:

- High quality relationships developed by managers and scientists can lead to expansive networks across the region and station.
- In-person interactions facilitated by travel funds are important for jump-starting collaborations and developing deeply rooted relationships.
- Pilot and site-specific projects can be tested and refined and then scaled-up to regional and multi-regional applications.
- Significant outside funds and resources can be leveraged with up-front small investments.
- The competitive microgrant program encourages innovation and co-development of management-driven projects.

Partnerships resulting from the R4–RMRS Science Partner Program are helping NFS managers with science-informed decision-making and to establish networks in the science community. In turn, RMRS scientists are presented opportunities to work more deeply in application while increasing their awareness of current NFS issues and processes. Forest Service scientists and managers working together on discrete projects and science-based, actionable outcomes is an effective way to connect R&D with NFS now and into the future. At the very core of the Science Partner Program is improving relationships and customer service in direct support of sustainable management of the nation’s forests and grasslands.

NFS Management Backed by Rigorous Science Is Powerful

The program epitomizes science-based, data-supported decision-making while also increasing analytical capacity on units. With better communication between science and management comes improved identification of program areas or projects that could benefit from scientific involvement or inquiry.



RMRS research forester meets with Salmon-Challis National Forest staff about economics and forest planning. USDA Forest Service photo by Gina Knudson.

“It saved us a lot of time and adds capacity. It helps us answer relevant questions that we may not have the expertise to answer. It’s nice to have this model to help us.”

*Joshua Milligan
Plan Revision Team Leader,
Salmon-Challis National Forest*

New Knowledge Co-Developed With Managers Is Beneficial to Scientists and Managers

Scientists participating in the Science Partner Program are provided with on-the-ground opportunities to develop or co-develop new knowledge with direct manager input. Research questions can be refined through interaction with managers and then, in turn, this framework allows for science development that is highly applied. Managers can hone research questions at the outset and influence end products that will be most useful.



“We need these partnerships. We [managers and scientists] view the world differently and working together is the only way we can see the whole picture.”

Terrie Jain, Research Forester, RMRS

Science Partner Program workshop in 2018, Ogden, Utah. USDA Forest Service photo by Nehalem Clark.

WHAT ARE THE CORE COMPONENTS FOR SUCCESS?

Along this Science Partner Program journey, we've learned that leadership, collaboration, communication, time management, and funding are key components for success. We also recognize that partnerships take a bit of work and come with challenges, some more easily overcome than others. We have more to learn but one thing we know now is that, ultimately, the care and feeding of science and management partnerships is worth it.

Leadership

- Program leadership facilitates cohesion and momentum.
- Shared leadership by science and management liaisons underscores collaboration.
- Regional and station supervisor level buy-in is essential for success, as is supervisor level support for employee participation.

Nehalem Clark (Rocky Mountain Research Station) and Natalie Little (Intermountain Region), the Science Partner Program co-leads, currently act as liaisons between the science and management organizations at large and as catalysts for moving the program forward. Their shared leadership and respective locations at regional and station headquarters ensure that the program is anchored to both. The co-leads provide structure, facilitate connections between scientists and managers, and support communication to build cohesion and sustain momentum.

Relationships and Collaboration

- Relationships matter!
- Scientists and managers learn from each other's experience, expertise, and challenges.
- Knowledge exchange between scientists and managers is powerful when studies are conducted on a field unit and/or designed collaboratively.
- Collaboration improves project implementation.
- Research and management goals may differ but are often complementary.

"I met people on the Salmon-Challis. Getting together in person made it possible to talk about FIA data, and knowing people face-to-face makes a big difference."

*Kristen Pelz
Research Scientist, RMRS*



A lone sunflower on Heber Mountain of the Uinta Wasatch Cache National Forest. USDA Forest Service photo by Nate Lowe.

Strong relationships are important to build trust, break down barriers, and foster mutual learning. When scientists and managers ask questions together, design studies together, and arrive at conclusions together, shared understanding expands and that leads to greater engagement and motivation. Projects are more likely to succeed. And when managers weigh in on where and how studies take place, scientists improve their understanding of local issues and conditions and managers are in a better position to understand the results. Co-creating new locally based information and monitoring in this way strengthens project planning and implementation.

Communication

- In-person field visits are ideal.
- Regular, recurring interactions are a must.
- Virtual connections are economical and particularly effective once relationships are established by in-person interactions.
- Regular check-in calls with science partner groups provide accountability and maintain momentum.
- Developing briefings or other communication products together helps groups focus and cultivate shared visions.

Communication is vital to cultivate strong relationships between scientists and managers and to discover shared vision. Face-to-face field visits are the gold standard, especially for establishing new connections. Whether in person or virtual, regular communication is important for maintaining good working relationships and keeping up momentum.

“There are things with our project that we just haven’t been able to get funding for. So this [the BeSMART microgrant] is huge help to get going on those aspects of the project.”

*Don DeLong
Wildlife, Weeds, and Range Specialist,
Bridger-Teton National Forest*

Time Management

- Partnerships can save time ultimately, but they also require engagement from all parties.
- Recognizing partnerships as part of existing job responsibilities, rather than as additional, allows employees to prioritize collaboration efforts.
- Time scales can vary between scientists and managers.
- Aligning schedules requires patience and persistence.

We have learned from participants that partnerships both save time and require time. Collaboration saves time by bringing relevant expertise to the table to help form and answer questions. Recognizing that the effort required for partnership projects as a valuable part of an employee's workload goes a long way toward having buy-in and getting the work done. It's also important to acknowledge that managers often operate at shorter term time scales than research projects require.

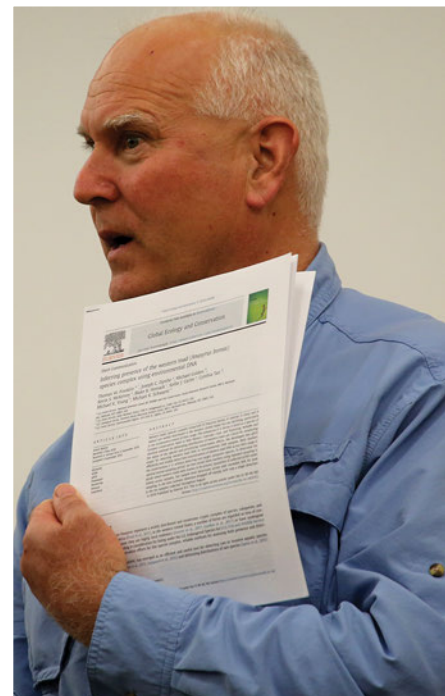
Funding

- The results of collaboration can result in cost savings.
- Travel and seed funding are critical.
- Success requires stable funding that is at the scale of the work needed over time.

A little funding goes a long way to launching the program. Travel funds support face-to-face interactions, which translate into strong relationships between scientists and managers. Microgrants can support proof of concept or pilot projects and help leverage other funds. However, the overall success of the program will depend on a stable, consistent source of funding. Without regular year to year funding, some programs and partnerships have stalled out.

"We need to work on being less competitive and more complementary. Take a broad view, see where overlaps are, and leverage resources."

*Matt Reeves
Research Ecologist, RMRS*



RMRS scientist emeritus Kevin McKelvey shares a co-produced publication about Boreal toad monitoring. USDA Forest Service photo by Kelly Wickens.

BeSMART MICROGRANTS

Best Science: Management and Research Together (BeSMART)

The competitive BeSMART microgrant program provides seed money for innovative, collaborative science-manager projects. The small-scale grants help to pair scientists and managers to work towards common goals (See Resource 2, page 37).

BeSMART is a joint R&D/NFS effort developed to enhance relations between Forest Service scientists and managers. It was initially developed by a Forest Service senior leader cohort and then adapted to the R4–RMRS Science Partner Program. The goal of this program is to bridge mission areas while ensuring that the best science is available for managing public land resources.

From 2017 through 2020, the BeSMART program awarded more than \$330,000 to 31 projects in addition to \$70,000 for travel.

BeSMART microgrants encourage and develop grassroots partnerships between managers and scientists. This joint R&D–NFS effort was developed to enhance relations and build new connections between Forest Service scientists and managers. The goal of this program is to bridge mission areas while ensuring that the best science is available for managing public land resources. R4 and RMRS have been national leaders in this arena. The partnerships continue to help NFS managers improve science-informed decisions, establish collaboration networks in the science community, and inform management concerns to scientists at RMRS. In turn, RMRS scientists increase their awareness of current NFS issues and increase familiarity with NEPA, forest plan revision, and other NFS management issues.

Microgrant proposals are judged and selected based on project relevance, potential impact, and probability for success. Highly impactful and tangible outcomes have resulted from these partnerships and microgrants with relatively small regional investment.

Past funded BeSMART microgrant projects have resulted in, for example: (1) extensive mapping and characterization of groundwater-dependent ecosystems across R4; (2) development of a genetic marker and field protocol for boreal toad monitoring, which will greatly increase the effectiveness and reliability of monitoring while reducing costs; and (3) leveraging forest inventory and analysis data and analytical capacity to support forest planning.

2017: 10 projects funded, total of \$80,000 funded by R4, plus \$20,000 travel funds. Focus was on science-manager partnerships

2018: 6 projects funded, total of \$65,000 by R4, plus \$20,000 travel funds. 3 additional projects at \$45,000 were funded by the WO Ecosystem Management and Coordination group. Focus was on NEPA Efficiency and Innovation.

2019: 3 projects for a total of \$45,000 plus \$30,000 travel funds were funded by regional planning group. The fuels program funded another 4 projects for a total of \$31,873. Focus on shared stewardship.

2020: 5 projects funded for a total of \$65,000 with focus on shared stewardship.

“People really do like the BeSMART program and having a robust BeSMART budget is essential. The travel is really important. We can try to leverage it, and do some other things, but the template has a lot to do with the backing of the funding.”

*Rema Sadak
Wildlife Ecologist, Region 4*

“It doesn’t require a huge effort to prepare a BeSMART proposal, so that’s nice. Thinking about a different way to add value to programs is important.”

*Stan Kitchen
Research Botanist, RMRS*

WHERE DO WE GO FROM HERE?

In our fifth year of the R4–RMRS Science Partner Program, our program is evolving. What we have learned we are still sharing and there is a desire to continue making new science-manager pairings. Many of the science partner groups initially formed are still working closely together, while others have completed their work together. A key issue identified by many groups is the need for a sustainable funding model. To initiate co-developed knowledge together, several seasons or even years working together are required. Without the ability to support these projects longer term, they can fizzle out and lose steam. There are also questions about how research priorities are identified at the station and regional level and a desire to make a tighter connection between these priorities and the Science Partner Program.

In fiscal year 2021, our annual workshop was held virtually to overcome the restrictions of meeting in-person during the COVID-19 pandemic and focused on sharing progress from on-going groups and BeSMART microgrants. In addition, the region intends to develop a broader scale monitoring strategy in support of forest planning.

R4 and RMRS intend to continue this valuable program, being a national model for bridging Forest Service management with science. In a future workshop, new and existing program scientists and managers will coalesce around questions about how to effectively and efficiently support monitoring in the region by leveraging existing data and science resources. An additional future workshop goal is to make new science partner group pairings.

Future plans also include actively sharing this road map with other regions and stations. This model could be particularly helpful as a national example to learn from as the agency moves to a new model for forest planning. Sustainable funding streams to allow for travel and collaborative projects is an unknown element at this time as the agency moves to a new budget model.



*Silvery lupine (*Lupinus argenteus*) in an alpine plant community in the Sheep Mountain Research Natural Area in the Lemhi Mountains just north of Caribou-Targhee National Forest. USDA Forest Service photo by Rose Lehman.*



Hell's Backbone Road is a 38-mile gravel road that was built by the Civilian Conservation Corps in the 1930s through the Dixie National Forest, and connects the towns of Boulder, Utah and Escalante, Utah. USDA Forest Service photo by Kevin S. Abel.

Boise Basin Experimental Forest Restoration Science Partner Group

Title: Landscape Restoration on the Boise Basin Experimental Forest and Boise National Forest

Location: Boise National Forest

Synopsis: RMRS researchers are partnering with managers on the Boise National Forest and university collaborators to develop, implement, and evaluate place-based adaptive management strategies with the goal of improving the resilience of Northern Rockies ponderosa pine stands to fire and other disturbances. The Boise Basin Experimental Forest (BBEF) project provides a unique opportunity to implement and evaluate a wide range of ponderosa pine management approaches using a management-science partnership framework, implement treatments at a landscape scale, and gain insights into improvements in the project planning and decision-making process. Early in the project development, the Idaho Ranger District and RMRS team engaged collaborative groups, special interest groups, other scientists, and timber industry representatives through a series of field trips to promote open conversation and idea sharing. These engagements will continue.

Objective: To develop, implement, and evaluate place-based adaptive management strategies in order to improve the resilience of Northern Rockies ponderosa pine stands to fire and other disturbances.

Outcomes:

- Outcomes of collaboration include an 11,500-acre replicated landscape experiment that addresses management issues.
- This partnership has emphasized flexibility in order to adapt to different views and make adjustments.
- Methods to communicate lessons learned.



Science partner group meets in the forest at Boise Basin Experimental Forest. USDA Forest Service photo by Terrie Jain.

Partners: **Kate Dwire**, *Research Ecologist, RMRS*; **Travis Warziniack**, *Research Economist, RMRS*; **Terrie Jain**, *Research Forester, RMRS*; **John Wallace**, *Boise National Forest*; **John Riling**, *Boise National Forest*; **Kristine Lee**, *Boise National Forest*; **Andrew Nelson**, *University of Idaho*; **Katherine Lee**, *University of Idaho*; **Dennis Becker**, *University of Idaho*; **Brant Peterson**, *Boise National Forest*; **Tera Little**, *Boise National Forest*; **Michael Feiger**, *Wildlife Biologist, Idaho RD, Boise National Forest*; **Nate Anderson**, *Research Forester, RMRS*

Website: <https://www.fs.usda.gov/rmrs/projects/region-4-science-partner-program-landscape-restoration-boise-basin-experimental-forest>

Boreal Toad Science Partner Group

Title: Developing an Environmental DNA Marker for the Boreal Toad

Location: Dixie National Forest

Synopsis: The Boreal Toad Science Partner Group developed a toad detection technique that eliminates the need for time intensive, costly, and inaccurate visual surveys. Reliable and sensitive methods for delineating distributions of western toads are critical for monitoring the status of the species and prioritizing habitat conservation efforts. An RMRS wildlife ecologist teamed up with the fisheries biologist on the Dixie National Forest to develop a reliable eDNA marker for boreal toad (*Bufo boreas*) and an appropriate sampling protocol for the complex habitats they occupy. The approach greatly simplifies detection efforts by allowing a single sample to indicate presence across complex wetlands. The peer-reviewed publication of this eDNA toad detection methodology lends tremendous credibility with regulatory agencies such as USFWS and can be an essential piece of rare species planning and management.

Objective: To make it easier and more cost effective to monitor the status of the boreal toad, a Species of Greatest Conservation Need in New Mexico, Colorado, Utah, and Wyoming.

Outcomes:

- eDNA marker for boreal toad (*Bufo boreas*) and sampling protocol.
- Peer-reviewed publication: Franklin, Thomas W.; Dysthe, Joseph C.; Golden, Michael; McKelvey, Kevin S.; Hossack, Blake R.; Carim, Kellie J.; Tait, Cynthia; Young, Michael K.; Schwartz, Michael K. 2018. [Inferring presence of the western toad \(*Anaxyrus boreas*\) species complex using environmental DNA](#). *Global Ecology and Conservation*. 15: e00438.
- Published a new, field validated eDNA marker for boreal toad.
- Streamlined field methods and conducted a cost effectiveness study versus conventional survey methods.
- Determined that filtering time and filter processing costs for lentic wetland samples resulted in eDNA not being cheaper or more effective than visual encounter surveys (VES).
- Determined that sampling the flowing outflows of wetlands was faster and cheaper than VES, but did not appear as effective as VES.
- Original marker development and validation was RMRS and Dixie National Forest.
- Grew to encompass Fishlake National Forest, Utah Division of Wildlife Resources, and Hogle Zoo's Citizen Science Program by the final cost effectiveness study.
- Information has been presented to Intermountain Region Fish and Wildlife biologists, as well as Utah's Boreal Toad Conservation Team
- Study has informed potential future work at Utah State University, Caribou-Targhee NF, and Bridger-Teton NF.

Partners: Kevin S. McKelvey, *Research Ecologist Emeritus, RMRS*; Michael Golden, *Wildlife Biologist, Dixie National Forest*; Cynthia Tait, *Aquatic Program Manager, Region 4 (Retired)*

Website: <https://www.fs.usda.gov/rmrs/projects/region-4-science-partner-program-detecting-boreal-toads-using-environmental-dna>

Cheatgrass Study Collaborative Science Partner Group

Title: Cheatgrass Seedling Reduction for Restoration of Native Sagebrush Grassland Plant Communities

Location: Bridger-Teton National Forest

Synopsis: How might we slow or stop the spread of cheatgrass with millions of seeds of this invasive grass in the seedbank? Managers on the Bridger-Teton National Forest and RMRS scientists are working to understand whether there is potential for long-term cheatgrass seedling reduction with use of the herbicide indaziflam. This work is taking place in sagebrush-grassland communities in Sublette County, Wyoming and will identify effectiveness, non-target impacts, specific application rates, optimal treatment dates, re-treatment interval, and feasibility of aerial application for an herbicide. These results will be critical to future management strategies on Bridger-Teton National Forest and could be important for cheatgrass management west-wide.

Objective: To identify effectiveness, relative impacts to nontarget species, specific application rates, optimal treatment dates, retreatment interval, and feasibility of aerial application for an herbicide with significant potential to bolster restoration efforts on annual invasive grass infestations NFS-wide. To compare herbicide treatments to reduce cheatgrass seedlings, allowing restoration of native sagebrush grassland plant communities.

Outcomes:

- Mid-project modifications were developed in collaboration with RMRS partners.
- Though the pandemic constrained travel and field activities in 2020, scheduled data collection was completed.

Partners: **Dave Cottle**, *Range Management Specialist, Bridger-Teton National Forest*; **Brice Hanberry**, *Research Ecologist, RMRS*; **Jeffery Ott**, *Research Biologist, RMRS*; **Paul Meiman**, *Colorado State University*; **Jake Courkamp**, *Colorado State University*

Website: <https://www.fs.usda.gov/rmrs/projects/region-4-science-partner-programs-cheatgrass-seedling-reduction-restoration-native>



Dr. Paul Meiman instructs the group before sampling the herbicide treatment plots in year 2 at Boulder Lake in Wyoming. USDA Forest Service photo by Jake Courkamp.

Climate Change Science Partner Group

Title: Integrating Climate Change Research into the Manti-La Sal Forest Plan

Location: Intermountain Region (R4); Utah; Manti-La Sal National Forest

Synopsis: The Climate Change Science Partner Group's effort to create climate change maps to help the Manti-La Sal Forest Revision Team expanded from the one forest to nearly the entire NFS system once the map development model was established. Forest managers everywhere need information on projected climate changes at a scale relevant to their decision-making processes. The group employed state-of-the art science to generate readily available maps that predict precipitation, air temperature, snow, and stream flow for individual national forests. National Forest Climate Change Maps (6,000 maps for 111 places) are now available for every national forest in the contiguous United States. The maps are hosted by the Forest Service Office of Climate and Sustainability.

Objective: To make climate change data more understandable and useable.

Outcomes:

- National Forest Climate Change Maps: Your Guide to the Future. <https://www.fs.fed.us/rm/boise/AWAE/projects/national-forest-climate-change-maps.html>.
- The Intermountain regional vulnerability assessment, "Climate Change Vulnerability and Adaptation in the Intermountain Region," (Part 1 and Part 2), is the foundational work for the region's climate change work, and was completed in parallel with this team's support.

Partners: Charles H. Luce, *Research Hydrologist, RMRS*; Tiffany Cummins, *Wildlife Biologist, Manti-La Sal National Forest*; Natalie Little, *Regional Sustainability and Climate Coordinator, Region 4*

Website: <https://www.fs.usda.gov/rmrs/projects/region-4-science-partner-program-integrating-climate-change-research-manti-la-sal-plan>

Video: <https://youtu.be/EtDB5NrtmWg>



The Abajo Mountains, Manti-La Sal National Forest. USDA Forest Service photo by Charity Parks.

Ecological Site Description Science Partner Group

Title: Ecological Site Descriptions for Tall Forb Communities

Location: Bridger-Teton National Forest

Synopsis: RMRS and the Bridger-Teton National Forest are teaming up to develop ecological site descriptions (ESDs) for tall forb communities. These ESDs will be used to guide science-based management on rangeland sites. Four counties within the BTNF agreed to cooperatively fund data collection for development of tall forb ESDs during the 2020-21 field seasons. A challenge cost share agreement was entered between the BTNF and Sublette County Conservation District to collect data on six tall forb sites in the Wyoming Range. Data collection was completed on four of the sites, soil samples are currently being analyzed, and site data is being compiled for an annual summary report. Two NGOs provided funding for a data-mining effort in the spring and summer of 2020 to compile and interpret relevant EUI data, and to identify further data collection needs for this effort.

Objective: To assure data collection protocols for tall forb Ecological Site Descriptions during the 2020-21 field seasons are understood and implemented by field data-collection crews. Design and implement a practical quality control strategy.



On the Bridger-Teton National Forest, one of the most striking features of the tall forb community is the abundance and variety of tall perennial wildflowers that make up the largest component of this community type. USDA Forest Service photo by Pattiz Brothers.

Forest Economics Science Partner Group

Title: Socioeconomic Assessment and Forest Plan Revision on the Salmon-Challis National Forest

Location: Salmon-Challis National Forest

Synopsis: Structured public meetings and other forms of personal engagement with the public and key stakeholders are important parts of the forest planning process. In support of forest planning, informational workshops can help the public understand complex, critical topics such as wildfire suppression, recreation access, and threatened and endangered species. The Salmon-Challis National Forest and Rocky Mountain Research Station came together to develop and deliver two four-hour workshops on forest economics. The workshops took place in the towns of Salmon and Challis in Idaho and brought together diverse participants with interest in this topic and how it is integrated into forest planning. The use of informational workshops to engage the public in forest plan revision has facilitated exchange of useful feedback from key stakeholders.

Objective: To fully integrate socioeconomic concerns into the forest plan revision assessment for the Salmon-Challis National Forest, located in east-central Idaho.

Partners: **Nate Anderson**, *Research Forester, RMRS*; **Gina Knudson**, *Collaboration Specialist, Salmon-Challis National Forest*; **Joshua Milligan**, *Plan Revision Team Leader, Salmon-Challis National Forest*

Website: <https://www.fs.usda.gov/rmrs/projects/region-4-science-partner-program-socioeconomic-assessment-and-forest-plan-revision-salmon>



First snow of the season on the peaks throughout the Lost River Ranger District, Salmon-Challis National Forest. USDA Forest Service photo by B. Higbee.

Forest Planning Readiness Science Partner Group

Title: Ready-Set-Readiness: Engaging Science Ahead of Forest Planning

Location: Bridger-Teton National Forest

Synopsis: The Rocky Mountain Research Station is connecting with the Bridger-Teton National Forest (BTNF) to pilot a science needs approach ahead of Forest Plan Revision. In 2019, a dozen RMRS scientists and staff traveled to the Forest for an informal science-manager engagement that perfectly complements the BTNF's proactive pre-Forest Plan Revision plan that they are calling their Readiness Strategy. This Readiness Strategy constitutes having information, staffing, public engagement, and governance components developed in advance to successfully support the future forest planning efforts (i.e., assessment, plan revision, amendment and monitoring). The science-manager team developed a collaboration strategy that identifies science needs and gaps on the Forest and specific paths forward toward closing these gaps in the next two years. We are calling this our Collaboration Plan.



RMRS scientists and Bridger-Teton National Forest resource staff at science partner meeting. USDA Forest Service photo by Nehalem Clark.

Greys River Pollinator Inventory Science Partner Group

Title: Greys River District Pollinator Inventory

Location: Bridger-Teton National Forest

Synopsis: Collectively the Bridger-Teton National Forest, Intermountain Region, Rocky Mountain Research Station, Agricultural Research Service, and the Wyoming Natural Diversity Database have developed a protocol for the Regional Pollinator Survey Team. This collaboration is at the forefront of pollinator inventorying and monitoring on national forests in the West. The protocol will provide baseline information (e.g., what bee and butterfly species inhabit which habitats) to inform how land management might affect pollinators. Field data and specimens are being collected to inform this larger regional pilot pollinator survey protocol.

Objective: To provide baseline info (e.g., what bee and butterfly species inhabit which habitats on the District) to inform how uses managed by the District affect pollinators, in recognition of crucial role pollinators play and threats facing them. Be able to present findings to the Forest Leadership Team and to educate them on status of pollinators.

Outcomes:

- Expected outcomes include: List of bee and butterfly/genera species occurring on the district, relative abundance of each, and their habitat and plant-species associations.
- Foster collaboration among partners.
- Presentation to the Forest Leadership Team (Bridger-Teton National Forest, RMRS, Wyoming Natural Diversity Database, Xerces Society).
- Help set the stage for future research including two funded summer undergraduate students.

Partners: **Don DeLong**, *Wildlife Program Manager, West Zone-BTNF*; **Lusha Tronstad**, *Invertebrate Zoologist, Wyoming Natural Diversity Database*; **Justin Runyon**, *Research Entomologist, RMRS*; **John Proctor**, *Regional Botanist/Invasives, Region 4*; **Brice Hanberry**, *Research Ecologist, RMRS*; **Terry Griswold**, *Research Entomologist, Ag. Research Serv.*; **Kareb Clause**, *Range Management Specialist, NRCS*; **Leslie Reis**, *Project Director, NA Butterfly Monitoring Network*; **Sarina Jepsen**, *Director, Endangered Species Program, Xerces Society*



Pollinator collectors. USDA Forest Service photo by Johnny Proctor.

Groundwater Dependent Ecosystems Science Partner Group

Title: Characterizing and Conserving Groundwater Dependent Ecosystems

Location: Intermountain Region (R4)

Synopsis: Springs, seeps, fens, and other wetlands—groundwater dependent ecosystems (GDEs)—make up less than 2% of all lands in the National Forest System. These rare systems warrant protection in part because they provide unique habitat for many plants and animals. This science partnership is dedicated to safeguarding GDEs in the West and the Great Basin region—now and into the future. The team consists of specialists in hydrology, soils, botany, range, and watershed conditions. Using established protocols, the GDE group collaborates with internal and external partners to systematically assess the type, condition, and location of wetlands across forests in Region 4. The mapping framework also integrates field surveys of rare plants and other species-of-concern. Reliable information on the location and condition of springs and wetlands will support a range of planning and management efforts.

Objective: To improve assessments of Region 4 groundwater dependent ecosystem resources, particularly springs and wetlands, in order to foster conservation through stronger forest plans, contribute to management strategies, and potentially locate new populations of rare biota (rare plants and spring snails) and other resources.



Mapping and characterizing groundwater dependent ecosystems in the Intermountain Region. USDA Forest Service photo by Kate Dwire.

Outcomes:

- Trainings in the use of the Level 1 protocols to staff on the Ashley and Bridger-Teton National Forests.
- A workshop that presents alternatives for the sustainable development of springs, provides tools for managing GDEs, and advances the professional network of GDE advocates.
- An approach for utilizing wetland maps from Colorado Natural Heritage Program (CNHP) in field assessments.
- A multi-agency workshop to discuss consolidation and archival of GDE field data, geodatabases, and maps from CNHP, as well as other existing information.
- Springs Stewardship Institute field workshop.
- Published a guide on how to promote ecologically sustainable spring developments. Hope to use this to educate Forest Service people, but also larger audiences. <https://www.fs.usda.gov/rmrs/publications/oases-future-springs-potential-hydrologic-refugia-drying-climates>.

Partners: *Kate Dwire, Research Ecologist, RMRS; Mark Muir, Soil Scientist, Region 4; Cynthia Tait, Aquatic Program Manager, Region 4 (Retired); Jeff Bruggink, Soil Scientist, Region 4; John Proctor, Botanist, Region 4*

Website: <https://www.fs.usda.gov/rmrs/projects/region-4-science-partner-program-characterizing-and-conserving-groundwater-dependent>

K-17 Range Allotments Science Partner Group

Title: Science for Grazing Rangeland Management

Location: Bridger-Teton National Forest

Synopsis: RMRS and the Bridger-Teton National Forest are working together to develop a short-term objective based strategy for informing grazing authorization decisions that will support long-term resource goals. Determining existing and desired conditions for primary forage vegetation communities within the K-17 range allotment complex is one of the immediate need as are development of site-specific ecological site descriptions. A science review team has been launched to help

Objective: Develop a short-term objective based strategy for supporting grazing authorization decisions where long-term resource goals have yet to be established.

Partners: **Matt Reeves**, *Research Ecologist, RMRS*; **Dave Cottle**, *Range Management Specialist, Bridger-Teton National Forest*



Grazing rangeland on the Bridger-Teton National Forest. USDA Forest Service photo by Pattiz Brothers.

Mesocarnivore Modeling Science Partner Group

Title: Developing Models of Rare Mesocarnivore Across Multiple Regions

Location: Bridger-Teton National Forest and the Greater Yellowstone Ecosystem

Synopsis: Monitoring rare and wide-ranging mesocarnivores (animals that mainly eat small prey) such as lynx, fishers, and wolverines on a large scale would overwhelm a single forest or region. A regional wildlife ecologist, RMRS research ecologists, and a wildlife program manager on the Bridger-Teton National Forest are pooling their resources and skills to developing a monitoring effort with efficiency in mind. The Mesocarnivore Modeling Science Partner Group created the Goal Efficient Monitoring (GEM) framework, a detailed model of rare mesocarnivores across multiple regions in the Greater Yellowstone Ecosystem. It's designed to be comprehensive, targeted, relevant, and affordable. And it's flexible. Scientists don't need to over-build today's wildlife survey to ensure that it can answer tomorrow's questions.

Objective: To develop and implement a monitoring plan for mid-sized carnivores, specifically Canada lynx, fisher, and wolverine, that reliably answers critical questions that affect management.

Partnership objectives are to have an inclusive partnership between research and management for monitoring without formal separation of roles and responsibility.

Outcomes:

- A published mathematical explanation of GEM.
- A practical example of GEM in operation using data from prototype forests.
- A wide range of collaborators and stakeholders interested in implementing the model.
- Cost savings from conducting field work by local biologists rather than seasonal staff.



Mesocarnivore tracks in snow. USDA Forest Service photo by Jessie Golding.

Partners: **Kevin S. McKelvey**, *Research Ecologist Emeritus, RMRS*; **Jessie Golding**, *Carnivore Research Associate, RMRS*; **Rema Sadak**, *Wildlife Ecologist, Region 4*; **Randall Griebel**, *Wildlife Biologist, Bridger-Teton National Forest*

Website: <https://www.fs.usda.gov/rmrs/projects/region-4-science-partner-program-developing-meso-carnivore-models-across-multiple-regions>

Video: <https://youtu.be/VoheRX71VaQ>

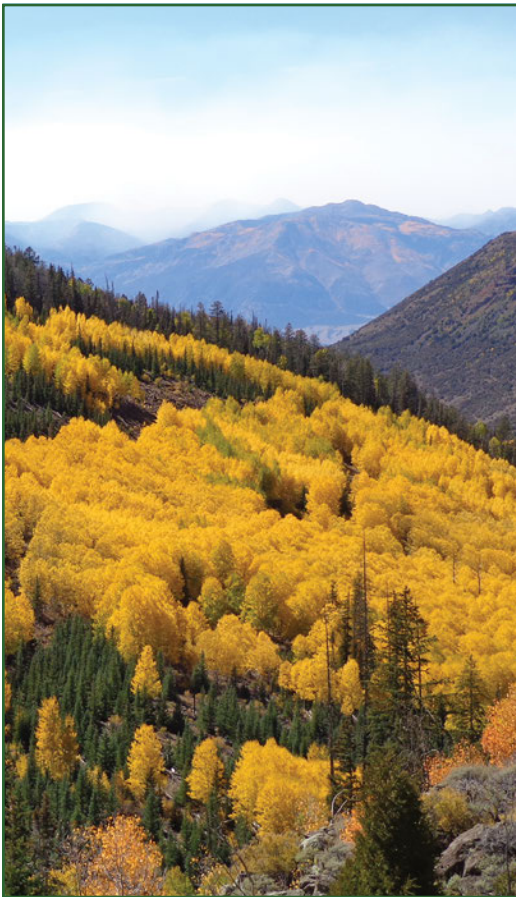
Quaking Aspen Science Partner Group

Title: Test-driving a Road Map for Collaborative Quaking Aspen Restoration

Location: Fishlake National Forest

Synopsis: The quaking aspen science partner group is 'test-driving' a science-based restoration framework for quaking aspen. These collaborators are developing and testing for planning and implementing a landscape-scale aspen restoration project that is both grounded in best available science and responsive to complex and competing resource perspectives. The key steps include assessment of aspen condition, identification of problematic conditions, determination of causal factors, selection of appropriate response options, monitoring for improvement, and assessment and adaptation.

Objective: To develop and test a step-by-step process for planning and implementing a landscape-scale aspen restoration project grounded in best available science and responsive to complex and competing resource perspectives. The steps include: (1) assessment of aspen condition, (2) identification of problematic conditions, (3) determination of causal factors, (4) selection of appropriate response options, (5) monitoring for improvement, and (6) assessment and adaptation. Once refined, this approach can be applied on the group on other national forests and quaking aspen restoration projects.



Fishlake National Forest, Monroe Mountain, Dyches Draw. USDA Forest Service photo.

Outcomes:

- Relationships!
- Project decision to treat 41,000 acres of aspen.
- Joint Chief's funding and Forest Service Chief's Award.
- Lessons learned incorporated into Aspen Restoration Guidelines ([RMRS-GTR-390](#)).
- Research and monitoring program produced four journal papers to date.
- Request for assistance to develop aspen restoration strategy on other forests.
- Spinoff: Research-management collaboration model applied to strategy for treatment of pinyon- juniper expansion into shrublands.

Partners: **Stanley G. Kitchen**, *Research Botanist, RMRS*; **Keith Moser**, *Research Forester, RMRS*; **Patrick N. Behrens**, *Regional Silviculturist (Retired), Region 4*; **John Guyon**, *Pathologist, Region 4*; **David Tart**, *Regional Ecologist, Region 4 (Retired)*; **Jason Kling**, *District Ranger, Fishlake National Forest, Richfield District*; **Andrew Orlemann**, *Forester, TEAMS*

Website: <https://www.fs.usda.gov/rmrs/science-spotlights/test-driving-roadmap-quaking-aspen-restoration>

Rangeland Monitoring Science Partner Group

Title: Adapting Rangeland Monitoring Strategies

Location: Intermountain Region (R4)

Synopsis: What threats do rangelands in Region 4 face in the future? A critical step in understanding rangeland vulnerability is to conduct an inventory of existing stressors that are likely to impede their resilience. Guided by insights from a planner at the Uinta-Wasatch-Cache National Forest, RMRS research ecologists are developing a tool for monitoring rangelands that's designed for planners and managers. The Rangeland Monitoring Science Partner Group uses a combination of FIA (All Conditions Inventory) data, remote sensing, and spatial modelling to identify stressors including degradation, invasive species, uncharacteristic fire regimes, and post-fire recovery rates. The list of indicators includes both ecological and social factors. The group is planning a communication and science delivery strategy to make the tool available beyond the borders Uinta-Wasatch-Cache National Forest to additional forest units.

Objective: To identify vulnerabilities in rangeland systems that may require monitoring, including both ecological and social assessment factors; and to enhance existing monitoring strategies using geospatial applications.

To enhance existing monitoring strategies with geospatial applications. The project will expand the Forest Inventory and Analysis (FIA) user base, develop remote monitors, and build collaborative relationships within and outside National Forest Systems."

Outcomes:

- Increased partnerships in Region 4 throughout the range management community.
- Publication and development of a tool that range managers and planners can use to query indicators in a user-friendly format.
- Ph.D. dissertation: Matt Elmer recently completed his Ph.D. at Colorado State University (Dept. of Economics) and his dissertation: "Essays on natural disturbances and the provision of ecosystem services: monetizing impacts, assessing management tradeoffs, and measuring vulnerability" (Fall, 2019; Advisor Dr. Robert Kling). It included a chapter: "Vulnerability to climate-induced changes in grazing services on national forest land in the Intermountain West," the work of which relied substantially on Science Partner work and collaboration with a team of Forest Service researchers and NFS staff.

Partners: **Matt Reeves**, *Research Ecologist, RMRS*; **Jim Menlove**, *FIA Analyst, RMRS, I&M Science Program*; **Pete Gomben**, *Regional Appeals and Litigation Coordinator, Region 4*; **Chris Miller**, *USDA Forest Service Washington Office Ecosystem Management*; **Matt Elmer**, *CSU PhD Student*



Cows grazing on the Curlew National Grassland. USDA Forest Service photo.

Site Resilience & Biodiversity Science Partner Group

Title: Increasing Site Resilience and Biodiversity on the Curlew National Grassland

Location: Curlew National Grassland (Caribou-Targhee National Forest)

Synopsis: This science partner group is developing an on-the-ground restoration "proof-of-concept" that includes many new methods. This science partnership, in conjunction with partners in BLM, FWS, and several non-governmental organizations, is collecting seed from forb species across the region that are high priority for pollinator habitat restoration. Collected seed is used in common garden experiments to develop seed transfer guidelines to guide restoration seed-sourcing. Additionally, collected seed will be increased by public and private partners in order to be used in active restoration projects and to support the restoration economy of the Intermountain West. Specific projects on the Curlew National Grassland using biochar and native forbs will follow what has been developed and learned from the larger partnership effort.

Objective: In conjunction with partners in BLM, FWS and several non-profits, to collect seed from forb species across the region that are high priority for pollinator habitat restoration. Seed collected is used in common garden experiments to develop seed transfer guidelines to guide restoration seed-sourcing. Additionally, collected seed will be increased by public and private partners in order to be used in active restoration projects and to support the restoration economy of the Intermountain West.

Outcomes:

- This is a "proof-of-concept," on-the-ground restoration project that includes many new methods.

Website: <https://www.fs.usda.gov/rmrs/projects/region-4-science-partner-program-pollination-restoration-curlew-national-grassland>



Monarch tagging to determine migration patterns. Curlew National Grassland, Caribou-Targhee National Forest. USDA Forest Service photo.

Using FIA Data on the Salmon-Challis National Forest

Title: Using what we have: FIA data for planning on the Salmon-Challis National Forest

Location: Salmon-Challis National Forest

Synopsis: The Salmon-Challis forest planning team is working closely with RMRS Forest Inventory and Analysis (FIA) scientists to create a planning and monitoring tool for forest and fuels management planning. Collectively, this team is looking “under the hood” at tree-level and coarse woody debris information in areas defined by LANDFIRE to expand on the current ways in which FIA data is utilized in forest planning.

Objective: To use FIA data and other data together to create a planning and monitoring tool.

Partners: **Kristen Pelz**, Forester, I&M, RMRS; **Joshua Milligan**, Plan Revision Team Leader, Salmon-Challis National Forest; **Cassandra (Sandy) Kollenberg**, GIS Specialist, Salmon-Challis National Forest; **Christine Droske**, Fire Ecologist, Salmon-Challis National Forest; **Mary Friberg**, Wildlife Biologist, Salmon-Challis National Forest



A field technician completes a survey. USDA Forest Service photo by Geneva Thompson.

*Field work. USDA
Forest Service photo
by Francis Kilkenny.*



RESOURCE 1 – SAMPLE IN-PERSON WORKSHOP AGENDAS

AGENDA: R4 Science Partner Workshop October 23-25, 2018 @ Eccles Center, Ogden, UT

Meeting Objectives:

- Assessing science partner pilot program: Learning from this model about how we build strong and lasting partnerships between Research and NFS.
- Identify current management challenges in Region 4 and identify ways in which RMRS and science partners can work collaboratively to tackle these problems in concert with the R4 Science Advisory Team.
- Brainstorm ways to share what the science partners are learning more broadly.
- Facilitate the existing science partnerships growth and provide tools to strengthen working relationships.
- Provide opportunities for Science Partner groups to work face-to-face with each other.
- Overlap and interact with R4 RLT and R4 Science Advisory Team.

Tuesday, October 23 – Meeting starts at 1 pm

Time	Topic	Who
8:00 am–1:00 pm	Optional: Morning meeting time for groups at RO	
1:00 pm	Meeting Starts @ Eccles Center, Ogden UT	
1:00–1:30 pm	Introductions & Group Ice Breaker	Elisha Hornung, Facilitator
1:30–1:45 pm	Welcome & Overview	Nehalem and Kris
1:45– 2:30 pm	What have we learned so far using this model to work together?	All
2:30–3:30 pm	Practice Lightning Round Speeches as Science Partners Groups / Group Break-out	All
3:30–4:00 pm	Break & Set up Posters	
4:00–5:30 pm	POSTER SESSION: Partner Group Sharing with RLT	RLT & Science Partners
6:00 pm - ?	Group Social	All

Wednesday, October 24 – 8:30–5:00 pm

Time	Topic	Who
8:30–9:00 am	Mingling	All
9:00–9:30 am	Thoughts from yesterday	Elisha Hornung
9:30–11:00 am <i>With am break</i>	<p>Overlap of R4 Partner Program/Advisory Team</p> <p><i>Information Sharing:</i> How are each of these groups functioning and what niche is being fulfilled?</p> <p><i>Problem-Solving:</i> How to Integrate and Leverage the Science Partner Program with the R4 Science Advisory Team</p> <p>How can the Science Partners use the Science Advisory Teams to our benefit? And vice versa.</p>	Science Partner Program and R4 Science Advisory Team
11:00–12:00 pm	Group discussion: Where do we want to go from here? Have we identified action items and follow-ups? What is needed in the Region that the Science Partner Program can fulfill?	All Groups
Lunch <i>(on your own in Downtown Ogden)</i>		
1:30–4:30 pm	Group Break-Out Sessions: Partner groups work together on project next steps, collaboration time	All
4:30–5:00 pm	Debrief and close-out	All
6:00 pm - ?	Group Dinner	All

Thursday, October 25 – Meeting ends at 12:00 pm

Time	Topic	Who
8:00–8:30 am	Mingling	All
8:30–8:45 am	Thoughts from yesterday	Facilitator
8:45–8:50 am	Science & Management Paired into the Future <i>(problem-solving and identify actions)</i> Introduction	Nehalem
8:50–9:20 am	Shared Stewardship	Erin Connelly
9:20–9:40 am	Environmental Analysis and Decision-Making	Pete Gomben
9:40–9:50 am	FY19 BeSMART Microgrant	Nehalem
9:50–10:05 am Break		
10:05–10:25 am	Forest Plan Revision	Kris Rutledge
10:25–10:40 am	Salmon-Challis Forest Planning Example	Nate Anderson
10:40–11:00 am	Wrap up and Group Discussion	All
11:00–11:45 am	Group discussion: What are the next steps? How do we share what we are learning? What will we accomplish in the next year? How can the coordinators best support continued efforts?	All
11:45–12:00 pm	Evaluate Workshop & Final Thoughts	
Meeting Adjourn	Head home & travel safe/Optional groups work together	All

Region 4–Rocky Mountain Research Station Science Partner Program

AGENDA: Annual Workshop Virtual Workshop @ Microsoft Teams

Facilitator: Jessica Brewen: RMRS Science Delivery & Public Affairs Specialist
Workshop Planners: Nehalem Clark, Jessica Brewen, Natalie Little and Val Gonzales

Meeting Objectives:

- Convene Science Partners, share progress and identify next steps.
- Invite new collaborations and science partners groups

Thursday, February 11th, 2021 – 9am – 12pm MST

Time	Topic	Presenter(s)
9:00-9:20 am	RMRS and R4 Welcomes	Monica Lear, RMRS Station Director Jim DeMaagd, R4 Acting Deputy RF
9:20-9:40 am	Introductions	All
9:40-10:00 am	Workshop Overview and Updates	Nehalem Clark, RMRS Natalie Little, R4
10:00-10:45 am	BeSMART & Science Partner Reports	BeSMART – Andre Snyder BeSMART – Anna Schoettle Rangeland Monitoring – Matt Reeves Groundwater Depend Ecosystems - Kate Dwire Forest Economics – Nate Anderson Boise Basin – Terrie Jain Grey’s River – Don DeLong Salmon Challis/FIA – Kristen Pelz
Break		
11:00-11:30 am	New opportunities & new ‘pitches’ for collaboration	All welcome
11:30-11:50 am	Group Discussion about Science Partner Program	All
11:50-12:00 pm	Wrap-up	Nehalem Clark, RMRS Natalie Little, R4

RESOURCE 2—BESMART REQUEST FOR PROPOSALS AND SUBMISSION FORM



Request for Proposals - FY19 Science Partner Microgrant Program

Intermountain Region (R4) and Rocky Mountain Research Station (RMRS)

PROPOSALS DUE NOVEMBER 20, 2018

What is BeSMART? BeSMART is a joint Research and Development – National Forest System effort developed to enhance relations between Forest Service scientists and managers. The goal of this program is to bridge mission areas while ensuring that the best science is available for managing public land resources. BeSMART believes that the highest quality science and the most effective management is born from managers and scientists working together.

What are BeSMART Science Partner Microgrants all about? This program awards small-scale grants to be used to facilitate land management problem solved through research-management partnerships. In FY19 we are requesting proposals that support Shared Stewardship, an initiative in which the Forest Service will work closely with States and partners to set landscape-scale priorities for targeted treatments in areas with the highest payoffs with the goal of reduce fire risk and improving forest resiliency through the use of new tools to conduct targeted investment planning, and by improving efficiencies in Planning/NEPA. A maximum of \$15,000 per proposal will be awarded (no min. \$). Microgrant funds can be used for RMRS and NFS perm/non-perm salary, travel, contracts and supplies and equipment.

How do I apply? The application process is easy! Complete the attached proposal form, limiting your response to 2 pages or less. Proposals must be jointly authored by at least one R4 FS manager/resource professional together with at least one RMRS scientist/professional. Additional project partners are encouraged. Proposals should highlight how the project will support the Agency Shared Stewardship initiative or employ a Shared Stewardship model to promote highly valuable outcomes, while promoting NFS-RMRS collaboration.

What are some examples? Some project ideas include cross-boundary workshops or stakeholder engagement events, prioritization of vegetation treatments to promote meaningful outcomes, improvement of valuable management outcomes as a result of the proposed project. All approaches are welcome as long as a joint partnership between the research station and Forest Service managers supports projects that use a Shared Stewardship model.

How will proposals be evaluated? Proposals will be evaluated based on: project relevance (especially to wildfire and Shared Stewardship, potential impact of project, probability of successfully completing the project within the proposed timeframe, ability to establish new or improved methods in planning and ability to engage other partners and leverage resources.

Proposals will be evaluated by the Microgrant Review Committee comprised of members from R-4, RMRS, and the BeSMART Team.

What else about the microgrant timeline?

- Proposals must be submitted to Nehalem Clark (ncclark@fs.fed.us) no later than **COB Tuesday, Nov. 20, 2018.**
- Funds will be made available upon award of the grant, which is expected to be late CY18 or early CY19.
- Projects must be completed or funds obligated by September 31, 2019.
- A final report describing project and outcomes will be required no later than November 15, 2019.

Need help finding a partner? BeSMART will help connect researchers and managers to facilitate new partnerships. Please contact us if you would like help finding a potential partner. Include a brief description of the proposed project, topic area or expertise required, and geographic region desired.

For more information please contact: Nehalem Clark, ncclark@fs.fed.us, phone: 970-498-1135 or Kris Rutledge, krutledge@fs.fed.us, phone: 801-625-5146



Proposal Form - FY19 Science Partner Microgrant Program
 Intermountain Region (R4) and Rocky Mountain Research Station (RMRS)

Proposal Title			
Funding Request \$			
Principal contact: Name, email, phone			
Project Leads	Name	Position	Administrative Unit
NFS Partner			
Research Partner			
Additional Partner			
Additional Partner			

Describe the project you are proposing, the plan of action and how it will lead to improvements in outcomes and apply to Shared Stewardship or efficiency and innovation in planning/NEPA. Describe how scientist-resource professional relationships will be formed or furthered.

Briefly describe how the project will address each of the 5 following criteria?
Project relevance | Potential impact | Probability for success | Shared Stewardship/EADM | Partners & leverage

Timeline detail - accomplishment milestones with estimated dates (*Estimate dates for events, draft and final reports.*)

Describe budget detail:
 Salary (permanent and non-permanent NFS and RMRS salary, include #days)
 Travel (e.g. #trips, expected mileage, flights, hotels)
 Supplies/equipment
 Contracts
 Matching or leveraged funds

RESOURCE 3—SCIENCE PARTNER PROGRAM FORMS



Science Partner Program

Region 4 – Rocky Mountain Research Station

Project Form

Date:

Project title:

Name of science partners, positions, and duty station locations:

Overall project objectives:

What are the desired outcomes and issues to be solved or improved?



Science Partner Program

Region 4 – Rocky Mountain Research Station

Individual Form

Date:

Name, Position:

Organization (R4/RMRS), Duty Station:

In the R4-RMRS Science Partners Program I am interested in:

- Being part of a new group
- Continuing in an existing group
- Finalizing a group's work

Describe the work you are interested in accomplishing through the Science Partners Program:



The sunset from the summit of the Squaw Peak Road on the Uinta-Wasatch-Cache National Forest east of Provo, Utah. USDA Forest Service photo by Nate Lowe.



At joint poster session with RMRS and R4, attendees discuss partner program. USDA Forest Service photo by Kelly Wickens.

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Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

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