Case Studies: SWERI Funding Connects Partners and Projects to Amplify CFRI's Impact

The Southwest Forest Health and Wildfire Prevention Act (Public Law 108-317) enacted by Congress in 2004 established institutes in Colorado, Arizona, and New Mexico. Collectively known as the Southwest Ecological Restoration Institutes (SWERI), our mission is to bridge the gap between academic research and on the ground management to improve forest resilience to fire in the Intermountain West. At the Colorado Forest Restoration Institute (CFRI), our broad range of collaborative relationships facilitates problem solving, while our analytical capacity advances the application of science-based tools and solutions.

CFRI leverages funds appropriated under the Act alongside agreements with other federal, state, and local government agencies, nongovernmental sources, competitive research grants, and charitable gifts to maximize resources and expand the impact of our work for and with our partners. SWERI funding supports CFRI's mission to incubate innovative new ideas, to anticipate and develop solutions for the future, and to bridge knowledge development, transfer, and application between projects and partners.

The two case-study examples described in this briefing paper offer a glimpse how CFRI leverages SWERI funding along with research grants and on the ground application projects to multiply our impact. In this way, CFRI bridges science and management for our partners to do the right work, in the right places, at the right scale, advancing science informed forest restoration and wildfire hazard reduction across the west.

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SWERI Funding Breaks Down Barriers: Cross-Boundary Fire and the Tools to Plan for It

Leveraging SWERI Funding to Support the Northern Colorado Fireshed and PODs

CFRI leverages SWERI annual workplan funds with independent agreements to make funding go further, fill critical gaps, and make knowledge and products accessible to everyone. This diverse funding and engagement approach multiplies CFRI's impact.

- Eager to use prescribed burns as learning opportunities, the Peaks to People Water Fund and Arapaho-Roosevelt National Forest funded CFRI to conduct pre- and post-burn effectiveness monitoring in Northern Colorado.
- Leveraging SWERI work plan funds, CFRI collaborated with local USFS to get partners in the same room and facilitate initial communications about burns.
- The Arapaho-Roosevelt National Forest funded key partners CFRI, RMRS, and CPRW to stand up the NoCo collaborative and deploy PODs across the forest.
- Joint Venture Agreement partnerships between CFRI, RMRS, and Colorado State University faculty fund co-development of fire modeling tools, applied science research, and engagement with national forests around the country as they create their own PODs networks.
- CFRI uses SWERI funding to document and disseminate PODs tools and processes across peer-reviewed publications, technical briefs, webinars, and blog posts to share lessons learned.
- Funding from The Nature Conservancy Fire Learning Network has expanded CFRI's burning without borders expertise throughout the Rocky Mountain region.

In 2017, the Arapaho-Roosevelt National Forest and The Nature Conservancy (TNC) were independently planning prescribed fires on adjacent lands. Engrossed in safely conducting their own burns, each organization was unaware of the others' plans until after the smoke had cleared. Had there been more cross-boundary communication in this case, these agencies could have pooled resources and worked together to complete a large-scale prescribed burn. This situation inspired conversations about how to develop solutions for land-

scape-scale management and improve collaborative cross-boundary burning. With inside knowledge of each agency's burn plans, Colorado Forest Restoration Institute (CFRI) was uniquely positioned to bridge the gap, and leveraged SWERI work plan funding to help multiple agencies—including the Arapaho-Roosevelt National Forest, USFS Rocky Mountain Research Station (RMRS), Coalition for the Poudre River Watershed (CPRW), and TNC, coalesce into the Northern Colorado Fireshed Collaborative. The NoCo Fireshed has blossomed into a leader in collaborative cross-boundary wildfire planning, and has accomplished more prescribed fire over the past 3 years than any other group on the Colorado Front Range.

Sharing maps and spatial analytical planning tools that inform decisions across all jurisdictions is at the heart of the group's efforts. The NoCo Fireshed uses a spatial wildfire planning framework called Potential Operational Delineations (PODs). PODs acknowledges that fire does not respect jurisdictional boundaries, and instead the framework builds on the longstanding practice of firefighters identifying features on the landscape which could serve as control lines during wildfire operations. This knowledge can be captured and enhanced with advanced wildfire modeling and spatial analysis before the fire season even starts, and used for collaborative planning. For example, PODs can show where mitigation treatments like prescribed fire or tree thinning could enhance control lines to reduce wildfire risk to communities or water infrastructure. PODs can be even more powerful when combined with other tools like multi-resource risk assessments that incorporate timber, wildlife, recreation, and other priorities onto one map that demonstrates how fire might positively or negatively impact a portion of the landscape. The PODs framework empowers agencies to work together at the scale of a wildfire, rather than within their boundaries alone.

With the help of CFRI and RMRS, over 20 National Forests are beginning to implement this planning framework, and some are already using it to make decisions. On the 2019 Amole fire in New Mexico, Taos Bureau of Land Management (BLM) staff responded to a fire on the Carson National Forest where CFRI and RMRS had helped develop PODs. With information about Carson National Forest's PODs network in hand, BLM staff recognized that this fire could be managed using indirect response strategies, and fire was reintroduced to over 1,900 acres, reducing fuels and fire risk for the rest of the Forest. This case in particular demonstrates how incorporating PODs and information sharing into preseason interagency planning facilitates shared stewardship and cooperative decision making.

On the Front Range, PODs efforts on the Arapaho-Roosevelt National Forest have instigated creation of a seamless PODs network for the adjoining Pike-San Isabel National Forest. PODs workshops that CFRI has helped facilitate have produced interagency cooperation, as Rocky Mountain National Park fire management staff have begun to apply the framework to the Park, which sits in the middle of the Arapaho-Roosevelt PODs network. CFRI uses science and analytical tools to empower the work of shared stewardship, and to identify collaborative opportunities across fire-adapted landscapes.

Power to the People in Chaffee County: Measuring Outcomes of Wildfire Risk Reduction Programs

How our funding goes further: taking lessons from our portfolio of work and applying them to new and innovative projects

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2015

A McIntire-Stennis Grant funded a research project that calculated return on investment for a small portion of the Forest to Faucets Partnership (a collaboration between Denver Water and US Forest Service that aims to protect Denver's drinking water supply from wildfire impacts). An academic paper for this project was released in 2017.

2016

CFRI applied lessons learned from Forest to Faucets Partnership to engagement with the Peaks to People Water Fund and four Northern Colorado water providers to develop the Watershed Investment Tool using Peaks to People funding. This tool used input from local forest and water utility mangers to model post-wildfire erosion impacts on water infrastructure, identify where water resources were most at risk from wildfire, and economize the return on investment to incentivize downstream water users to protect upstream forests vulnerable to wildfire. Our science based analysis spatially prioritized where downstream investors got the biggest bang for the buck engaging in proactive forest management to protect water supplies before smoke is in the air.

2018

The Forests to Faucets Partnership funded CFRI and partners at CSU to leverage the framework developed for the Peaks to People Watershed Investment Tool to quantify the return on investment of the entire Forests to Faucets program, sprawling nearly 4 million acres across 3 national forests.

2019

Working with Envision Chaffee County, CFRI leveraged SWERI funding and expanded this framework to include additional values beyond watershed protection, prioritizing and measuring wildfire risk reduction outcomes at the scale of the county, watershed, or fireshed.

An initially small effort to add values of ecosystem services to CFRI's project level ecological monitoring has ballooned into a robust Risk Analysis and Decision Support (RADS) system that is the foundation for allocating county tax dollars towards forest management projects in Chaffee County. RADS takes measuring outcomes to a whole new level.

CFRI developed RADS through several pilot projects with Peaks to People Water Fund, Denver Water, and the US Forest Service measuring benefits of forest management to improve resilience of drinking water resources to wildfire. However, the Envision Chaffee County group saw greater potential for the locally driven, science-based watershed risk assessment tools we developed. CFRI's recent work in Chaffee County incorporates many more stakeholder values beyond watershed protection, including human safety, infrastructure and homes, water resources, wildlife habitat, and recreation. CFRI analyzed likely impacts from wildfire to all these values, and mapped community priorities in relation to wildfire risk, often in real time during community meetings. Participants could then collectively visualize and evaluate tradeoffs how prioritizing risk reduction to one value could impact another. Through compromise, discussion, and CFRI technical modeling expertise, the participants arrived at a plan in which everyone could see their values represented on the map, was amenable to the trade-offs made between priorities, and agreed on specific areas where forest management investments would yield the greatest bang for the buck to achieve their desired outcomes.

The collaborative planning process facilitated by CFRI analytical tools has paid off. Community leaders who participated in the planning sessions brought their consensus to the citizens of Chaffee County, and used CFRI maps and analysis to explain how they arrived at the shared priorities in the risk assessment. In 2019 voters in Chaffee County approved a sales tax increase to fund projects that reduce wildfire risk and improve ecological function in forest throughout the county. The advisory committee overseeing the Chaffee County Common Ground program is using CFRI's analysis to guide allocation of tax dollars and matching grants to projects that maximize impact towards shared outcomes. The County Commissioners and other partners unanimously approved the Community Wildfire Protection Plan informed by our analysis in February 2020.

RADS compliments CFRI's robust project level monitoring program by measuring outcomes across large landscapes and multi-million dollar forestry programs. The collaboration in Chaffee County served as a successful test case to demonstrate the RADS framework for communities to identify, prioritize, and measure program outcomes to protect values at risk with CFRI technical assistance. The RADS development process also illustrates how CFRI leverages SWERI resources with other projects such as Peaks to People Water Fund and Forest to Faucets Partnership to grow our impact into new areas. We are combining existing models in new ways, using our own technical modeling capacity and collaborative adaptive management expertise to empower and implement stakeholder decision-making processes that have tangible outcomes on the ground. Power to the people, in Chaffee County and beyond!

A Chaffee County fire official uses a CFRI data product to demonstrate treatment priorities to attendees at a community meeting.