

COLORADO FOREST RESTORATION INSTITUTE 2018 ANNUAL REPORT



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About the Colorado Forest Restoration Institute

The Colorado Forest Restoration Institute (CFRI) was established in 2005 as an application-oriented program of the Department of Forest & Rangeland Stewardship in the Warner College of Natural Resources at Colorado State University. CFRI's purpose is to develop, synthesize, and apply locally-relevant science-based knowledge to achieve forest restoration and wildfire hazard reduction goals in Colorado and the Interior West. We do this through collaborative partnerships involving researchers, forest land managers, interested and affected stakeholders, and communities. Authorized by Congress through the Southwest Forest Health and Wildfire Prevention Act of 2004, CFRI is one of three Institutes comprising the Southwest Ecological Restoration Institutes, along with centers at Northern Arizona University and New Mexico Highlands University.

The Colorado Forest Restoration Institute at Colorado State University receives financial support through the Cooperative and International Programs of the U.S. Forest Service, Department of Agriculture, under the Southwest Forest Health and Wildfire Prevention Act. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights Room 326-A, Whitten Building 1400 Independence Avenue, SW Washington, DC 20250-9410 or call (202) 720-5964 (voice & TDD).



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BACKGROUND

Fire is an essential part of how forests renew and sustain. However, historic land uses and decades of fire suppression has excluded fire from millions of forested acres of in Colorado and across the western United States. Since the early 1990s, the size and severity of wildfires have increased; human land use and development in fire-prone forests have also expanded. This combination of factors has resulted in the loss of life, property, and highly-valued natural, social, and economic assets from wildfires. This is forecasted to continue due to increases in average annual temperatures and the frequency, duration, and severity of drought. The US Forest Service estimates that approximately 80 million acres of western forests are vulnerable to large severe wildfires.

Forest restoration aims to reduce this vulnerability by applying mechanical, manual, and managed fire (both natural and planned ignitions) methods to alter or remove forest vegetation. By doing this, fires – when they do occur – can result in lower social and economic losses and costs, and serve their natural role in renewing forests. However, the cost, complexity, and controversy associated with forest restoration requires that forest managers and interested and affected stakeholders access and apply locally-relevant science-based knowledge to strategically identify the location, size, and types of restoration actions to produce the most benefits. While researchers in federal agencies and universities produce scientific findings relating to forest and fire ecology, it is not in their missions to engage with managers and stakeholders to localize these findings into project planning, analyses, design, and monitoring, and adapting future plans. Similarly, managers and stakeholders rarely have sufficient time and expertise to access, interpret, and localize scientific findings to inform effective forest restoration. What is needed are entities that can act as bridges and translators between research and management.

To address this gap, the Southwest Forest Health and Wildfire Prevention Act was enacted by Congress in 2004 (Public Law 108-317). The act authorized the establishment and federal funding support for university-based institutes in Arizona, Colorado, and New Mexico. As specified by the Act, the duties of each Institute are to:

- (1) Develop, conduct research on, transfer, promote, and monitor restoration-based hazardous fuel reduction treatments to reduce the risk of severe wildfires and improve the health of dry forest and woodland ecosystems in the interior West;
- (2) Synthesize and adapt scientific findings from conventional research to implement restoration-based hazardous fuel reduction treatments on a landscape scale using an adaptive ecosystem management framework;
- (3) Translate for and transfer to affected entities any scientific and interdisciplinary knowledge about restoration-based hazardous fuel reduction treatments;
- (4) Assist affected entities with the design of adaptive management approaches (including monitoring) for the implementation of restoration-based hazardous fuel reduction treatments; and
- (5) Provide peer-reviewed annual reports.

Per the fifth duty of the act, this annual report provides information about accomplishments of the Colorado Forest Restoration Institute (CFRI) at Colorado State University for calendar year 2018 for deliverables under the FY17 work plan approved on April 7, 2017 by the Southwest Ecological Restoration Institutes (SWERI) Executive Team, and the FY18 work plan approved on July 1st, 2018.

ORGANIZATION

CFRI is hosted in the Department of Forest and Rangeland Stewardship, one of five academic departments in the Warner College of Natural Resources at Colorado State University. Tony Cheng is Professor in the Forest and Rangeland Stewardship department and the director of CFRI. Dr. Cheng has been director since April 2008. In calendar year 2018, CFRI had eleven full-time employees and twenty one part-time employees. All employees report to Dr. Cheng. In turn, Dr. Cheng reports to the head of the Forest and Rangeland Stewardship. Heads of all departments in the Warner College report to the college's Dean.

ACCOMPLISHMENTS

Funding

CFRI utilizes funding appropriated under the SWERI-approved work plan as leverage for additional funding from federal and state government and nongovernmental sources. The table below displays all CFRI's funding sources, amounts, and agreement numbers for calendar year 2018.

Source	Project title	Agreement No.	Amount
Oregon State University / Joint Fire Science Program	Co-managing Risk or "Parallel Play"? Examining Connectivity across Wildfire Risk Mitigation and Fire Response in the Intermountain West	L17AC00230 (prime); L0196B-A (subaward)	\$17,809
City of Boulder	Risk Analysis Decision Support for Boulder Watershed	Contract no. 2017000482	\$49,627
US Forest Service, Grand Mesa-Uncompahgre-Gunnison NF	Monitoring Ecological, Social, and Economic Effects of the Uncompahgre Plateau Collaborative Forest Landscape Restoration Project, MOD 1	17-CS-11020400-023	\$31,500
USDA Forest Service - Southwest Region	Colorado Forest Restoration Institute, FY18	18-DG-11031600-052	\$450,000
US Forest Service, Arapaho-Roosevelt NF/Pawnee NG	Science-Based Support to Sustain the Resilience of Colorado's Front Range Forests, Watersheds, and Communities to Wildfire MOD 1	17-CS-11021000-032 MOD 1	\$161,500
USDA Forest Service - Rocky Mountain Region	Forest-to-Faucets Assessment and Monitoring , MOD 2	16-CS-11020000-062, MOD 2	\$190,000
USDA Forest Service - Rocky Mountain Research Station	Strategic Science Application and Delivery Efforts in the Interior West, MOD 3	16-JV-11221631-139, MOD 3	\$20,000
USDA Natural Resource Conservation Service (via Texas	Expansion of Conservation Effectiveness Assessment program for forests of the Colorado Front Range	Coop. agreement NR183A750023C002	\$55,000

A&M Gulf Coast CESU Sub-Award)			
USDA Forest Service - Rocky Mountain Research Station	Incorporating early career natural resource professionals into the Rocky Mountain Research Station silviculture program	18-JV-11221633-145	\$21,000
TOTAL			\$996,436

State Support

The State of Colorado, through its support to Colorado State University, provides financial support for CFRI facilities and administration. In 2018, this support totaled \$431,945.

Project deliverables

Following is a report on deliverables under two agreements active during calendar year 2018 that were authorized through the Southwest Ecological Restoration Institutes (SWERI) development and executive team workplan approval process for the Colorado Forest Restoration Institute to carry out the duties described in the Act:

For FY17 agreement number 17-DG-11031600-062, CFRI reports the following accomplishments toward each project deliverables in the work plan for the calendar year 2018:

Deliverable	Status of Deliverables
Project 1: Supporting Collaborative Forest Landscape Restoration Projects	
1.1 Produce and disseminate 1-3 technical documents regarding multi-party monitoring strategies and results for the Front Range Collaborative Forest Landscape Restoration Project	<p>Completed. Published paper entitled, "Collaborative restoration effects on forest structure in ponderosa pine forests of Colorado" in <i>Forest Ecology and Management</i>. Accessible online at: https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/05/cannon-et-al-2018-FEM-CFLRP.pdf</p> <p>Completed. Developed and disseminated a discussion brief entitled, "Updated 'status of knowledge' for Front Range Roundtable fuel treatment goals and objectives". Accessible online at: https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/04/2018-FRRT-Status-of-Knowledge-matrix.pdf</p> <p>Spencer Elliot presented a poster on Spatial and Temporal effects of collaborative restoration on front range ponderosa pine</p>

	<p>dominated forests, titled: Elliott, S, Cannon, JB, and Briggs, JS. (2018) Spatial and temporal effects of collaborative restoration on Front Range ponderosa pine dominated forests. Front Range Student Ecology Symposium, Colorado State University, February 2018, Fort Collins, CO. https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/04/Elliott_FRSES_CFLRP_adaptive_management_spatial.pdf</p>
<p>1.2 Produce and disseminate 1-3 technical documents regarding multi-party monitoring strategies and results for the Uncompahgre Collaborative Forest Landscape Restoration Project.</p>	<p>Completed report: Chambers, M. and Cannon, JB. (2018). Uncompahgre Plateau CFLRP Gambel oak understory response to mowing and prescribed burning treatments study summary. Colorado Forest Restoration Institute. CFRI-1801. https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/03/2018-CFRI-Gambel-oak-understory-study-summary.pdf</p> <p>Completed summary, and delivered poster at 2018 UP CFLR Annual Stakeholder meeting titled: Cannon, JB, Chambers, M, and Cheng, A. (2017). Monitoring trends in forest spatial patterns: Uncompahgre Plateau Collaborative Landscape Restoration Program. Colorado Forest Restoration Institute. CFRI-1703. Link to summary: https://cfri.colostate.edu/wp-content/uploads/sites/22/2017/10/CFRI1703_UP_CFLRP_Spatial_pattern_monitoring_2017.pdf Link to poster: https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/04/Cannon_UP_CFLRP_spatial.pdf</p>
<p>1.3 Conduct and report on at least two (2) field-based workshops per CFLR project to review and deliberate treatment effects and desired conditions.</p>	<p>June 29th-30th, 2018, Marin Chambers assisted with organizing and leading the Collaborative Forest Landscape Restoration field trip on the Uncompahgre Plateau near Montrose, Colorado.</p> <p>Co-organized and conducted a field workshop for the Front Range CFLRP on September 26th, 2018, to review and deliberate CFLR results, and disseminate RMRS-GTR-373 forest restoration framework, attended by ~75 people.</p>
<p>1.4 Document and distribute CFLR treatment design and monitoring approaches to other place-based collaborative forest efforts</p>	<p>Worked with the Southern Fire Exchange to produce and disseminate technical brief entitled, "Effects of forest restoration treatments and wildfires on tree spatial patterns in the Colorado Front Range" to land managers, forest restoration stakeholders, and researchers engaged in place-based collaborative forest restoration efforts beyond Colorado. Accessible online at: https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/03/AFE2017_Research-Highlight_Cannon.pdf</p>

	<p>Brett Wolk organized, presented restoration principles, and moderated a webinar discussion for the Forsythe II Multiparty Monitoring Group. April 2nd, 2018. The webinar was titled: "Principles and Application of the Front Range Restoration RMRS-GTR-373 to the Forsythe II Project."</p> <p>Chambers, M., Freels, E. Ex, S. "Gambel oak understory response to mowing treatments". Southern Rockies Fire Science Network Gambel Oak Webinar Symposium. November 13, 2018. https://www.youtube.com/watch?v=niNF9CBORCA</p>
Project 2: Addressing Knowledge Gaps for Post-Disturbance Forest Recovery and Future Forest Resilience	
2.1 In collaboration with Paula Fornwalt at the Rocky Mountain Research Station and Jeff Underhill, Regional Silviculturalist, produce and disseminate 1-3 status of knowledge summaries of vegetation response following large-scale forest mortality events	<p>In process.</p> <p>Chambers, M., Fornwalt, P., Redmond, M., Malone, S., Battaglia, M. "Post-fire conifer regeneration in ponderosa pine dominated forests of the southern Rocky Mountains, USA." Utah State University Forestry Extension Learn at Lunch Webinar. August 28, 2018.</p> <p>A paper being led by CFRI staff Marin Chambers examining regional tree regeneration patterns following high severity fire is in preparation for submission to peer-reviewed journal.</p>
2.2 In collaboration with Mike Battaglia at Rocky Mountain Research Station, produce and disseminate 1-3 technical reports or management briefs concerning the status of scientific knowledge about spruce management effects about spruce management effects	<p>Prepared and submitted for scientific peer-review a paper entitled, "Post-spruce beetle timber salvage drives short-term surface fuel increases and understory vegetation shifts", to the journal <i>Forest Ecology and Management</i>. Mike Battaglia is a co-author on the paper.</p>
2.3 Conduct and report on at least one (1) workshop to facilitate knowledge exchange regarding post-disturbance forest management options and effects	<p>Delivered presentation, "Patterns of conifer regeneration following high severity wildfires in Southern Rockies ponderosa pine-dominated forests" at the Natural Areas Conference, October 10-12, 2017.</p> <p>Delivered presentation, "Patterns of conifer regeneration following high severity wildfires in Southern Rockies ponderosa pine-dominated forests" at the 7th International Fire Ecology and Management Congress, November 28-December 2, 2017.</p>
Project 3: Assessing Treatment Effectiveness	

<p>3.1 Produce and disseminate between 1-3 written reports on fuel treatment effects on landscape-scale fire behavior, forest vegetation dynamics, and/or watershed values</p>	<p>Published paper: Rhoades, C, Pelz, K, Fornwalt, P, Wolk, B, and Cheng, T. (2018) Overlapping Bark Beetle Outbreaks, Salvage Logging and Wildfire Restructure a Lodgepole Pine Ecosystem. <i>Forests</i>, 9. doi: 10.3390/f9030101.</p>
<p>3.2 Conduct and report on between 1-3 field-based workshops to review and deliberate treatment effects and desired conditions</p>	<p>August 16, 2017, three CFRI staff conducted a field workshop at a CSFS project near Golden, Colorado, to deliberate treatment effects and desired conditions with CSFS staff and private land owners, and discussed application of monitoring from the Forest to Faucets program to private lands forestry management.</p> <p>Brett Wolk (CFRI staff) led discussion about desired conditions and applications for development of Community Wildfire Protection Plan update for Chaffee County. Brett traveled to Salida, Colorado, and delivered presentation to Envision Chaffee County collaborative group, titled: "Watershed Wildfire Risk Assessments: Strategies, Tools, Scope, and Resources for Envision Chaffee County." Envision Chaffee County working session, Salida, Colorado. October 1st, 2018.</p>
<p>Project 4: Supporting Collaborative Capacity-Building</p>	
<p>4.1 Conduct, convene, organize, and report on between 1-3 site visits or workshops that bring together research scientists from RMRS, other federal agencies, and universities with participants of place-based forest collaboratives to transfer knowledge about, and assist in the development of, science-based methods for multi-party monitoring</p>	<p>Organized and led a field workshop for the Natural Areas Conference, October 12th, 2017, in Fort Collins, Colorado. The workshop toured CFLRP restoration sites and discussed monitoring data and strategies. Approximately 38 people from across the USA attended, representing two other CFRLP programs outside of Colorado, the San Juan Headwaters Forest Health Partnership, Pennypack Ecological Restoration Trust, California State University - Davis, and several other organizations. Speakers included CFRI staff Brett Wolk, Jeff Cannon, and Ben Gannon; RMRS Research Scientist Matt Thompson; USGS Research Scientist Jenny Briggs; and CSU Faculty in watershed sciences Stephanie Kampf.</p> <p>Organized a special session on forest and fire impacts on watershed health, and contributed a presentation on watershed wildfire risk reduction decision support tools at the Sustaining Colorado Watersheds conference, October 9-11th, 2018, in Avon, Colorado. Chuck Rhoades, research scientist at RMRS, was invited to speak as part of the special session, as well as two cooperators from place-based forest collaborative groups.</p>

For agreement number 18-DG-11031600-052, CFRI reports the following accomplishments toward each project deliverables in the work plan for dates while the agreement was active, including July 1st, 2018 through December 31st, 2018:

Deliverable	Status of Deliverables
Project 1: Supporting collaborative monitoring and adaptive management to streamline environmental analysis and decision-making for forest landscape restoration and resilience	
1.1 Produce and disseminate 1-3 technical documents regarding multi-party monitoring strategies and results for the Front Range Collaborative Forest Landscape Restoration Project	None yet to report
1.2 Produce and disseminate 1-3 technical documents regarding multi-party monitoring strategies and results for the Uncompahgre Collaborative Forest Landscape Restoration Project.	<p>Developed a series of technical briefs summarizing ecological, economic, social impacts, and the Up CFLR high school internship program.</p> <ul style="list-style-type: none"> - Chambers, M. (2018) Uncompahgre Plateau Collaborative Forest Landscape Restoration Program: High School Internship Programs. CFRI-1804. https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/10/UP_CFLRP_High-School-Internship_final_1804.pdf - Chambers, M. (2018) Uncompahgre Plateau Collaborative Forest Landscape Restoration Program: Social Impacts & Contributions. CFRI-1805. https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/10/CFLRP_social_brief_final.pdf - Chambers, M. and Cannon, J. (2018) Uncompahgre Plateau Collaborative Forest Landscape Restoration Program: Ecological Impacts. CFRI-1806. https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/10/UP-CFLRP-Ecological_brief_final_.pdf - Chambers, M. and Speas, C. (2018) Uncompahgre Plateau Collaborative Forest Landscape Restoration Program: Economic Impacts & Contributions. CFRI-1807. https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/10/CFLRP_economic_brief_final_1807.pdf

<p>1.3 Conduct and report on at least two (2) field-based workshops per CFLR project to review and deliberate treatment effects and desired conditions.</p>	<p>August 14-15th, 2018, Brett Wolk and Marin Chambers assisted with organizing a field workshop with the Uncompahgre CFLR project to discuss results with partners and USFS Washington Office staff, attended by ~20 people.</p>
<p>1.4 Document and distribute between 4-6 monitoring methods and results (where applicable) to multi-stakeholder collaborative initiatives focused on forest health and wildfire risk mitigation</p>	<p>- Published written protocols for monitoring impacts of prescribed fire of vegetation and fuel loading: Monitoring Immediate Postburn Vegetation and Fuel Characteristics Protocol. 2018. Colorado Forest Restoration Institute. CFRI-1808. https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/10/ImmediatePostburnProtocolMothership_2018.pdf</p> <p>Developed integrated monitoring approaches and detailed protocols for monitoring changes in forest composition, structure, and fuel loading in Colorado forests.</p> <p>- 2018 Mothership Plot Protocol. Colorado Forest Restoration Institute. CFRI-1810. https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/10/2018-Mothership-Protocol.docx</p> <p>- 2018 Simple Plot Protocol. Colorado Forest Restoration Institute. CFRI-1809. https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/10/2018-Simple-Plot-Protocol.docx</p>
<p>Project 2: Translating National Cohesive Wildland Fire Management Strategy principles in practice</p>	
<p>2.1 Produce and disseminate between 2-4 written reports describing linkages between Potential Operational Delineations and fuel treatment effects on landscape-scale fire behavior and potential post-fire soil erosion for the purpose of pre-positioning fire response and coordinating future landscape-scale, cross-boundary forest vegetation treatments</p>	<p>None yet to report.</p>

2.2 Produce and disseminate between 1-3 written reports describing lessons learned and best practices for cooperative cross-boundary prescribed fire	None yet to report.
2.3 Conduct and report on between 4-6 field-based workshops to review and deliberate treatment effects and desired conditions with cross-boundary partnerships.	None yet to report.
Project 3: Providing Decision Support for Collaborative Landscape-Scale Assessment and Strategic Prioritization	
3.1 Convene and report on the structure and functioning of between 2-4 collaborative landscape analysis teams involving managers, researchers, and stakeholders	Prepared and submitted for scientific peer-review a paper entitled, "Prioritizing fuels reduction for water supply protection", to the journal <i>International Journal of Wildland Fire</i>
3.2 Convene and report on between 2-4 peer-to-peer learning workshops involving collaborative landscape analysis teams that have utilized the strategic prioritization approach and multi-stakeholder groups interested in applying the approach.	None yet to report.

<p>3.3 Report on the outputs of strategic prioritization data, methods, and tools for 2-4 projects to Forest, Regional, and Washington Office, water providers, watershed coalitions, and forest collaboratives.</p>	<p>None yet to report.</p>
<p>Project 4: Supporting Region 2 forest vegetation program planning</p>	
<p>4.1 Compile currently available data and analytical tools on changes in forest conditions for between 1-3 pilot national forests or areas within a single national forest. These forests or areas will be determined by the collaborative working group convened by CFRI.</p>	<p>None yet to report.</p>
<p>4.2 Convene and report on collaborative learning events involving managers, researchers, and stakeholders to assess and validate forest condition changes</p>	<p>None yet to report.</p>
<p>4.3 Convene and report on between 1-3 peer-learning workshops to facilitate knowledge exchange between managers and stakeholders engaged in this project with managers and stakeholders interested in replicating the process</p>	<p>None yet to report.</p>

<p>on their national forest or geographic area.</p>	
<p>Project 5: Supporting Collaborative Capacity-Building and Peer-Learning</p>	
<p>5.1 Conduct, convene, organize, and report on between 4-6 site visits or workshops that bring together research scientists from RMRS, other federal agencies, and universities with participants of place-based forest collaboratives to transfer knowledge about, and assist in the development of, science-based methods for collaborative assessment, monitoring, and adaptive management.</p>	<p>None yet to report.</p>

PEER REVIEW

A peer review of this document was provided by two personnel from agencies who are familiar with the CFRI annual workplan. As an organization focused on helping others apply science based adaptive management approaches, we value feedback from our partners and strive to continually improve our own organization through critical self-reflection and feedback.

Peer Review #1

PEER REVIEW

2018 Colorado Forest Restoration Institute Annual Report

Author(s): Tony Cheng, Director and Brett Wolk, Assistant Director

Reviewer: Anna Bengtson, Watershed Partnerships Detailer, State and Private Forestry & Tribal Relations, U.S. Forest Service Rocky Mountain Region

Date: May 29, 2019

Background: The Colorado Forest Restoration Institute (CFRI) is one of three university-based entities created following the passage of the 2004 Southwest Forest Health and Wildfire Prevention Act. CFRI's purpose is to achieve forest restoration and hazardous fuel reduction goals in the fire-dependent landscapes of Colorado and the Interior West through the development, synthesis, and application of locally-relevant scientific knowledge. Partnerships between the U.S. Forest Service and CFRI are a key aspect of this work. In recent years, CFRI has been implementing research, capacity-building, monitoring, assessment, and adaptive management projects on National Forest System lands intended to inform and improve landscape-scale forest restoration efforts.

Summary of Annual Report Review Key Points: Each year CFRI shares a peer-reviewed Annual Report of accomplishments in accordance with the Southwest Forest Health and Wildfire Prevention Act. CFRI's 2018 Annual Report is a well-organized document that clearly shows they are not only delivering on their program of work, but also leveraging their funding to expand their scope of impact. Of particular note is the number of scientific papers that have been published and presented to further the understanding of forest response to disturbance as well as treatment method. The following provides more detailed commentary and feedback on the 2018 Annual Report:

- It is helpful to see the outline of CFRI's funding sources to understand how they are coordinating work across the landscape with different partners.
- Including a brief accomplishments summary in future Annual Reports that (1) highlights the total number of published papers, delivered presentations, and hosted workshops, (2) lists the different audiences engaged, and (3) describes a couple key activities in more detail would help provide a better big-picture view of CFRI's overall impact.
- Having the web links to CFRI's publications compiled into this single document is valuable for information-sharing among partners and the public.
- Since a focus of this work is the transfer of knowledge into practice, it might be useful to include some analysis of the types of engagement that have been most informative and effective for land managers.
- Though CFRI is largely accomplishing tasks as outlined in their Annual Work Plan, there are a number of project deliverables without status updates. For these deliverables, it would be useful to have a rough estimate of the timeframe for initiation/action to know how the deliverable is expected to progress. Additionally, this may be an aspect of CFRI's work to revisit in subsequent Work Plans to determine if there is a need to be more targeted with project deliverables.

CFRI Response Reviewer #1

We appreciate your time reviewing and providing critical feedback on our annual report.

- A key aspect of CFRI's strategic direction is to leverage funding between projects and partners. In the future we will aim to include a brief narrative to better describe our overall impact beyond the annual workplan funding.
- While other reviewers appreciated the clarity and brevity of the report, your suggestion to highlight a few key activities in more detail is something we will consider to better demonstrate our accomplishments.
- We have put substantial effort into improving our website and posting web-based material over the past year, and appreciate you highlighting this.
- One of our FY2018 annual workplan projects includes co-producing a research paper with partners at the Rocky Mountain Research Station that will analyze the effectiveness of our substantial outreach efforts to support the publication *Principles and practices for the restoration of ponderosa pine and dry mixed-conifer forests of the Colorado Front Range. RMRS-GTR-373*. I'm glad that you feel this research, and other similar research, is useful. This was recorded as "None yet to report" in this annual report, and highlights the potential for CFRI to better communicate information in our annual reports about projects that are in progress.

Peer Review #2

Reviewer: Nehalem Clark, Science Delivery and Exchange Specialist, USDA Forest Service Rocky Mountain Research Station, Fort Collins, Colorado.

Date: May 29th, 2019.

Thank you for the chance to have a look over the CFRI Annual Report and provide a peer review. I liked all of it, especially the concise format and the clear deliverables. A couple of minor comments:

- Page 5, 1.3: Co-organized and conducted field workshop for CFLRP on 9/26, 75 attendees. This is all fine, but if you would like to include more here we organized two workshops and all of those presentations and pub talks, etc. Not sure what would be beneficial here but can get you a longer list if you like.
- Pages 9-10: Project 2: Is there nothing from the ARP/NOCO Fireshed Project to report here? I thought the PODS work had wrapped up there. And Mike Caggiano's blog got so much positive traction.

CFRI Response to Reviewer #2

We appreciate your time reviewing and providing critical feedback on our annual report.

- We strive to keep the report concise, while communicating the breadth of activities CFRI supports. I'm glad that you felt information and deliverables were clearly communicated in our annual report.
- Both of your comments highlight the need to better represent how CFRI leverages our annual workplan with additional project funding, and we agree with this feedback.

Specifically, the second field workshop you mention that CFRI helped co-organize and fund for RMRS-GTR-373 on September 12th, 2018, was supported with CFRI funding from agreement Colorado Forest Restoration Institute, FY17 (SUPPLEMENTAL) 17- DG-11031600-070, as well as other agreements. Nine of CFRI's eleven full time staff participated in teaching and organizing these two workshops, and our engagement was supported from a variety of different funding sources both both workshops. Similarly, our work with the ARP/NoCo Fireshed Project leverages our annual workplan funding with additional agreements from the ARP (e.g. agreement with US Forest Service, Arapaho-Roosevelt NF/Pawnee NG titled: Science-Based Support to Sustain the Resilience of Colorado's Front Range Forests, Watersheds, and Communities to Wildfire) and other funding sources.

- For future annual reports we will consider adding a column to the deliverables table to describe associated leveraged activities, or other means to better communicate leveraged work, while still maintaining a clear and concise report format. Describing our strategy for leveraging funding sources, while accurately representing deliverables for specific funding agreements, is something we will strive to improve in the future.



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