

FLN Networker No. 291: December 11, 2019

The FLN Networker is a publication of the Fire Learning Network—a partnership of the USDA Forest Service, agencies of the Department of the Interior and The Nature Conservancy—intended to foster communication within the network and among its friends. Submit comments, information to share, and subscription requests to Liz Rank.

For more about the FLN, visit www.conservationgateway.org/fln.

News from the Field

California: A writer and photographer from *The Guardian* visited the **Yurok TRES** this fall, and came away with the wonderful [article](#) “**Fire Is Medicine**”: The Tribes Burning California Forests to Save Them.”

Colorado: In a **Fire Adapted Colorado** [blog post](#) “Fulfilling the Burning Need to **Engage More People** in Prescribed Fire,” **Alex Graf** (agraf@wildfireadapted.org) describes his first experience organizing and experiencing a **community tour of a prescribed burn** this summer. “These educational tours highlight the growing partnerships between various stakeholders in Southwest Colorado as we strive to create a closer, more resilient relationship with fire.”

New Jersey: The recent **FAC Net** [blog post](#) “**Changing the Fire Paradigm** in New Jersey: The Power of Networks and Sustained Investments” is a good place to catch up on the work being spearheaded there by **Bill Brash** (bill@NJFireSafetyCouncil.org), and how his membership in FAC Net has been an **important catalyst** there.

Tennessee: The University of Tennessee *Daily Beacon* [article](#) “How Prescribed Burns Are Beneficial to the Great Smoky Mountains National Park” gets across the message of **good fire** across well. For more, contact **Greg Salansky** (greg_salansky@nps.gov), co-lead of the **Great Smoky and Unaka Mountains FLN** landscape.

Spain: Last month, **48 fire practitioners** came together in the province of Almería for two weeks of learning at the first **Andalucía TRES**. Participants and guests provided **35 presentations** on a wide range of topics, and they completed **216 acres** (87.5 hectares) of burning on a dozen units over the course of six burn days. Outreach, through **interviews and social media**, was also a key component of this TRES—see, for example, the [local news coverage](#) (at minute 1:50) of a meeting with the Ministry of the Environment and [prepared remarks](#) from **Jeremy Bailey** (jeremy_bailey@tnc.org).

TRES: Dates have been set for **seven spring TRES**—for details, see the listings below or on the [Upcoming TRES](#) page of the Conservation Gateway.

Resources: Learning Exchanges / Lessons from the Camp Fire / Smoke & Health

Learning Exchanges: The **Fire Adapted New Mexico** [blog post](#) “Five **Do’s and Don’ts of Hosting** a Learning Exchange: Reflections from Two FACNM Exchanges” is a good place to start if you’re thinking about hosting a learning exchange, full of useful tips (shared in true learning exchange spirit). For more, contact **Gabe Kohler** (gabe@forestguild.org).

Lessons from the Camp Fire: **Butte County**, California, has released a **series of four videos** on [lessons learned](#) from the Camp Fire that are applicable for those facing the potential for **wildfire—or other disasters**. Narrated by a resident who lost his home, the videos are intended to help residents and officials alike apply the lessons gained at such a “high and awful price,” **before, during and after** a disaster.

Smoke & Health I: The **U.S. EPA** has an **online course** on wildland fire smoke for **healthcare providers**. The [course](#) complements the recently updated [publication](#) “Wildfire Smoke: A Guide for Public Health Officials”; **additional resources** are in the EPA [Smoke-Ready Toolbox for Wildfires](#).

Smoke & Health II: The **EPA** also recently released a **data visualization tool** for its Smoke Sense **citizen science study**. The tool allows you to explore how people are using the **Smoke Sense app**, including the number of participants, where they’re reporting smoke and health observations, reported physical and behavioral responses to smoke, and more.

Articles & Reports: Disturbance Ecology / Fuel Breaks / Cooperative Burning / Social Vulnerability

Disturbance Ecology: “With the accumulating evidence of changing disturbance regimes becoming increasingly obvious, there is potential for disturbance ecology to become the most **valuable lens** through which climate-related disturbance events are interpreted,” begins the abstract to the brief [article](#) “Disturbance Ecology in the Anthropocene” by Erica Newman. The article defines **disturbance regimes**, discusses managing for **biodiversity** over the disturbance cycle, and highlights some **policy considerations**.

Fuel Breaks: The [article](#) “**How Big Is Enough?** Vegetation Structure Impacts Effective Fuel Treatment Width and Forest Resiliency” is based on an analysis of shaded fuel breaks that burned in the 2014 Bald Fire on the Lassen National Forests. The results “indicate that fuelbreak design may need to be **wider than generally prescribed** and that even during extreme fire conditions fuel treatments can result in resilient forest structures.”

Cooperative Burning: The **final report** “Collaborative Forest Restoration Program Statewide Cooperative Burning Pilot Program” (attached) summarizes work under a three-year project in New Mexico. The **cooperative prescribed fire capacity-building project** accomplished more than 22,000 acres of burning on State Trust land, and assisted with prescribed fire on 16,000 acres of four national forests. More than **24 agencies** took part, providing experience and training opportunities for more than **330 firefighters, natural resource professionals and university students**. The report also highlights opportunities to further increase cooperative burning in the state. For more, contact **Mike Caggiano** (michael.caggiano@colostate.edu).

Social Vulnerability: The **Northwest Fire Science Consortium** and **Ecosystem Workforce Program** at the University of Oregon have released the **literature synthesis** “Social Vulnerability and Wildfire in the Wildland-Urban Interface.” The [publication](#) is intended to “clarify areas of debate, clearly define and contrast disparate approaches, and synthesize findings that may help address **vulnerability to wildfires and other natural hazards**. While land managers and fire personnel might find it pertinent to approach biophysical and social issues separately, addressing both aspects of wildfire hazard can be productive for minimizing risk and empowering communities, neighborhoods, and households to prepare and recover from wildfire events.”

Video: Women in Fire

Women in Fire: The new [video](#) “**Igniting Inspiration for Women in Fire**,” produced by **The Nature Conservancy’s** Florida chapter and North America creative team, highlights some of the value that greater representation of women brings to the fireline. The video was primarily filmed at two women’s burn events in Florida earlier this year, including the **Women-in-Fire TREX (WTREX)** hosted at Tall Timbers and a burn hosted by the Florida chapter.

Jobs: Wildland Fire Modules / LLC Manager / Conservation Forester

Wildland Fire Modules: The **Forest Stewards Guild**, in partnership with the **Air Force Wildland Fire Branch**, is hiring full-time seasonal **wildland fire support module operations technicians** to be based at Kirtland AFB (Albuquerque), Joint Base San Antonio (Texas) and Joint Base Elmendorf-Richardson (Anchorage). The positions encompass both fire and land management responsibilities. For details, see the listings on the Guild's jobs page for the [Kirtland AFB](#) position (applications due **December 15**), [Joint Base San Antonio](#) position (due **December 20**) and the [Joint Base Elmendorf-Richardson](#) position (due **January 1**).

LLC Manager: The **National Park Service** is seeking a **fire management specialist** to manage the **Wildland Fire Lessons Learned Center**. Details are available on usajobs.gov ([announcement NPS Merit-2020-0002](#)); applications are due by **January 6**.

Conservation Forester: The **Tennessee** chapter of **The Nature Conservancy** is seeking a conservation forester for a **growing program**. Details are on the Conservancy's careers page ([Job ID 48260](#)); applications are due by **January 10**. (Current Conservancy employees should apply through [PeopleSoft](#).)

Network Workshops & Field Tours

December 12
new listing

Georgia Blue Ridge Mountains FLN / Helen, GA

Partners in this SBR FLN landscape will meet for presentations in the morning and then travel to nearby Smithgall Wood's State Park for a field trip in the afternoon to see a proposed table mountain pine burn unit.

Information: Mike Davis (mike.a.davis@usda.gov)

May 19-21

Southern Blue Ridge FLN / Dillard, GA

Save the date for this regional FLN workshop hosted by the Balsam-Nantahala landscape.

FLN Prescribed Fire Training Exchanges (TREX)

March 6-14
new listing

Alto Minho TREX / Porto, Portugal

Save the date—details will be available soon.

March 21-April 3
new listing

Niobrara Valley Preserve TREX / Johnstown, NE

See the [announcement](#) for details; applications are due by January 30.

March 22-April 4
new listing

Loup TREX / Central NE

Save the date—details will be available soon.

March 30-April 10
deadline

Women-in-Fire TREX (WTREX) / Southeastern VA

Participants of all genders and ethnic and racial backgrounds will explore the growing role of women in fire management, while conducting prescribed fire operations designed to advance their formal qualifications in wildland fire management and enhance their understanding of fire ecology and effects, communications and outreach, prescribed fire policy and planning, and more. Applications are due by **December 13**.

Details and a link to the registration form are in the [announcement](#).

April 27-May 8

Central Oregon TREX / Central OR

[Save the date](#), and watch for details and application materials in January.

April 27-May 8 **Ashland TREX / Southwestern OR**
[Save the date](#), and watch for details and application materials in January.

April 27-May 10
new listing **Northwoods TREX / Minnesota**
[Save the date](#), and watch for details and application materials in January.

Conferences, Workshops, Training, Etc.

February 4-5 **Burning Big! Large Burn Implementation in the Central Appalachians / Staunton, VA**
The **Heart of the Appalachians FLN** landscape is hosting this multidisciplinary workshop, with lively discussion, skill-building and sim table exercises.
Register: <https://forms.gle/riGjvwk5DBBzEYEN6>

February 6
new listing **Interagency Fuel Treatment Decision Support System Workshop / Kalamazoo, MI**
Information & registration: <https://www.eventbrite.com/e/interagency-fuel-treatment-decision-support-system-workshop-tickets-76808788153>

February 25-26 **Mitigation Best Practices / Boise, ID**
February 27-28 **Community Mitigation Assistance Team (CMAT) / Boise, ID**
Coalitions & Collaboratives (COCO) and the U.S. Forest Service are co-hosting this Wildfire Mitigation Academy at the National Interagency Fire Center. The first session is for current or future mitigation specialists, and the CMAT session is intended for potential CMAT trainees and team members.
Information: <https://co-co.org/get-involved/events/>

April 6-8
new listing **After the Flames / Tahoe, CA**
This conference has two tracks—one for property owners, community leaders, and agencies responding to fire, and another providing technical information for scientists, engineers, trainers and consultants.
Information: <https://aftertheflames.com/>

April 15-16
deadline **Colorado Wildland Fire Conference / Grand Junction, CO**
Fire Adapted Colorado is presenting this conference focused on “Discover Your Role: Reducing Wildland Fire Risk.” Proposals are being accepted through December 15.
Information: <https://www.wildfire-colorado.com/>

April 20-24 **3rd International Smoke Symposium / Raleigh, NC and Davis, CA**
Presented by International Association of Wildland Fire in partnership with NWCG Smoke Committee and the UC-Davis Air Quality Research Center, the symposium will have based in Raleigh, with a [satellite location at UC-Davis](#).
Information: <https://www.iawfonline.org/event/3rd-international-smoke-symposium/>

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Send News, Links & Comments

Emily Hohman – emily.hohman@tnc.org – Emily is out December 23-January 1.

Heather Montanye – hmontanye@tnc.org – Heather is out December 23-January 3.

Jeremy Bailey – jeremy_bailey@tnc.org – Jeremy is out December 16-20.

Marek Smith – marek_smith@tnc.org – Marek is out December 23-27.

Mary Huffman – mhuffman@tnc.org – Mary is out December 24-25.

Wendy Fulks – wfulks@tnc.org – Wendy is out December 23-January 3.

Liz Rank (editor) – lrnk@tnc.org – Liz is out December 13, 19-20 and 24-25.

Note: December 25 and January 1 are Conservancy holidays.

Full Links

News from the Field—CA: <https://www.theguardian.com/us-news/2019/nov/21/wildfire-prescribed-burns-california-native-americans>

News from the Field—CO: <https://fireadaptedco.org/fulfilling-the-burning-need-to-engage-more-people-in-prescribed-fire/>

News from the Field—NJ: <https://fireadaptednetwork.org/changing-the-fire-paradigm-in-new-jersey/>

News from the Field—Spain—News: <http://www.canalsur.es/multimedia.html?id=1506049&jwsourc=c>

Prepared remarks:

<http://www.conservationgateway.org/ConservationPractices/FireLandscapes/HabitatProtectionandRestoration/Training/TrainingExchanges/Documents/Andalucia-2019-Bailey-Introductory-Remarks.pdf>

News from the Field—TN: http://www.utdailybeacon.com/city_news/how-prescribed-burns-are-beneficial-to-the-great-smoky-mountains/article_44c1aefc-0fd0-11ea-817e-2f800c5da049.html

Resources—Learning exchanges: <https://facnm.org/news/2019/11/15/the-dos-and-donts-of-hosting-a-learning-exchange>

Resources—Lessons from the Camp Fire: <http://www.buttecounty.net/oem>

Resources—Smoke & Health I—Course: <https://www.epa.gov/wildfire-smoke-course>

Guide: <https://www3.epa.gov/airnow/wildfire-smoke/wildfire-smoke-guide-revised-2019.pdf>

Toolbox: <https://www.epa.gov/smoke-ready-toolbox-wildfires>

Resources—Smoke & Health II—Tool: <https://www.epa.gov/air-research/smoke-sense-data-visualization-tool>

Intro to the project: <https://www.epa.gov/air-research/smoke-sense-study-citizen-science-project-using-mobile-app>

Articles & Reports—Disturbance ecology: https://www.fs.fed.us/pnw/pubs/journals/pnw_2019_newman001.pdf

Articles & Reports—Fuel breaks: https://www.fs.fed.us/pnw/pubs/journals/pnw_2019_kennedy001.pdf

Articles & Reports—Social vulnerability: http://www.nwfirescience.org/sites/default/files/publications/WP_96.pdf

Video—Women in fire—Video: <https://www.youtube.com/watch?v=N6G-opAS1CI&feature=youtu.be>

WTREX handout:

<http://conservationgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/Pages/Focus-WTREX.aspx>

FLN Webinars—Information about upcoming FLN webinars and recordings of previous ones is at:

<http://conservationgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/NetworkProducts/Pages/webinars.aspx>

TREX—The latest application information for upcoming TREX is always listed at:

<http://www.conservationgateway.org/ConservationPractices/FireLandscapes/HabitatProtectionandRestoration/Training/TrainingExchanges/Pages/Upcoming-Training-Exchanges.aspx>

The Fire Learning Network is supported by *Promoting Ecosystem Resilience and Fire Adapted Communities Together: Collaborative Engagement, Collective Action and Co-ownership of Fire*, a cooperative agreement between The Nature Conservancy, USDA Forest Service and agencies of the Department of the Interior.

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Collaborative Forest Restoration Program Statewide Cooperative Burning Pilot Program



Final Report

“This burn was the largest prescribed burn in the northern part of the state for three Forests, and it was the highest priority “Flagship” burn as well. The cooperator and partner resources that supported this burn did an amazing job, and there is no way we could have done it without them. I can’t thank them enough for their assistance and exceptional support. Thank you for your role in getting them the reimbursement they so earnestly deserve”

– Forest Service Burn Boss

Key Findings and Accomplishments

- The Statewide cooperative prescribed fire capacity building CFRP project cumulatively reintroduced fire to over 38,000 acres of fire-adapted ecosystems. The cooperative led prescribed fire efforts on over 22,000 acres of State Trust land, and assisted with prescribed fire on 16,000 acres of four National Forests.
- More than 24 agencies participated in cooperative prescribed fire efforts associated with this project, which resulted in participation and training opportunities for more than 330 firefighters, natural resource professionals, and university students.
- This CFRP project helped several agencies scale up prescribed fire efforts. Several burns on State Trust lands and National Forests system lands would not have been accomplished without the additional participation from non-federal firefighters.
- Ecological monitoring efforts suggest burns largely met ecological objectives defined in burn plans, and reduced the threat of large catastrophic wildfire on multiple landscapes.
- Multiparty monitoring efforts found that project collaborators and cooperative burn participants valued this program, and noted numerous benefits to the Forest Service, state agencies, and local communities. Many participants expressed a desire to continue collaborative prescribed fire efforts after the project's conclusion.

This report has prepared by Mike Caggiano for the US Forest Service Collaborative Forest Restoration Program on behalf of South Central Mountain Resource Conservation and Development Council.

Cover Photo Credit: US Forest Service

November 30, 2019

Summary

This report provides a brief summary of the Statewide cooperative prescribed burning pilot program supported by the Collaborative Forest Restoration Program (CFRP) awarded to South Central Mountain Resource Conservation and Development Council (SCM RC&D) in 2015. Nationally, at-risk communities and government agencies are increasing the pace and scale of forest management activities with goals of creating resilient ecosystems, preventing catastrophic wildfire, and protecting communities, watersheds, and habitat. While logging, thinning, and other mechanical approaches are needed, fire adapted ecosystems cannot be fully restored without reintroducing fire. That is what this project sought to do on multiple jurisdictions throughout New Mexico.

The four-year CFRP Interagency Cooperative Prescribed Fire Implementation Project [CFRP #18-15] brought together over 24 project collaborators, five land management agencies, and 14 fire response organizations to reintroduce fire to over 38,000 acres of fire adapted ecosystems. This CFRP project facilitated the implementation of several types of cooperative burning efforts on multiple jurisdictions across the state, on both federal and state managed public lands. In this report we review: four cooperative burning models deployed for this effort, efforts to build capacity within the New Mexico Prescribed Fire Council, and both ecological and socio-economic monitoring results. We conclude with several suggestions and next steps that could be taken to continue cooperative prescribed fire efforts like those facilitated by this CFRP project.

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Cooperative Burns

This CFRP project recognized the importance of a multi-pronged approach, and implemented several different types of cooperative burns on four landscapes. Local cooperative burns that relied on local fire departments were held on the Carson and Cibola National Forests. Prescribed Fire Training Exchanges were held on New Mexico State Trust land in the Luera Mountains and on Bureau of Land Management land near Taos with the support of The Nature Conservancy. Cooperative burns led by the Forest Stewards Guild and members of the New Mexico Prescribed Fire Council also took place on the State Trust lands in the Luera Mountains. Additionally, existing agreements and administrative support facilitated participation of the All Lands All Hands burn team in cooperative burns on the Carson National Forest. In total, the Project lead three burns on 22,000 acres on State Trust Land and helped support 10 additional burns on 16,000 acres across three National Forests (Table 1). We discuss several burns below.

Local burns on the Carson

On some parts of the Carson National Forest, project partners initially had difficulty organizing volunteer fire departments for cooperative burning efforts, but eventually implemented several landscape-scale burns totaling 9,000 acres. Without the assistance received from the All Hands All Lands effort driven by the Forest Stewards Guild and The Nature Conservancy, the Forest would have had insufficient resources to support and implement the Alamosa Burn. Not only were these resources critical for implementation, they also provided

multiple training opportunities for federal, tribal, and county firefighters. The high priority Loop Road Rx burn used a similar cooperative approach by working with the Angel Fire and Red River Fire Departments. Burn severity maps indicate low and moderate severity across much of the unit (Figure 1).

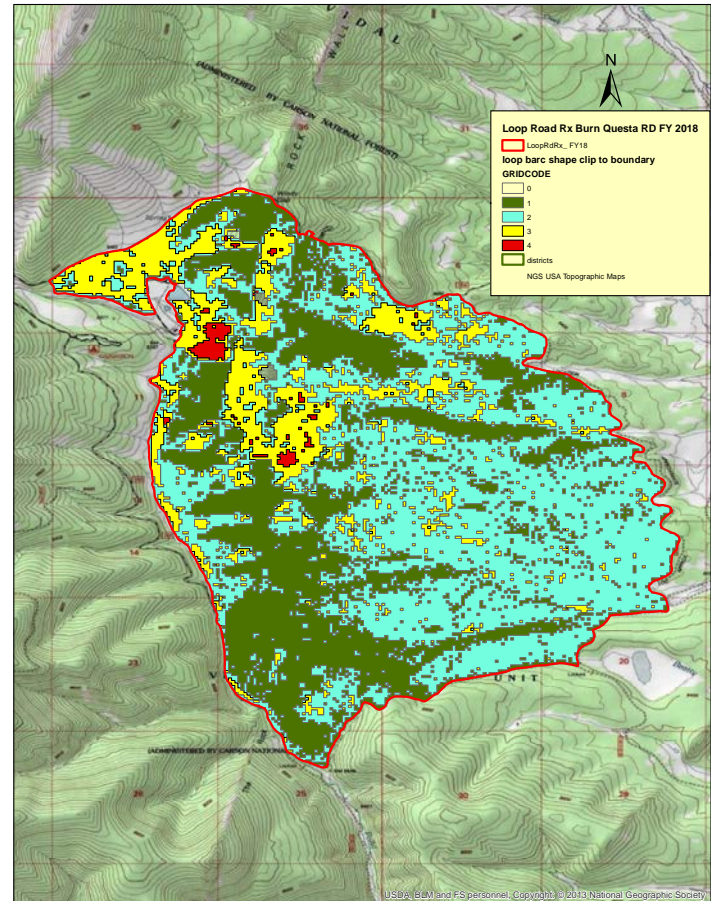


Figure 1. Burn severity map of the 2018 Loop Road cooperative prescribed fire on the Carson National Forest shows mixed and low intensity burning over the majority of the 5600 acre burn unit. Map produced using satellite imagery.

Credit: US Forest Service

<u>Rx Project</u>	<u>Jurisdiction</u>	<u>Date</u>	<u>acres</u>
1 Sulpher Rx	Cibola: Sandia	10/2016	100
2 Thunderbird Rx	Cibola: Mountainair District	10/2016	250
3 2017 Luera Mnt TREX	State Land Office	05/2017	6,000
4 Taos Ski Valley Pile Burn	Carson: Questa District	10/2017	50
5 David Canyon Rx	Cibola: Sandia District	10/2017	150
6 Thunderbird Rx	Cibola: Mountainair District	10/2017	300
7 Loop Road Rx	Carson: Questa istrict	04/2018	5,600
8 Chato Rx	Cibola: Mountainair District	09/2018	150
9 Borego Mesa Rx	Carson: Questa District	10/2018	450
10 Camino Real Pile Burn	Carson: Questa District	11/2018	300
11 Alamosa Rx	Carson: El Rito District	11/2018	3,500
12 2019 Luera Mnt Coopertive Rx	State Land Office	06/2019	22,000
Total			38,850

Table 1. List of cooperative prescribed burns supported by the CFRP project. Twelve burns occurred on five jurisdictions over four years reintroducing fire to 38,500 acres of fire adapted ecosystems.

Pre- Burn Photo #9



Post-Burn Photo #9



Figure 2. Cibola Fire: Pre- and post-fire repeat photo monitoring plot on the 2017 Thunderbird prescribed fire.

Credit: US Forest Service

Local burns on the Cibola

Burns on the Sandia and Mountainair Ranger Districts were completed with assistance from local fire departments, county emergency services, and tribal crews. Though burns were smaller than on the Carson, the burns on the Cibola were adjacent to wildland-urban interface communities. Local firefighters who assisted with the burns acted as community liaisons to educate their neighbors about prescribed fire. Ecological monitoring efforts were conducted before and after burns to ensure the burns met resource objectives (Figure 2).

Prescribed Fire Training Exchanges

The Nature Conservancy assisted project co-operators in hosting two Prescribed Fire Training Exchanges (TRES) – one in the Luera Mountains on State Trust Land southwest of Magdalena, and one with the Bureau of Land Management Taos Field Office. TRES is a unique program that brings firefighters into a community to conduct prescribed fire with an emphasis on implementation, training, and outreach. Over 40 firefighters, natural resources professionals, and university students participated in the two TRES burns sponsored by the CFRP project. These participants implemented prescribed burns, gained fire line experience, and worked on firefighter qualifications, all while learning about fire ecology and fire management in New Mexico (Figure 3).

Luera Mountains Cooperative burns

The Forest Stewards Guild Gravitas Peak

Wildland Fire Module, New Mexico Prescribed Fire Council, and others implemented several cooperative burns on State Trust Lands in the Luera Mountains. This innovative, dual-season, landscape-scale prescribed burn utilized natural fuel type transitions and strategic ignition patterns to moderate fire behavior to achieve desired mixed-severity fire effects that improved habitat. The burn will protect the landscape for years to come. The effort built off a CFRP-supported planning effort and a history of active management, and used a relatively small crew to cost-effectively reintroduce fire to over 22,000 acres of fire adapted with minimal operational support from federal agencies (Figure 4).

Participation and Agreements

More than 24 organizations sent staff, and a total of 338 firefighters to assist with cooper-



Figure 3. University student participants on the 2016 Luera TRES monitoring fire effects, fuel consumption and rates of spread on the 2016 Luera TRES.

ative burns. 187 of those firefighters were from non-federal organizations. Over 35 participants were from tribal fire crews, in youth conservation corps, or from universities. Table 2 details key collaborators, land management agencies, and fire cooperators who facilitated and participated in cooperative prescribed fire efforts.

Numerous agreements were put in place to facilitate cooperative burning on five different jurisdictions.

- South Central Mountain RC&D developed CFRP-authorized agreements with four National Forests and twelve fire response organizations to allow participation on cooperative burns, administer cooperator reimbursements, and negotiate liability concerns.
- The Nature Conservancy developed cooperative fire management agreements with the US Forest Service to facilitate the All Hands All Lands effort, and with the New Mexico State Land Office and the BLM to facilitate TRES events.
- The Forest Stewards Guild developed supplementary agreements with the New Mexico State Land Office, New Mexico Game and Fish, and The Nature Conservancy to facilitate their participation and additional cooperative burning efforts supported by this project.

These agreements facilitated increased cooperation, and negotiated exchange of resources, funding, and liability concerns. These agreements benefited the CFRP project, but also laid the



Figure 4. Firefighters reviewing a operational briefing map at the spring 2017 Luera Mountain cooperative prescribed burn.

groundwork for continued cooperation, which has already resulted in cooperative prescribed fire efforts beyond the scope of the CFRP project.

Prescribed Fire Council

Project stakeholders recognized the important role of the New Mexico Prescribed Fire Council (NMPFC) in supporting prescribed fire efforts on both public and private lands across the state. The CFRP project helped NMPFC achieve nonprofit status, open a bank account, and develop a website. CFRP funds also helped the Council purchase and outfit a prescribed fire trailer which makes supplies, tools, and personal protective equipment available to support

Key Project Collaborators:

South Central Mountain RC&D
 Forest Stewards Guild: Gravitas Peak Wildland Fire Module
 New Mexico Prescribed Fire Council
 The Nature Conservancy
 New Mexico Game & Fish
 New Mexico Forest And Watershed Restoration Institute

Land Management Agencies:

Carson National Forest
 Cibola National Forest
 New Mexico State Land Office

Fire Cooperators:

Isleta Pueblo Tribal Fuels crew
 Village of Tijares Fire Department (FD)
 Valencia County Emergency Service
 La Madera FD
 Angel Fire FD
 Vermejo FD
 Philmont FD
 Red River FD
 Taos Ski Valley FD
 La Lama FD
 Albuquerque FD
 Bernallillo FD
 Rocky Mountain Youth Corps
 Taos County
 New Mexico State Forestry

Table 2. List of Project collaborators, host land management agencies, and fire cooperators. Over 25 organizations were involved in cooperative prescribed fire efforts facilitated by this project, and 338 firefighters participated in prescribed burn efforts.

prescribed fire implementation across the state (Figure 5). The trailer has supported implementation of eight prescribed burns and a total of twenty-four days of burning across the state. CFRP funds were also used to support public outreach in four communities. Engagement between NMPCF, project partners, and the CFRP program has empowered the NMPCF to develop its own cooperative prescribed fire-based CFRP project with the Gila National Forest, which started in 2019.

Monitoring

Monitoring occurred throughout the CFRP-supported projects in several forms. First, District Fire Management Officers were responsible for completing project tracking forms for each cooperative burn. Tracking forms required information about burn location, fire effects, fuel consumption, project size, cooperator involvement, and training opportunities. Forms provided valuable information for tracking accomplishments.

Second, ecological monitoring of fire effects was conducted by monitoring crews on a selection of the cooperative burns (Figure 3). Ecological monitoring used pre- and post-fire assessments to track first-order fire effects and assess whether burns were meeting burn plan objectives. Monitoring indicated that cooperative burns largely met ecological objectives. In many locations, surface fuels were significantly reduced, forest struc-

tural heterogeneity increased, and the prescribed fires mimicked historical fire regimes.

Lastly, at the conclusion of the four-year term, focus groups were held with project stakeholders and cooperative burn participants. These focus groups were designed to gain a better understanding of: the process of implementing cooperative burns, the use and integration of interagency crews, the value of involving cooperators, and opportunities for improving and expanding cooperative burning in the future. These conversations provided critical feedback for project managers, the CFRP program, and other practitioners exploring options for reintroducing fire as a forest restoration tool.

Focus Group Findings

Representatives from the New Mexico Forest and Watershed Restoration Institute led focus groups on several key landscapes. The focus groups brought together project collaborators and cooperative burn participants in an effort to understand participants' experiences, discuss accomplishments and cooperative engagement opportunities, and distill lessons learned. During focus groups, participants also explored possibilities for continuing and expanding cooperative prescribed fire efforts after the conclusion of the CFRP. Several key themes reoccurred throughout multiple focus groups. A more detailed report on focus group findings is forthcoming.

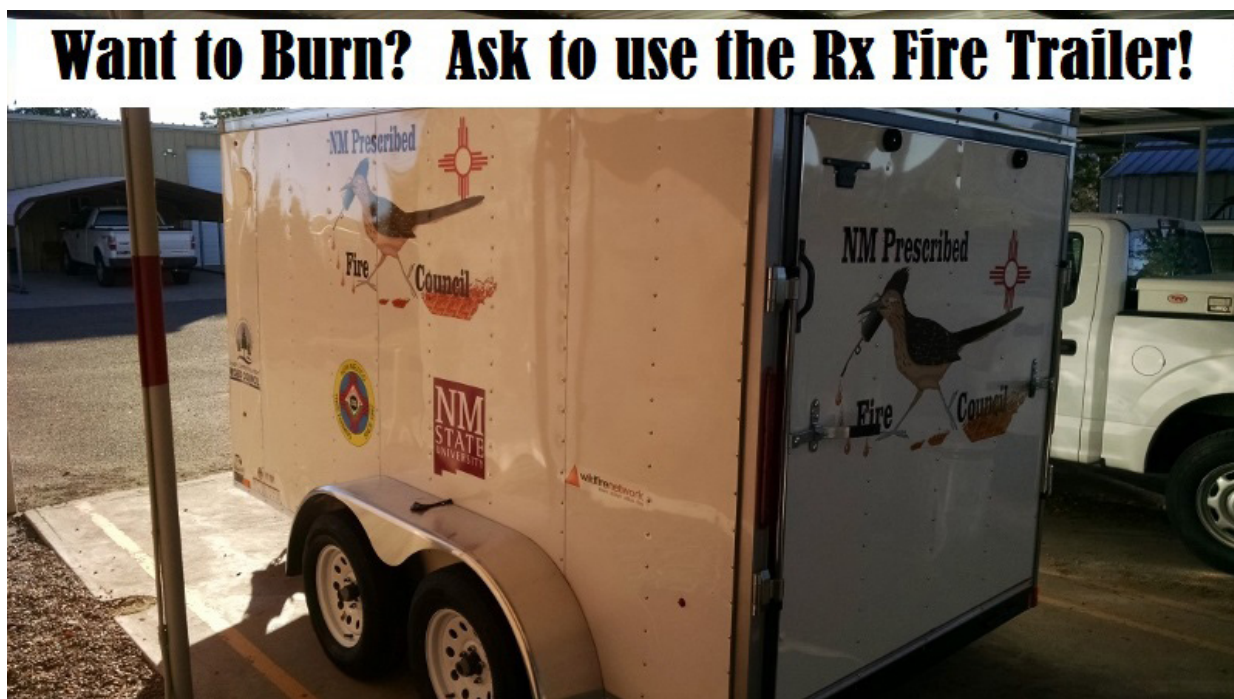


Figure 5. The New Mexico Prescribed Fire Council Burn trailer is stocked with tools and personal protective equipment made available to support prescribed burns across the state.

Generally, we found cooperative prescribed fire:

1. Provides numerous training opportunities for federal and local firefighters
2. Helps build capacity and improve fire response
3. Allows agencies to scale up restoration activities and increase accomplishments
4. Increases agency/community connections and leads to sense of shared responsibility and stewardship
5. Should continue after the conclusion of the project

Training Opportunities and Improving Fire Response

Working collaboratively on prescribed fire provides numerous benefits, and improves wildland fire response. Novice firefighters gain fire line experience in a non-emergency setting, and more advanced firefighters can improve their qualifications, work on task books, or be placed in training roles. Firefighters from different agencies get to work together, gain familiarity with one another, and understand each other's competencies. Prescribed fire settings give firefighters the opportunity to build these important relationships in lower-stress environments before they are required during a wildfire response.

"I think for me, the real take home accomplishment is we had a fire down in Bosque where we did a lot of burning out. The competency, you hand the firefighters drip torches and they automatically flip them and watch the way they're lighting. They've obviously got some experience, especially with the Isleta bunch. These guys are keyed in, they know what to do. They know how to do it. That experience gained on the cooperative prescribed burn is traveling and it's having an effect."

Interagency Prescribed Fire Resources and Capacity Building

Federal agencies were able to implement several prescribed burns they otherwise would not have. In several cases, combining resources allowed agencies to conduct large landscape-scale burns. Cumulatively, these burns are increasing the pace and scale of restoration activities on multiple landscapes.

"Cooperator resources enhanced the organization and provided much needed depth in certain resource areas. Specifically, fire engines increased our holding capacity since the unit had a road completely around it. On a burn this size, it was critical to have enough resources on site to mitigate long response times. I feel that the additional resources provided by our cooperators allowed us to conduct firing operations without the holding concerns that would normally accompany large firing operations."

Community Connections Through Shared Responsibility and Stewardship

When local fire departments are involved in cooperative burns, local firefighters can act as liaisons to communities and neighborhoods and educate the public about prescribed fire activities. Often, members of the public prefer to get this sort of information directly from their neighbors, members of their own community, and volunteer firefighters who participated in prescribed burns, rather than from the federal or state government. Locally-driven communication efforts can help facilitate productive conversations between communities and federal land managers, and reduce tensions regarding land management decisions.

"But the public, the smaller un-incorporated communities do have a concern. They're concerned with us... We've slowly come around to over the last five to seven years of bringing those folks around and actually sit down and have a cup of coffee. Go to public meetings on Saturday morning and those types of things has really changed the public's perception and we find that folks are much more supportive now than they were five to seven years ago"

Local Fire Department Involvement

Interest in participating in cooperative burns on the National Forest was highly variable. In some cases, rural fire departments lacked capacity to participate – they would have had trouble meeting staffing requirements while assisting with cooperative burns, or they may have been composed of older firefighters or firefighters who were not properly red carded. In other cases, fire

departments had higher levels of interest and participation. Those departments were often comprised of younger members or firefighters interested in wildland fire training opportunities. On some burns, The Forest Stewards Guild and Gravitas Peak Wildland Fire Module provided organizational support and incident command structure. The Module mobilized disparate resources into a full cohesive crew. This effort provided additional value to land management agencies. Additionally, increasing the reimbursement rate offered to fire departments could have encouraged more participation.

“With a lot of the departments ...it’s a bunch of mostly retired folks, people that have day jobs. They’re not trying to go out there and bring tools and drag drip torches around, so I think the lack of interest is largely because of the demographic of some of these volunteer departments.”

Most participants from both federal agencies and local fire departments thought the cooperative burning efforts were worthwhile and wanted to find a way to continue them after the conclusion of the CFRP project.

Continuing Cooperative Burning

Throughout the project and during multiparty monitoring meetings, project collaborators, cooperative burn participants, and prescribed burn host agencies all noted the desire to continue cooperative burning efforts, whether facilitated by the CFRP program or otherwise. The unique legislative authority of the CFRP program gave operational capacity to programs that leveraged existing resources and reimbursed local fire resources assisting with prescribed fire efforts; however, the CFRP program may not be the only authority capable of supporting cooperative prescribed fire efforts. Project cooperators identified four potential mechanisms that could facilitate additional cooperative prescribed fire efforts after the conclusion of the CFRP project.

1. After the conclusion of a similar CFRP project managed by the South Central Mountain RC&D and the Lincoln National Forest, the two organizations developed an agreement to use brush disposal funds to contract fire suppression resources to assist with prescribed fire efforts. This project was highlighted as a success by the Lincoln National

Forest and CFRP program in a 2017 promotional video. It may be possible to duplicate this agreement with other National Forests in New Mexico.

2. The All Hands All Lands Burn Team facilitates cooperative prescribed fire efforts on multiple jurisdictions in support of the Rio Grande Water Fund’s goals. This initiative leverages the support of the Rio Grande Water Fund, the Nature Conservancy, and US Forest Service Region 3. Additional supplemental project agreements between the Forest Stewards Guild and individual National Forests were put in place to complete prescribed burns. It may be possible to duplicate these agreements on additional Forests outside of the Rio Grande Water Fund focus area, and further expand cooperative prescribed fire efforts onto other jurisdictions.
3. Changes to the US Forest Service Indefinite Delivery Indefinite Quantity (IDIQ) contracting process managed at the regional level may enable National Forests to contract with fire response organizations to assist on prescribed fire efforts.
4. It may be possible to adjust the language of the Mater Joint Powers Agreement (JPA) between the State of New Mexico and Region three of the US Forest Service to include language allowing for cooperative prescribed fire. The State of New Mexico has already used the JPA to facilitate cooperation and resource exchange on wildfire incidents, and has negotiated tiered agreements with fire departments across the state. However, in light of the Good Neighbor Authority and recent push towards Shared Stewardship, changing some wording in the JPA could allow the same agreements to facilitate fire department participation in cooperative prescribed fire efforts as well.

Conclusion

Prescribed fire is being increasingly recognized as an important tool to restore forest ecosystems and protect communities. Recently, multiple state agencies in New Mexico have begun to increase their interest in and engagement with prescribed fire efforts. Non-governmental organizations like the South Central Mountain RC&D, Forest Stewards Guild, The Nature Con-

servancy, and the New Mexico Prescribed Fire Council have also become more engaged. The political winds surrounding prescribed fire in New Mexico are changing, and collaborative implementation of prescribed fire is a strategic way to increase the pace and scale of restoration activities. As these organizations, federal agencies, and others create new partnerships and opportunities, they should continue to explore avenues for expanding prescribed fire efforts in fire-adapted ecosystems.



Figure 6. Prescribed fire in the Luera Mountains (2019).



Ignitions on the 2019 Luera Mountain cooperative burn