Fire Learning Network
Field Guide

November 2014

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The Fire Learning Network Team

Photo Credits

Contents

A Brief Introduction to the Fire Learning Network

The Fire Learning Network and its related programs are part of "Promoting Ecosystem Resilience and Fire Adapted Communities Together" (PERFACT), a cooperative agreement between The Nature Conservancy, USDA Forest Service and agencies of the Department of the Interior. The partnership works in particular places with individual people, and also at regional and national scales; it also makes the connections between those scales.

Key aspects of this work are:

- the Fire Learning Network (FLN), fostering collaboration for restoration and integrated fire management in landscapes across the country;
- the Fire Adapted Communities (FAC) Learning Network, which is doing the same with communities adapting to wildfire;

- prescribed fire training exchanges (TREX), experiential training opportunities that integrate a range of people, places and aspects of fire;
- targeted restoration action under Scaling-up to Promote Ecosystem Resiliency (SPER); and
- communication and public outreach about fire, restoration, and the collaborative work being done on them.

All of these aspects are interconnected, making all parts more effective at promoting healthy ecosystems and fire-adapted human communities. than they would be on their own. In many of the places where the FLN works, it is becoming difficult to tell where the FLN leaves off and other programs begin—which is as it should be.

A crew works on the Tshanik and Nix units burns during the October 2014 Klamath River prescribed fire training exchange. More than 50 people took part in this TREX, which treated numerous parcels on private lands to support fire adapted communities goals along the river. *Photo: Thomas Dunklin*

By the Numbers (2014)

> 30	**FLN landscapes**
9	regional networks
> 250	partners
66.4	million acres
20	states
18	**FAC Net hubs**
50	communities
425	partners
8	**prescribed fire training exchanges**
345	participants
> 9,000	acres of prescribed fire
1,570	acres of thinning, fire & other treatments by **SPER** landscape projects

(SPER: January-June total)

private landowners & contractors

state & local (includes fire departments)

university students (Spring Break TREX)
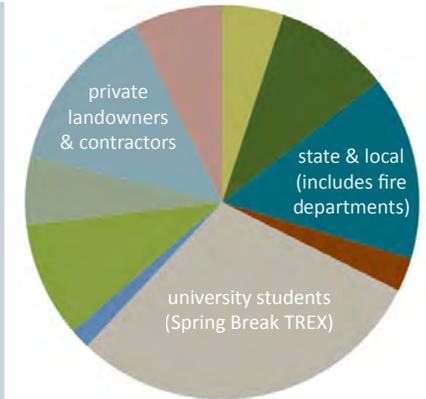
Prescribed Fire Training Exchange
Participant Affiliations—Spring 2014

- Dept. of the Interior
- Forest Service
- state & local gov'ts
- tribal members
- university students
- Dept. of Defense
- TNC
- other NGOs
- private
- international

The Fire Learning Network

More than thirty landscapes—most working as part of regional networks—are now active in the FLN. In addition to long-established partnerships, collaborative groups in the early stages of their FLN work are being developed in California, Colorado and Idaho. The FLNs under development generally focus on a collaborative planning process that brings stakeholders together to work through where they want to go and how they can get there. The more established FLNs, having done this planning work, are now engaged in a diversity of place-specific activities.

These include hosting workshops to share knowledge and develop local tools, as well as those that support the work of landscape-scale projects and statewide prescribed fire councils; they nurture the development of fire adapted communities, host prescribed fire training exchanges, monitor fire effects on bird populations, develop interpretive signage, and publish restoration resources. In doing so, they engage hundreds of diverse partners, from state and federal agencies to private landowners and researchers, and from coast to coast.
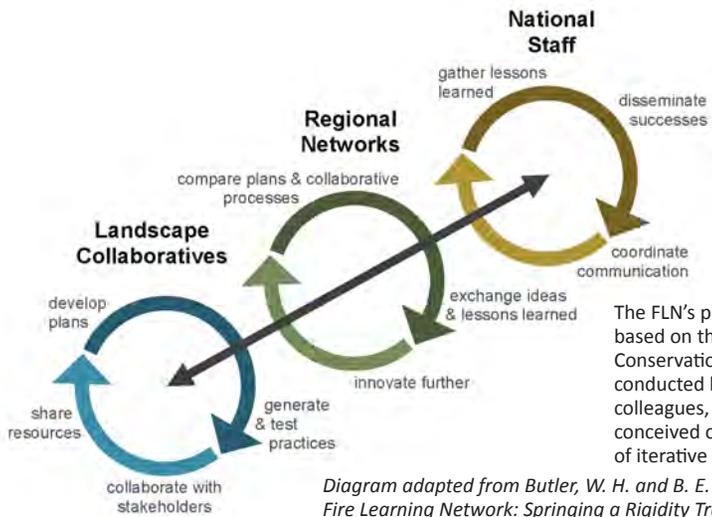
The FLN's planning methods are based on the Open Standards for Conservation. According to research conducted by Bruce Goldstein and colleagues, the Network can best be conceived of as a multiscalar process of iterative adaptive management.

Diagram adapted from Butler, W. H. and B. E. Goldstein (2010). "The US Fire Learning Network: Springing a Rigidity Trap through Multiscalar Collaborative Networks." Ecology and Society *15(3):21.*

The Fire Adapted Communities Learning Network

Modeled after the FLN, the FAC Learning Network was launched in April 2013 with a workshop for stakeholders from eight pilot communities; in March 2014, another ten communities joined the network. Collaborative teams from these communities receive financial, technical and peer network support to implement and innovate fire adapted community concepts and best practices, and to share them within the network and beyond. So far, communities have worked on projects as diverse as updating CWPPs and county-wide integrated fire plans, securing funding for mitigation projects, and gathering and sharing the lessons learned from first-hand experiences with wildfires. The network communicates regularly through an online workspace (Podio), and public blog (http://facnetwork. org/), as well as quarterly peer-learning webinars and an annual workshop.

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Staff and network members are working with researchers Sarah McCaffrey (USFS Northern Research Station) and Bruce Goldstein (University of Colorado), to increase the rigor of network operations and activities, and investigate how networks and the FAC approach contribute to growing community resilience. This will help the network make the greatest possible impact on the development of fire adapted communities nationwide.

Novel means of assisting and enabling communities to complete fuel treatments are among the strategies used by FAC network hubs.
Photos: Andrew Holm; Forest Guild; Florida Division of Forestry; Jerry McAdams/Boise FD

Prescribed Fire Training Exchanges

Training events combining experiential learning and principles of integrated fire management are now being held in numerous locations each spring and fall. The integration of professional wildland firefighters with less-traditional training partners at these events expands both the capacity of the fire community and its breadth of knowledge. It strengthens the ability to conduct controlled burning effectively and with full social license, and develops connections that are helping wildfires

Spring Break TREX has grown rapidly; the March 2014 TREX provided hands-on fire experience for 50 students from 7 universities. *Photo: Anu Kramer*

be managed with sensitivity to local plans and concerns. TREX also actively engage local, regional and national media, and help participants communicate key messages with skill.

Since 2008, 33 events have served nearly 1,100 practitioners and treated more than 78,000 acres. The earliest exchanges were in FLN grasslands, but they are now offered in forested landscapes and quite frequently in wildland-urban interface (WUI) areas, in support of fire adapted community efforts as well as landscape-scale ecological restoration. The TREX program is now at an important growth point—

it has almost simultaneously moved toward larger crew sizes, spread into new geographic areas (and habitats), become more closely tied to fire adapted communities efforts, and become more locally based. Numerous participants have attended multiple events, and are becoming sources of leadership and support. Staff support is now shifting from running the events to mentoring others. Efforts are shifting toward helping this model—and this integrated way of viewing fire management and doing prescribed fire—become adaptable, self-sustaining, and ever more widespread.

In spring 2014, the Central Appalachians FLN and partners in VIrginia hosted the first TREX offered east of the Mississippi.   *Photo: TNC/Sam Lindblom*

Scaling-up to Promote Ecosystem Resiliency

Modest amounts of implementation funding are targeted to either fill gaps in a landscape, or provide a catalyst to accelerate work. Prescribed fire, thinning, helicopter logging and invasive species management treatments are conducted under SPER, mainly on relatively small, strategically-placed parcels that leverage and connect existing or planned treatments on federal lands. In the first phase, six projects proposed to complete 19,767 acres of treatments to restore ecosystem resiliency and help protect municipal

watersheds and communities. In spite of drought, flooding, a state-wide ban on prescribed fire, the banning of fire on proposed plots to protect sage grouse and a variety of other obstacles, by adaptive planning and relying on long-standing partnerships, the six projects together completed 20,625 acres of treatments, about 5 percent more than proposed. In several cases, this funding also spurred the completion of other nearby projects with other funding sources.

The second phase of SPER is now underway. Five landscape-based projects, similar to the first six, are working on about 3,000 acres of treatments in support of fire adapted communities through the FAC Learning Network or FLN. In addition, SPER is supporting several prescribed fire training events aimed at building local capacity while conducting treatments near at-risk communities.

Top: Eastern redcedar was removed from this site as part of a program of glade restoration across Arkansas landscapes. *Photo: TNC/McRee Anderson*
Bottom: A multi-agency crew briefs before the Blue Suck Burn, conducted to improve forest health on Virginia State Parks land. *Photo: TNC/Marek Smith*

Integrated Outreach

Communication efforts are woven through much of the work conducted by the FLN and related programs. This serves to disseminate lessons learned and success stories that can help other projects, and to offer a more nuanced—and empowering—view of wildfire and fire management than is often seen in news accounts. Highlighting fire adapted communities efforts and other successes also opens a larger space for the important work that can be done.

A recent example of success occurred in the fall of 2013 in the small town of Angel Fire, NM, where a headline just before a prescribed fire training exchange read "Residents Brace for Sept. 30 Burn Near Angel Fire." By the end of the event, the headline "Prescribed Burn Near Angel Fire Wraps up at 105 Acres" ran over a story that included an excellent, calming video in which a TREX leader explained all the precautions taken to ensure that the burns were being conducted safely, and for the benefit of the community and the forest.

Working Together

In June 2014, about 100 participants in the FLN and FAC Learning Network met, along with staff and national-level partners, at a workshop that provided numerous opportunities for sharing information within and between the networks (and other programs), as well as cementing the relationships that are central to any network's success. Participants also reflected on the work of recent years and engaged in strategic discussions for moving forward together in the coming years, meeting the challenges and seizing the opportunities for restoring resiliency and health to our natural systems and the communities in them.

At a pair of overlapping workshops in June 2014, members of the Fire Adapted Communities Learning Network and the Fire Learning Network held discussions specific to each network, but also met jointly for a poster session and field tour of treatment sites. These joint events fostered the sharing of information between the two networks, and helped strengthen their ties as well.
Photos: TNC/Liz Rank

Where We Work

Legend:
- Fire Learning Network landscapes
- Fire Adapted Communities Learning Network pilots
- Scaling-up to Promote Ecosystem Resiliency
- Prescribed Fire Training Exchanges (2014)

South-Central Oregon
Northwest FLN
Deschutes County
Jackson & Josephine Counties (FAC pilot communities)
SPER: Ashland Watershed Resilience

Northern California
W. Klamath Mountains FLN
California Klamath-Siskiyou FLN
Orleans-Somes Bar (FAC pilot community)
Yurok TREX (May-June)
Klamath River TREX (Sept)
NorCal TREX (Oct)
SPER: Trinity Integrated Fire Management Partnership

Northern New Mexico
Rio Grande Water Fund FLN
Santa Fe County (FAC pilot community)
International TREX (Sept)
Black Lake TREX (Sept-Oct)
SPER: Collaboration to Reduce Risk in the Fire Prone Southern Sangre de Cristo Mountains

Leavenworth
Washington Dry Forests FLN
Centennial Valley FLN
Island Park / W. Yellowstone
Ada County (Boise)
FireScape Mendocino FLN
N. Lake Tahoe
Summit County
Woodland Park
Pike's Peak FLN
SW Colorado
FireScape Monterey FLN
Flagstaff
Ojai
Travis County (Austin)

Spring Break (Niobrara) TREX (March)
Lower Loup Rivers TREX (March-April)
Ely
Great Plains FLN
South Central FLN

Central Appalachians FLN
Barnegat Township
Virginia TREX (April)
SPER: Allegheny and Potomac Highlands Ecosystem Restoration Project
Southern Blue Ridge FLN
Towns County
Baker County
SPER: Ozark Pine-Oak Woodland and Glade Restoration Partnership

In FLN leaders' own words:

The FLN supports "a grassroots and formative dialog among unconventional partners about how to restore healthy fires to some of the most remote landscapes in the West. I see ranchers, tribal representatives, environmentalists and local governments realizing that through this collaborative they can and will effect meaningful change on public land-use planning."

"New partners energize the network with new ideas and enthusiasm. Time and time again, partners emphasize the value of sharing information—what works and what doesn't—as well as having the opportunity to deepen relationships with neighbors."

"As a mature learning network, regional and national partners are aware of our partnerships and seek out our learning and experience….The continued use of field tours showing different stages of restoration is critical, as is having developed complete species lists for restoration sites that serve as a guide for other sites as they move down the road toward 'What and when is it restored?'"

California
Klamath-Siskiyou
Fire Learning Network

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Partners in the Trinity Mountains are focusing on the synergy created between the Fire learning Network (FLN) and the Trinity Integrated Fire Management Partnership's (TIFMP) implementation work. In addition to having local prescribed burning to ground our learning, we have a formal collaborative group that acts in an advisory capacity to the county board of supervisors and federal land management agencies. With this forum, and the Trinity County Fire Safe Council, we are able to link learning about fire to the planning, implementation and monitoring processes. Being able to tie together all of the parts of the adaptive management cycle is critical if we want to impact systems and achieve necessary shifts in our management approach.

Regional partnerships that we've invested in over the years continue to be a focus of the CKS FLN. Through support of the Northern California Prescribed Fire Council, the network directly reaches over 200 people every year, bringing together practitioners and scientists and facilitating important movement in the policies and practice of prescribed fire in the region.

Another regional effort, co-hosting events with the Joint Fire Science Program, allows us to bring a science-

Top: A smoke plume rises from a prescribed fire training exchange (TREX) operation at Bar 717 Ranch. Communities in Trinity County are tucked among the mountains, separated by narrow winding roads. This geographic isolation makes investing in local fire management capacity particularly important. The TIFMP is working with volunteer fire departments around the county to offer training and collaborate on larger projects.

Center: The fall 2013 TREX also served as an opportunity to engage the media in prescribed fire issues, as when a local TV reporter interviewed a National Park Service employee about the burning conducted at Redwood National Park..
© *Lenya Quinn-Davidson/NCPFC*

Bottom: TIFMP has completed prescribed burns on private property in Hayfork and Hyampom. Each burn is planned with landowners to meet their management objectives while furthering community wildfire protection goals and ecosystem restoration. © *Josh Smith/WRTC*

based approach to regional management and the dialogue at the events helps inform our landscape level work, as well as bringing a management perspective to the scientists involved.

Prescribed fire training exchanges (TREX) bring together many aspects of work in this landscape. They enable participants to experience fire interacting with a variety of communities and ecosystem types, and help build local capacity manage fire. And the treatments conducted during a TREX help make both the forests and human communities more resilient to wildfire.

Landscape Partners

Bureau of Land Management—Redding Field Office
CAL FIRE
Humboldt State University
Hyampom Volunteer Fire Department and Fire Safe Council
Local landowners and residents
Northern California Prescribed Fire Council
Trinity County Collaborative
Trinity County Fire Safe Council
Trinity County RCD
University of California Extension
USDA Forest Service—Pacific Southwest Research Station
USDA Forest Service—Province Ecologist
USDA Forest Service—Shasta-Trinity National Forest (Forest Supervisor's Office, Weaverville Ranger District, Hayfork Ranger District)
USDA Forest Service—Six Rivers National Forest
USDA Natural Resources Conservation Service
Weaverville Volunteer Fire Department

Centennial
Fire Learning Network

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A key goal of the Centennial FLN is to prepare the landscape—both natural and human—so that fire can once again roam and fill its ecological role. To this end, the Lakeview Community Protection Project has completed thinning in nearly all the private forests in the area, and the BLM and U.S. Fish & Wildlife Service are developing complementary projects on lands around the town. This will allow managers to let natural fires in the nearby wilderness to burn safely, and will lower the risk to fire workers if extreme fire conditions warrant fire suppression. The FLN is also working with the Fire Adapted Communities Learning Network hub on the other side of the Centennial Mountains, in Island Park, Idaho. The groups have a mutual interest in developing coordinated plans to manage fire safely, cost-effectively, efficiently, wisely, and for the greatest benefit.

Protecting threatened species. To improve critical sage grouse habitat, a half dozen FLN partners are implementing a coordinated multi-year grazing plan across over 45,000 acres; the plan will improve the health of the rangeland for livestock as well as wildlife, so partners hope to spark the interest of other landowners in the Sage Grouse Initiative. With researchers from Montana State University, the effects of management and grazing on sage grouse are also being measured, and this study will help

Landscapes
Centennial Valley
Gravelly Landscape
Henry's Lake / Island Park

to guide land management decisions for sage grouse habitat. In the sandhills, open sand blowouts are being conserved for rare plants and tiger beetles, and monitoring of vegetation and bird communities, as well as the effects of a 2008 prescribed burn, is ongoing continues. Managers are also experimenting with using hand tools and volunteer labor to remove sagebrush and grasses to restore blowout habitat with fewer negative consequences than burning.

Planning for climate change. Through monitoring and adaptive management, partners are preparing for unexpected consequences of a changing climate. A novel water vulnerability assessment conducted by Conservancy scientists and a University of New Mexico graduate student is illuminating the effects of climate change on headwater streams in the Centennial and other valleys in southwest Montana. Preliminary results indicate that flows from north-aspect basins are more resilient to climate changes, which has important ramifications for where limited restoration and land protection resources should be invested; the results are being incorporated into state and federal fisheries planning.

Building connectivity. FLN partners are working to restore wetland connectivity and riparian areas by changing grazing, replacing culverts and planting willows. These changes create habitat for beaver, and recent studies have shown that beavers improve late-season flows and thus will likely protect watersheds under predicted climate change scenarios.

Providing leadership. The FLN provides leadership locally and regionally on forest management priorities, for example, partnering with the Greater Yellowstone Coalition and the Wildlife Conservation Society to guide management of 450,000 acres in the Gravelly And, looking to the future, for the last several years, high school student volunteers have assisted with forestry and fencing projects, putting in hundreds of hours each summer, and Conservancy interns from urban high schools have worked on stream monitoring and other projects. These programs are engaging a new generation of scientists and citizen naturalists in on-the-ground conservation work, and providing them with experience to embark on science careers of their own.

Landscape Partners
Bureau of Land Management—Dillon Field Office
Greater Yellowstone Coalition
Montana Department of Natural Resources and Conservation—Dillon Resource Area
Montana Fish, Wildlife and Parks—Region 3
Private ranch operations
Trout Unlimited
U.S. Fish & Wildlife Service—Red Rock Lakes NWR
University of Montana Western
USDA Forest Service—Beaverhead-Deerlodge NF (Madison RD)
USDA Natural Resources Conservation Service—Dillon Office
Wildlife Conservation Society

Central Appalachians
Fire Learning Network

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Over its eight-year history, growth in both the diversity and partnership strength in the Central Appalachians FLN has been key to restoring the role of fire at an ecologically meaningful scale. Increased communication and coordination has resulted in nearly all controlled burns being conducted by four or more partners regardless of land ownership. Memoranda of understanding between founding and new partners have enabled treatments to expand into additional geographies and directed significant funding towards our restoration efforts.

Significant progress has been made in implementing effectiveness monitoring in all FLN landscapes. Members of the Monitoring Working Group in the Heart of the Appalachians landscape revised their monitoring protocol and data forms and developed standardized data entry templates to facilitate more user-friendly data entry into an integrated database. As a result, most of the information from pre- and post-burn visits to the 333 macroplots monitored by TNC and the George Washington and Jefferson NFs are now entered into a single database. On the Daniel Boone NF, the Stearns and London Ranger Districts installed 40 new vegetative monitoring plots across their landscape. And in Pennsylvania, TNC and the Pennsylvania

Game Commission contracted with Arcadia University to provide fire effects monitoring for their growing program. Ground-based protocols and remote sensing tools developed by TNC and the George Washington and Jefferson NFs have been shared with the Cherokee National Forest Landscape Restoration Initiative (CNFLRI) as its steering committee considers recommendations for a fire effects monitoring program. Interestingly, it was lessons learned from the CNFLRI's own ecological departure analysis that lead us to employ these methods for a project-level analysis on the GWNF.

Increasing staff capacity and specialized qualifications have long been objectives of this FLN. To help address this, in March 2014 we hosted the first eastern U.S. prescribed fire training exchange (TREX). Participants from a wide range of organizations and states got valuable experience while helping Virginia partners complete moderate

Top: Setting up a monitoring plot on Big Wilson burn unit, 2013; *Bottom*: A briefing at the 2014 TREX

Network Partners
Arcadia University
Consortium of Appalachian Fire Managers and Scientists
Kentucky Department of Fish & Wildlife Resources
Kentucky Division of Forestry
National Park Service—Shenandoah NP, New River Gorge National Recreation Area
National Weather Service
National Wild Turkey Federation
Pennsylvania Department of Military and Veterans Affairs at Fort Indiantown Gap
Pennsylvania Game Commission
Radford University
The Nature Conservancy—Kentucky, Maryland, Pennsylvania, Virginia, West Virginia
University of Kentucky—Forestry
University of Maryland
University of Tennessee
U.S. Geological Survey—Virginia Cooperative Fish and Wildlife Research Unit
USDA Forest Service—Daniel Boone NF, George Washington and Jefferson NFs, Monongahela NF; Northern Research Station

USDA Natural Resources Conservation Service
Virginia Department of Conservation and Recreation—Natural Heritage, State Parks
Virginia Department of Forestry
Virginia Department of Game and Inland Fisheries
Virginia Tech
Virginia Forestry and Wildlife Group
West Virginia Division of Forestry
West Virginia Division of Natural Resources
West Virginia University

complexity controlled burns in southeastern pine savannas and Appalachian hardwood forests.

Funding from the Forest Service/ Natural Resources Conservation Service (NRCS) Chiefs' Joint Landscape Restoration Partnership was recently awarded to the Monongahela and Daniel Boone NFs, in part due to established FLN partnerships. This funding will help restore historic fire regimes through the use of controlled burns, complete fuel reduction treatments in priority wildland-urban interface, and engage landowners in creating fire

resilient communities. The initiative also brings the NRCS—a key player— into the FLN partnership, which will help facilitate increased collaboration with private landowners and speed progress towards an all-lands conservation approach.

FireScape Mendocino
Fire Learning Network

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FireScape Mendocino is one of the newest landscapes in the FLN, having hosted its first workshop in November 2013. The group hopes to develop a stakeholder-based approach to fire management of the Mendocino National Forest and the surrounding area.

The group is using the Open Standards for the Practice of Conservation for its foundational planning. This is being supported by field trips, historical photos, GIS-based fire risk assessment, traditional ecological knowledge and other tools. To date, the group has identified its geographic scope, landscape vision and a suite of enduring

Field tours are an important part of learning during workshops. *Above*: Stakeholders examine a shaded fuel break on private timberland. *Top of page*: A Forest Service archaeologist and elder of a pioneer family discuss grazing to reduce fuels on sacred sites, like this oak woodland.
Photos: TNC/Wendy Fulks, USFS/Rick Mowery

landscape values—ecological, cultural and economic—which form the basis for working together.

In late 2014, the group's shared values were identified as:

- Quality recreation opportunities
- Cultural heritage—past, present and future
- Fire adapted human communities
- Healthy terrestrial systems—structure, function and species
- Healthy riparian and aquatic systems—structure, function and species
- Diverse landscape-based economic opportunities

Moving forward, the group is forming working teams to implement the strategies they have developed, which are designed to improve the viability of those values. Key strategies include:

- building local capacity for fire adapted communities,
- expanding proactive fire management as part of integrated vegetation management,
- adjusting air quality policy to support prescribed burning,
- increasing tribal involvement in public land management, and
- ensuring that late successional forest areas are resilient to future temperature and moisture regimes.

Top: At the group's fourth planning workshop in September 2014, a commercial forester, local resident and Forest Service ecosystem management staff officer use Google Earth to explore possible treatment approaches. *Bottom*: Participants work on revising the situation diagram.
Photos: TNC/Mary Huffman

Landscape Partners

Blue Ribbon Coalition
Bureau of Land Management
CAL FIRE
California Wilderness Coalition
Environment Now
Environmental Protection Information Center (EPIC)
Lake County Fire Safe Council
Mendocino Redwood Company and Humboldt Redwood Company
Office of Congressman Jared Huffman
Round Valley Confederated Indian Tribes—Yuki Tribe

Tehama County Resource Conservation District
Tuleyome/Yolo Audubon Society
USDA Forest Service—Mendocino National Forest
USDA Natural Resources Conservation Service

FireScape Monterey
Fire Learning Network

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FireScape Monterey completed its Open Standards planning process in 2012, and members emerged from the process re-energized, informed and ready to take action. Since then, the group's core team—made up of property owners and representatives from wilderness groups, federal and state agencies and the University of California—holds regular conference calls to update one another on the progress of various fire-related projects throughout Monterey County.

A project of particular focus is the U.S. Forest Service Strategic Community Fuelbreak Improvement Project, which concept was derived from the Open Standards process. This project is located on the northern portion of the Monterey Ranger District of the Los Padres National Forest. It is designed to enhance community protection from wildfire within the wildland-urban interface threat zone. The project includes improving and maintaining strategic historically-used firelines to function as fuelbreaks. In total, the project proposes work on about 24 miles of fuelbreaks, as well as a key 64-acre unit, for a total of 544 acres. A variety of treatment types are proposed, including machine and hand thinning, piling and burning or chipping, and mastication. The notice of intent to prepare an environmental impact statement for the Strategic Community Fuelbreak Improvement Project was posted on December 28, 2012, and the Forest Service is currently undertaking the NEPA process.

Volunteer fire departments—the Mid Coast Fire Brigade and Cachagua Fire Prevention District—are working to increase local fire suppression capacity to meet community protection needs. This year, both received Forest Service grants for work such on fuelbreaks and road improvement to facilitate suppression crew access.

Other work in this landscape includes research on sudden oak death (SOD) led by faculty from the University of California at Davis. Related to this, some partners are working to remove symptomatic bay trees near healthy oak trees along a shared roadway; this will both mitigate the effects of SOD, and reduce fuels and widen the road for better firefighting vehicle access.

Partners discuss landscape issues at Botcher's Gap during a 2012 workshop *Jeff Kwasny/USFS*

Landscape Partners

Big Sur Land Trust
Bishop Grading and Forestry Services
Bureau of Land Management
Cachagua Fire Prevention District
CAL FIRE
California Native Plant Society
California State Parks
California State University at Monterey Bay
California Wilderness Project
Carmel Highland Fire Protection District
Coast Property Owners Association
El Sur Ranch
Esselen Tribe of Monterey County
Fire Safe Council for Monterey County
Galante Vineyards
Jamesburg-Cachagua Neighbors United
Los Padres Forest Watch
Mal Paso Creek Property Association
Mid-Coast Fire Brigade
Monterey Bay National Marine Sanctuary
Monterey County Water Resources Agency
Monterey FireSafe Council
Monterey Institute of Research & Astronomy
Monterey San Benito Range Improvement Association
USDA Forest Service—Los Padres NF
USDA Natural Resources Conservation Service
Resource Conservation District of Monterey County
Santa Lucia Conservancy
Sierra Club—Ventana Chapter
Tassajara Zen Mountain Center
University of California, Davis—Plant Pathology
University of California, Santa Cruz—Big Creek Preserve
U.S. Fish & Wildlife Service
U.S. House of Representatives—Office of Sam Farr (Congressional District 20)
Ventana Wilderness Alliance

Top photo: View from the Prewitt Ridge fire break
© Mike Splain/Ventana Wilderness Society

Great Plains
Fire Learning Network

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The Great Plains Fire Learning Network is focused on building and supporting a strong network of fire practitioners in the region, sharing lessons learned and making connections outside the region with fire practitioners that need hands-on fire training. One of our biggest accomplishments to date in the Great Plains has been the successful training exchanges that are held primarily in Nebraska along the Niobrara River and in the grasslands surrounding the Loup Rivers. These exchanges have hosted more than 200 participants over the last three years, prioritizing Student Association for Fire Ecology participation. In addition, cooperative training burns have enabled the Loess Hills landscape partners in Iowa to accomplish larger burns and share techniques and equipment ideas. Building on the successful training exchanges and the age-old spirit of "neighbors helping neighbors," our approach for the next several years is to expand and enhance the network of training exchanges and cooperative burning in the region by engaging new partners and supporting partners in hosting training exchanges on their own.

With much of the land in private ownership we need to continue to emphasize strategies that can be transferred to private landowners, but we also need to ensure that local, state

Network Landscapes
Loess Hills
Lower Loup Rivers
Middle Niobrara River Valley
U.S. Fish & Wildlife Service
Refuges of Nebraska and
South Dakota

and federal agencies and NGOs have the capacity to get fire management accomplished. In Nebraska, landowner burn associations have offered a positive means for landowners to share equipment and labor, and these models are being adopted in other parts of the region. Volunteer fire departments also play a role in supporting fire management, both offering prescribed fire services to community members, as is occurring in parts of the Loess Hills, and as permitting agencies and support to prescribed fire operations in Nebraska.

To achieve success we will expand our capacity through training exchanges and cooperative burning to overcome the barriers associated with fire qualifications and standards that differ among groups. And by working closely with the Great Plains Fire Science Exchange, we will have an opportunity to reach an audience beyond our landscapes; this also provides a means for the Exchange to transfer knowledge to land managers at the local level.

Above: Sand table exercise in the field at the 2014 Spring Break TREX in the Niobrara Valley.
Right: Lighting a 730-acre unit to reduce invasion by eastern redcedar during the Lower Loup TREX.
Photos: Jose Luis Duce, Jeremy Bailey

Regional Partners
Great Plains Fire Science Exchange
Pheasants Forever
Private landowners
Student Association for Fire
Ecology (SAFE)
The Nature Conservancy—Arkansas,
Colorado, Iowa, Minnesota / North
Dakota / South Dakota, Nebraska
U.S. Fish & Wildlife Service

Northwest
Fire Learning Network

Members of the public and agency staff tour the site of the Pole Creek Fire together during a 2013 learning exchange. *Photo: Marika Yuma*

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Across the three landscapes of the Northwest FLN we are working to integrate ecological, economic and social values into collaborative dry forest restoration. This is only possible by engaging diverse partners with an interest in Oregon's dry forests and all the community benefits they provide. We are working with federal, state and local organizations to develop a shared vision of restored dry, frequent-fire forests across the region and the benefits a more resilient forest landscape can provide. We are using innovative collaborative approaches and cutting-edge research and analysis to reach a broader segment of the community, reconnect people with the forest, and facilitate a science-based conversation about fire-adapted forests and the implications of living in and around these dynamic, fire-prone landscapes.

Recent examples of this work include a statewide analysis of restoration need in dry, frequent-fire forest systems; the community learning exchanges; the Ashland Forest Resiliency "Fire for Water" video; and the publication of *Restoration of Dry Forests in Eastern Oregon: A Field Guide*, developed in partnership with Dr. Jerry Franklin and Dr. Norm Johnson.

As a trusted partner to a diverse range of interests, we use tools like these to foster dialogue, stronger relationships and trust within the

Network Landscapes

Rogue Basin
Upper Deschutes Basin
Lakeview Stewardship Unit / Fremont-Winema NF
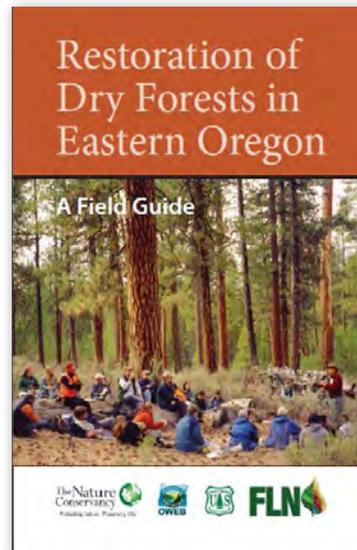
The restoration field guide is the product of a collaboration among numerous partners, including the NW FLN. It is available electronically at http://nature.ly/dryforests

communities where we work. By pairing this with a strong scientific rationale, we are helping forge a path through decades of conflict, bringing together local community interests and federal land managers to implement this shared vision on the ground, at a pace and scale commensurate with the ecological need.

Network & Landscape Partners

American Forest Resource Council
Applegate Partnership
Black Oak Forest Restoration
Bureau of Land Management—Medford District
Central Oregon Intergovernmental Council
Central Oregon Fire Management Service
City of Ashland
City of Bend
City of Sisters
Deschutes County
Josephine County Stewardship Group
Klamath Tribes
Klamath-Siskiyou Wildlands Center
Lake County Resource Initiative and members within
Lomakatsi Restoration Project
Northern Arizona University—Ecological Restoration Institute
Oregon Department of Fish and Wildlife
Oregon Department of Forestry
Oregon State University Extension
Oregon Wild
Project Wildfire
Sierra Club
Southern Oregon Forest Restoration Collaborative
Southern Oregon University
The Nature Conservancy—Oregon
The Wilderness Society
U.S. Fish & Wildlife Service
Upper Deschutes River Coalition

USDA Forest Service—Deschutes, Fremont-Winema and Rogue River-Siskiyou National Forests
USDA Forest Service—Forest Health Protection
USDA Forest Service—Pacific Southwest Research Station
USDA Forest Service—Region 6
Warm Springs Confederated Tribes

Pike's Peak
Fire Learning Network

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The Pike's Peak FLN is a new collaborative initiative focused on
- increasing public understanding of and support for the use of fire in forest management,
- expanding local forest and fire management capacity, and
- demonstrating the safe and effective use of fire in high priority landscapes.

Pike's Peak area partners are using the FLN to leverage and expand on the great work already being implemented by other local organizations, including the Woodland Park Fire Adapted Communities Learning Network hub. FLN activities will include building an effective stakeholder network, hosting public workshops on fire ecology and the use of fire for management, facilitating training opportunities for fire practitioners, and implementing at least one prescribed burn in the coming year. The FLN's work will build

Above and bottom right: The Conservancy's Southern Rockies Wildland Fire Module at work on the Little Sand Fire in southwest Colorado in July 2012.
Photos: TNC/Jeff Crandall

on the accomplishments of the Upper Fountain Creek Watershed Restoration Initiative (which was supported by Scaling-up to Promote Ecosystem Resilience (SPER))and will contribute to the goals of the Front Range Collaborative Forest Landscape Restoration Program (CFLRP) project, Colorado Prescribed Fire Council and Southern Rockies Fire Science Network.

Pike's Peak FLN
— area of interest
— core area

The Conservancy's Colorado chapter recently delivered a report to the U.S. Forest Service with a set of collaboratively-developed, science-based management recommendations for the 67,000-acre Upper Monument Creek landscape, which is in the FLN core area. *Left*: Webster Park in the Upper Monument Creek project area; *Right*: Field tour to the project area   *Photos: Peter M. Brown; TNC/Rob Addington*

Landscape Partners

City of Colorado Springs
Coalition for the Upper South Platte
Colorado Division of Fire Prevention and Control
Colorado Parks and Wildlife
Colorado Prescribed Fire Council
Colorado Springs Utilities
El Paso County

Pike's Peak Wildfire Prevention Partners
Southern Rockies Fire Science Network
Teller-Park Conservation District
The Nature Conservancy—Colorado
U.S. Air Force Academy
USDA Forest Service
USDA Natural Resources Conservation Service
U.S. Geological Survey

Rio Grande Water Fund

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In New Mexico, the FLN is now a key part of a water source protection fund program for the northern Rio Grande. Our vision is to provide a reliable supply of high-quality Rio Grande water and healthy forests for the benefit of New Mexico's communities. Our goal is to scale up forest thinning and prescribed fire treatments from about 6,000 acres per year to 30,000 acres per year in northern New Mexico. We will do this by developing a sustainable source of funding from water users, government, investors and donors, and facilitating payments to upstream land managers to help them reduce wildfire and debris flow risk in high priority areas and to maintain those areas for the long-term.

The seven-million acre Rio Grande landscape includes 1.7 million acres of forest, of which 600,000 acres are treatable. FLN supported activities include engaging with the Fire Adapted Communities Learning Network, and working with on-the-ground federal, state, tribal and private land managers to accelerate fire and thinning treat-

ments that build forest resilience. The FLN is also addressing the post-fire impacts where uncharacteristically large and severe fires have damaged watersheds.

Improving the health of headwater forests is a critical climate change adaptation strategy in a warming Southwest, where fire seasons have become longer and more severe, and water security is a primary concern for all communities.

Read More

The Rio Grande Water Fund Comprehensive Plan:
   http://www.nmconservation.org/RGWF/RGWF_CompPlan_Exec.pdf
From The Nature Conservancy's New Mexico chapter:
   http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/new-mexico/new-mexico-rio-grande-water-fund.xml
Fire Adapted Communties: www.fireadaptednewmexico.org

Fire Learning Network Partners

Forest Guild
National Park Service—Bandelier National Monument
New Mexico Association of Conservation Districts
New Mexico Department of Game & Fish
New Mexico Division of Forestry
New Mexico Forest and Watershed Health Institute
New Mexico Forest Industry Association
Northern Arizona University
Pueblo of Jemez
Pueblo of Santa Clara
Southwest Fire Science Consortium

The Nature Conservancy—Colorado, New Mexico
University of Washington—Conservation Canines Program
University of Arizona—Laboratory of Tree-Ring Research
U.S. Fish & Wildlife Service
U.S. Geological Survey
USDA Forest Service—Cibola National Forest
USDA Forest Service—Santa Fe National Forest
Valles Caldera Trust

Photos: Wetlands (*top*) and hillock (*center*) at Valles Caldera National Preserve in the heart of the Water Fund landscape; a properly-thinned stand of ponderosa pine (*bottom*) is more resilient to wildfire.
© 2013 Alan W. Eckert for The Nature Conservancy

South Central
Fire Learning Network

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The South Central Regional Fire Learning Network (FLN) has long been a catalyst for restoration, supporting scientific knowledge exchanges and developing monitoring protocols and definitions of current and desired ecological conditions across the region. This network is a long-term, diverse coalition functioning as a robust community of practice of restoration practitioners, scientists, policy makers and on-the-ground managers. Together, they are restoring and managing lands with prescribed fire and timber management techniques for the long-term health of the lands for wildlife and water quality benefits. The South Central FLN has secured implementation funding from state wildlife grants, non-profits, private foundations, and state and federal institutions for restoration and management on a portfolio of multi-ownership (federal, state and private) lands throughout the region.

Since 2001, over $8.5 million in federal funding has been awarded to this collaborative partnership for ecosystem management across the Interior Highlands, starting with the 60,000-acre Woodland Ecosystem Project (WEP), which continues to be a model for landscape-scale restoration. Both funding and the scale of work have grown since then, with partners now working on two CFLRP projects (over 1 million acres) and the 80,000-acre Happy Bat Project on the Sylamore

Current Projects

Indiana Bat Habitat Restoration Project

Ozark Highlands Ecosystem Project (CFLRP)

Shortleaf-Bluestem Community Project (CFLRP)

Ranger District of the Ozark-St. Francis National Forest.

In addition to this on-the-ground work, the region is the epicenter of the shortleaf pine (*Pinus echinata*) range, and the FLN has been chosen to lead a new Shortleaf Pine Initiative to address the steep decline of this species and its associated fire-adapted communities. This initiative will develop a range-wide conservation plan covering the 23 three states where shortleaf pine is found.

This FLN also continues to bring partners together for field trips, workshops and project proposal development for large, collaboratively-based woodland and glade restoration projects, such as those being done under the "Scaling-up to Promote Ecosystem Resiliency" program. Finally, the FLN assists partners with institutionalizing restoration programs and developing public demonstration areas throughout region.
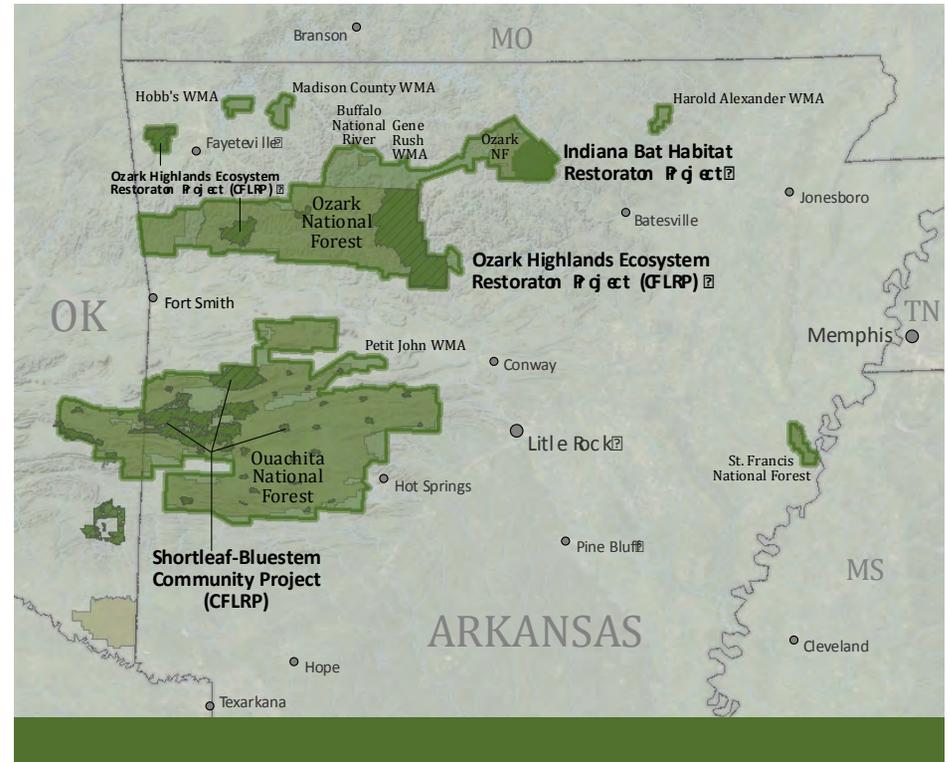
Network Partners

Arkansas Audubon Society
Arkansas Forestry Commission
Arkansas Game and Fish Commission Wildlife Management Areas
Arkansas Natural Heritage Commission
Arkansas Wildlife Federation
National Forest Foundation
National Park Service—Buffalo National River
National Wild Turkey Federation
Ouachita Timber Purchasers Group
The Nature Conservancy—Arkansas
U.S. Fish & Wildlife Service—Arkansas Field Office

University of Missouri, Columbia
USDA Forest Service—Ouachita NF
USDA Forest Service—Ozark-St. Francis NF (Big Piney Ranger District)

Southern Blue Ridge
Fire Learning Network

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Partners in the Southern Blue Ridge FLN (SBR FLN) collaborate to develop, share and apply the best available science to restore fire across a vast, diverse region. Partners and stakeholders work in teams in the network's eight landscapes to set and achieve restoration goals in their fire-adapted pine and oak forests.

Vegetation maps, models and tools developed by partners help build a cohesive vision and description of restoration needs. Landscape teams have adapted a regional treatment prioritization tool and applied it locally, with each learning from other landscapes' work. The SBR FLN has also collaborated with the Cherokee National Forest Landscape Restoration Initiative, Central Appalachians FLN and LANDFIRE to adapt LANDFIRE models to this region. The models, along with a LiDAR-based forest structure analysis and the vegetation maps, have been used to estimate the departure of current vegetation from historic conditions across the National Forests of North Carolina. This information is informing forest planning and National Environmental Policy Analysis (NEPA) projects in several landscapes.

Fire history research on three SBR FLN landscapes is shaping prescribed fire regimes. Evidence that fire historically played a role in maintaining these

Network Landscapes
Central Blue Ridge Escarpment
Georgia Blue Ridge Mountains
Great Smoky & Unaka Mountains
Nantahala & Balsam Mountains
New River Headwaters
Northern Escarpment
South Mountains
Southern Blue Ridge Escarpment

forests—which are changing, due to almost a century of fire suppression—is also being used to build wider support for the use of controlled fire.

Partnership burns across multiple ownerships have become quite common in most landscapes, and more are planned for the coming year. Partly as a result of the last SBR regional workshop, state agencies in North and South Carolina are discussing collaborative burning for the first time.

A network of monitoring plots established by Forest Stewards enables partners to track the effectiveness of management actions. Consistent, long-term monitoring is essential, since it can take years—and multiple treatments—for the full impact of fire in hardwoods to become evident. The first comprehensive assessment using these data was recently completed, and will be used to inform planning for future burns and other restoration work.

This network helped build the foundation of the Joint Fire Science Program's Consortium of Appalachian Fire Managers

and Scientists, and continues to play a key role in providing opportunities for networking among scientists, managers and practitioners. This accelerates transfer of knowledge and feedback that supports adaptive management.

Well-attended workshops, collaborative projects, and tools shared by webinar and other means have helped the SBR FLN build strong working partnerships. These in turn support the steady growth of the network, most recently with the addition of the Georgia Blue Ridge Mountains landscape. This landscape brings a new dimension to the SBR FLN, as it includes Towns County, a Fire Adapted Communities (FAC) Learning Network pilot community.

Network Partners
Consortium of Appalachian Fire Managers and Scientists
Forest Stewards
Georgia Department of Natural Resources—State Parks; Wildlife Resources Division (Game, Nongame)
Georgia Forest Watch
Greenville Water
Land Trust for the Little Tennessee River
National Park Service—Blue Ridge Parkway; Great Smoky Mountains NP
North Carolina Division of Parks and Recreation
North Carolina Forest Service
North Carolina Wildlife Resources Commission
South Carolina Division of Natural Resources

South Carolina Forestry Commission
South Carolina State Parks
The Nature Conservancy—Georgia, North Carolina, South Carolina, Tennessee
Towns County (Fire Adapted Communities Learning Network)
USDA Forest Service—Chattahoochee-Oconee NF (Blue Ridge RD, Chattooga River RD, Conasauga RD); Cherokee NF (Unaka RD); National Forests in North Carolina: Nantahala NF (Cheoah RD, Tusquittee RD, Nantahala RD); Pisgah NF (Grandfather RD); Region 8 Fire & Aviation
USDA Forest Service—Southern Research Station
Western North Carolina Alliance

Washington Dry Forests
Fire Learning Network

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More than three million acres of dry forests in central and eastern Washington need active restoration. Intensifying wildfires threaten wildlife habitat, clean water, recreation and local livelihoods. These fires also cost taxpayers increasingly large sums to suppress. Our network provides leadership in the North Central Washington Forest Collaborative, the Tapash Sustainable Forest Collaborative and the Washington Prescribed Fire Council, all of which work to identify and employ strategies that increase the pace and scale of active restoration and increase community resiliency.

Two complementary tools can be used to restore forests and reduce the social, ecological and economic costs of wildfires: mechanical thinning and controlled burning. The key barrier to the use of fire to meet economic, social and ecological restoration goals is cultural. There is a historically strong cultural bias against fire in the

Network Landscapes
Tapash Sustainable Forest Collaborative & fire adapted community
Sinlahekin & Methow Ecosystem Restoration Demonstration Landscape

Evergreen State—birthplace of the "Big Burn" of 1910. Many see fire as being too risky or as bad for people, wildlife, air and water; others view fire as wasteful, using up resources that could otherwise be harvested. And since the 1970s, increasing concerns about air quality have led to regulations that originally only restricted the burning of logging slash in western Washington to be applied statewide.

Prescribed Fire Council
In 2010, to initiate a shift in this culture, this network took a lead role in expanding the efforts of the North Central Prescribed Fire Council to a statewide organization, developing its capacity to "protect, conserve, and expand the safe and responsible use of prescribed fire on the Washington landscape to meet both public and private management objectives." The Council now brings together a diverse set of people from federal and state agencies, industry, and NGOs, representing clean air, homeowner, industry, policy and land management perspectives. The Council is now working to identify policy barriers and recommend changes to expand the safe use of controlled burning.

Fire Adapted Communities
The FLN is also using a new approach,

integrating social and ecological aspects of wildland fire by engaging a broader network of fire professionals and community members through the framework of Fire Adapted Communities (FAC)—working with those living with, and those responsible for management of, fire in the wildland-urban interface. We are working closely with the Leavenworth FAC Learning Network pilot community in the Tapash landscape as they test approaches for mobilizing community members in their various roles. The network is also helping to start a FAC pilot community in the Tapash landscape, where we have long worked on cross-ownership controlled burning and the Tapash Collaborative Forest Landscape Restoration Project. Two FAC workshops in early 2014 brought community members together to learn

Landscape Partners
Bureau of Land Management
Center for Natural Lands Management
Chumstick Wildfire Stewardship Coalition
Conservation Northwest
Kittitas County Conservation District
South Central Washington Resource Conservation & Development Council
The Nature Conservancy
USDA Forest Service—Okanogan-Wenatchee NF (Supervisors Office; Cle Elum RD, Naches RD)
USDA Forest Service—Region 6
Washington Department of Fish and Wildlife (L.T. Murray, Methow, Oak Creek and Sinlahekin Wildlife Areas)
Washington Department of Fish and Wildlife (prescribed burn team)
Yakima County Fire
WUI homeowners

about FAC concepts and share ideas for taking action. We see FAC as a fruitful new approach to engaging community members, which provides a means to discuss land management options and make proactive choices that benefit the landscape and people living there.

Western Klamath
Mountains
Fire Learning Network

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The Western Klamath Restoration Partnership is a diverse working group representing nearly all major stakeholders in the region. This partnership has shown support for focused point resource protection that will allow greater use of wildfires on the edges of fire season to achieve landscape-scale fuels reduction and ecosystem restoration goals. Our network is currently focusing on bringing participants in the Western Klamath Restoration Partnership from agreement in principle on manual, mechanical and prescribed burning treatments to agreement in practice through collaboratively developed prescriptions.

We are building local capacity to implement treatments that will affect fire management options at the landscape scale.

We are developing management strategies that rely on the large-scale use of prescribed fire to protect rural communities, restore cultural resources, and rejuvenate habitats for plants and animal species that have been negatively impacted by over a century of effective fire suppression.

We are implementing prescribed fire training exchanges with a diverse array of tribal, local, state and federal partners, and building mechanisms for local and tribal community members

Top: The Butler and Salmon River Complex Fires burned over 25,000 acres near the towns of Forks of Salmon and Sawyers Bar during the summer of 2013. The scope of high severity burns is visible as red patches where tree mortality was high in plantations following salvage logging after the 1977 Hog Fire.   © *Thomas B. Dunklin*

Bottom: A landowner celebrates a burn on his property during the Fall 2013 Northern California Prescribed Fire Training Exchange. Burns like this are helping communities become better adapted to fire in this landscape.   © *TNC/Mary Huffman*

to participate in implementing prescribed burns for community protection and resource benefits.

We are educating at the local, regional and national levels through videos, articles and presentations that highlight innovative ways of managing fire in the Mediterranean climates of the western United States.

FLN leads are also on the steering committee for the California Fire

Science Consortium, committed to reducing the gap between fire science and fire management across northern California; work with the Intertribal Timber Council; and have been involved in the development of the Western Region Strategy Committee's Phase II Report and Action Plan. This FLN also works closely with the Northern California Prescribed Fire Council.

Landscape Partners

California Environmental Protection Agency—State Water Resources Control Board

Deer Creek GIS

Happy Camp Coordinating Committee

Happy Camp Fire Safe Council

Karuk Tribe—Department of Emergency Services; Department of Natural Resources

Mid Klamath Watershed Council

National Oceanic and Atmospheric Administration—Fisheries

Northern California Prescribed Fire Council

Orleans Volunteer Fire Department

Orleans-Somes Bar Fire Safe Council

Salmon River Fire Safe Council

Salmon River Restoration Council

Salmon River Volunteer Fire and Rescue

University of California, Berkeley

U.S. Environmental Protection Agency

U.S. Fish & Wildlife Service

USDA Forest Service—Klamath National Forest; Six Rivers National Forest

USDA Forest Service—Pacific Southwest Research Station

USDA Natural Resources Conservation Service—Fortuna Service Center; Yreka Service Center

SEE MORE

"**Catching Fire: Prescribed Burning in Northern California**," highlights work by the prescribed fire council, the Karuk Tribe and the Orleans/Somes Bar Fire Safe Council. http://www.youtube.com/watch?v=LWriDpfZnXQ

"**Fall Burning in Orleans 2013**," filmed during the prescribed fire training exchange highlights a burn near Orleans, a Fire Adapted Communities Learning Network pilot community. http://www.youtube.com/watch?v=l6mFZyDqtJE&feature=youtu.be

"**Lifestyles of the Rural & Fire Safe**" visits five landowners using various treatments to protect their properties. http://www.youtube.com/watch?v=0hmFABXAojA

Scaling-up to Promote Ecosystem Resiliency (SPER)

Scaling-up to Promote Ecosystem Resiliency (SPER)

Left: Thinning along a Santa Fe County road to allow wildland fire engines to pass; slash was laid down to combat erosion and promote understory regeneration. *Center*: Glade restoration in the Ozarks. *Right*: Briefing for a prescribed burn in Douthat State Park in Virginia.

Collaborative partnerships form the foundation for SPER fire and forest restoration projects. Treatments are part of long-term plans, and leverage work on adjacent federal lands. The current, second round of SPER, begun in late 2013, builds on earlier SPER work and on that of the Fire Learning Network, the Fire Adapted Communities Learning Network and prescribed fire training exchanges. The treatments improve system health and resiliency and contribute to longer term progress by strengthening partnerships and increasing workforce capacity.

All SPER projects target treatments to key areas that help restore and maintain resilient landscapes. They specifically treat state and private lands that support, leverage or fill gaps in existing or planned federal projects, bringing them to landscape scale. The projects in California, New Mexico and Oregon focus treatments on sites that also provide critical support to fire adapted communities in those landscapes. And in a variety of ways, all of these projects also support improved response to wildfire—by bringing diverse partners to work together, by increasing contact between fire practitioners and communities, and by augmenting the fire workforce.

SPER projects are on-the-ground embodiments of a broad-based, integrated approach to fire management.

Ashland Forest Resilience Partnership

The Nature Conservancy, City of Ashland, Lomakatsi Restoration, Rogue River-Siskiyou National Forest, Oregon Department of Forestry and U.S. Fish & Wildlife Service are conducting the prioritization, planning, landowner recruitment and coordination of 50 acres of treatments that will help protect the city's watershed.

Trinity Integrated Fire Management Partnership

The Watershed Center, Northern California Prescribed Fire Council, Trinity Fire Safe Council, CAL FIRE, Weaverville Volunteer Fire Department, Shasta-Trinity and Six Rivers National Forests, Natural Resources Conservation Service, Bureau of Land Management, Firestorm and private landowners are building on the partnerships and training implemented as part of the first SPER program to complete two more landscape-scale burn plans, conduct a training course and treat 100 acres in Trinity County with prescribed fire.

Collaboration to Reduce Risk in the Fire Prone Southern Sangre de Cristo Mountains

The Nature Conservancy, Forest Guild, Santa Fe County, New Mexico State Forestry, Santa Fe National Forest, City of Santa Fe and local companies and landowners are working together to thin and burn 50 high-priority acres of private land in a landowner cost-share effort. The project is also providing training opportunities for local and regional firefighters and managers to increase their qualifications and capacity to promote and deliver future controlled burns.

pale green outlines are Fire Learning Network landscapes; all five SPER projects are associated with a local FLN

Ozark Pine Woodlands & Glade Restoration Project

The Arkansas Natural Heritage Commission, Arkansas Game and Fish Commission, Ozark-St. Francis National Forest, Buffalo National River and The Nature Conservancy will implement 50 acres of invasive species treatments and 1,000 acres of prescribed burns.

Sites include calcareous glade-woodland complexes, old fields, stream corridors and roadsides on state land and adjoining private property. These lands are integrated as an active partners on large landscape-scale woodland and glade restoration efforts on the Buffalo National River and Ozark-St. Francis National Forest.

Allegheny & Potomac Highlands Restoration Project

The Monongahela National Forest, Northern Research Station, Virginia Department of Conservation and Recreation, West Virginia Department of Agriculture, West Virginia Division of Natural Resources, West Virginia Rivers Coalition, U.S. Fish & Wildlife Service Partners Program and The Nature Conservancy are implementing 2097 acres of prescribed fire on state, federal and private lands. They are also conducting invasive plant treatments on state, federal and private lands, and offering stakeholders, neighbors and the general public field tours and opportunities to observe active and completed controlled burns.

Partner Types

Organization and agency types of the key partners listed by the FLNs. Groups typically work with many other partners as well, so this table is by no means exhaustive.

	CA Klamath-Siskiyou	Centennial	Central Appalachians	FireScape Mendocino	FireScape Monterey	Great Plains	Northwest	Pike's Peak	Rio Grande Waterfund	South Central	Southern Blue Ridge	WA Dry Forests	Western Klamath Mts
FEDERAL AGENCIES													
USDA Forest Service	■	■	■	■	■		■	■	■	■	■	■	■
Bureau of Land Management	■	■		■	■		■					■	
National Park Service			■			■			■	■	■		
U.S. Fish & Wildlife Service	■	■			■	■	■		■	■			■
USDA Natural Resources Conservation Service	■	■	■	■				■					■
Department of Defense								■					
other federal				■	■	■		■	■				■
OTHER GOVERNMENTS													
state agencies & departments	■	■	■	■	■	■	■	■	■	■	■	■	■
local government agencies & departments	■				■	■	■	■			■	■	
volunteer fire departments	■				■	■							■
resource conservation districts	■			■	■			■	■			■	
tribal agencies & departments				■	■		■		■				■
NON-PROFIT ORGANIZATIONS													
The Nature Conservancy		■	■			■	■	■	■	■	■	■	
other conservation NGOs	■	■	■	■	■	■	■	■	■	■	■	■	■
other NGOs				■				■					
FireSafe Councils	■			■	■								■
prescribed fire councils	■								■				■
JFSP science consortia	■		■			■			■	■	■		
university extension services	■										■		
university researchers, faculty, students	■	■	■		■	■	■		■	■	■		■
PRIVATE & COMMERCIAL PARTNERS													
private landowners & homeowners	■			■		■						■	
homeowner associations / neighborhood groups					■			■					■
contractors	■		■		■	■							■
timber, ranching or agriculture	■	■		■	■	■							
professional associations					■		■		■	■			

Areas of Focus & Expertise

	CA Klamath-Siskiyou	Centennial	Central Appalachians	FireScape Mendocino	FireScape Monterey	Great Plains	Northwest	Pike's Peak	Rio Grande Waterfund	South Central	Southern Blue Ridge	WA Dry Forests	Western Klamath Mts
HABITAT TYPES													
grasslands		■	■			■				■			
native prairie		■	■			■				■			
forests, eastern deciduous			■			■				■	■		
forests, eastern mixed			■							■	■		
oak woodlands / savannas	■		■	■		■				■	■		■
oak barrens			■										
shortleaf pine			■							■	■		
longleaf pine													
ponderosa pine						■	■	■	■			■	■
forests, other western conifer	■	■			■		■	■	■			■	■
forests, other western		■					■	■				■	■
pinyon-juniper								■	■				
sagebrush		■										■	
wetlands, riparian zones		■			■		■				■	■	■
arid lands													
sandhills													
old growth													■
COMMUNITY CONTEXT													
WUI (wildland-urban interface)	■	■	■	■	■		■	■		■	■	■	■
near major population center(s)			■				■	■		■	■	■	
FAC Learning Network pilot site / hub ties		■					■	■	■		■	■	■
FireWise communities nearby	■	■	■				■	■	■	■	■	■	■
CWPPs nearby	■			■	■		■	■			■	■	■
smoke issues	■		■	■	■		■	■	■	■	■	■	■

Focus & Expertise

	CA Klamath-Siskiyou	Centennial	Central Appalachians	FireScape Mendocino	FireScape Monterey	Great Plains	Northwest	Pike's Peak	Rio Grande Waterfund	South Central	Southern Blue Ridge	WA Dry Forests	Western Klamath Mts
OTHER LANDSCAPE CONTEXT													
recent wildfires nearby	■		■	■	■		■	■	■		■	■	■
prescribed fire used in landscape	■	■	■	■		■	■	■	■	■	■	■	■
high ownership fragmentation			■			■	■	■		■	■	■	
high % federal ownership	■		■	■				■		■	■		■
wilderness	■	■	■	■	■		■	■		■	■	■	■
natural resource-based economy	■		■										■
timber	■	■	■	■		■	■			■	■	■	■
grazing	■	■				■							■
OHV recreation			■					■				■	
POLICY, PROCESSES, SKILLS													
facilitating collaboration	■	■	■	■	■	■	■	■	■	■	■	■	■
cross-boundary implementation	■	■	■			■	■	■	■	■	■	■	■
multi-agency implementation	■	■	■			■	■	■		■	■	■	■
MOUs	■	■	■			■	■	■		■	■	■	■
forest planning	■	■	■							■	■		■
NEPA	■	■	■				■		■	■	■	■	■
stewardship contracting	■						■					■	■
monitoring protocols		■	■				■	■		■	■	■	■
using volunteers	■	■	■		■						■		■
media experience			■			■	■		■	■	■	■	■
public opinion information							■			■		■	■
ties to JFSP consortia	■		■			■	■	■	■	■	■		■
ties to prescribed fire council	■		■		■		■	■		■	■	■	■
modeling			■	■							■	■	
indigenous fire management practices													■

Managing in Landscapes with Threatened & Endangered Species

Many FLNs work in landscapes where species of conservation concern occur. In some cases the FLNs work directly in the management of such species--for example, as part of the Indiana Bat Project in the South Central FLN. In other cases, the work is less direct, or the presence of listed species affects the kinds of actions that are possible.

The Indiana bat, northern spotted owl, Jemez Mountains salamander and fisher are among the species and subspecies of conservation concern that FLNs manage for in their landscapes.

Photos: USFWS/Ann Froschauer, Rick McEwan, TNC/Anne Bradley,   USFS/Dave Clayton

plants	CA Klamath-Siskiyou	Centennial	Central Appalachians	FireScape Mendocino	FireScape Monterey	Great Plains	Northwest	Pike's Peak	Rio Grande Waterfund	South Central	Southern Blue Ridge	WA Dry Forests	Western Klamath Mts
bladderpod, Missouri (*Physaria filiformis*)										■			
blazing star, Heller's (*Liatris helleri*)											■		
checker-mallow, Keck's (*Sidalcea keckii*)				■									
clover, running buffalo (*Trifolium stoloniferum*)										■			
coneflower, smooth purple (*Echinacea laevigata*)			■										
geocarpon (*Geocarpon minimum*)										■			
golden-heather, mountain (*Hudsonia montana*)											■		
howellia, water (*Howellia aquatilis*)				■									
mallow, Peter's Mountain (*Iliamna corei*)			■										
pondberry (*Lindera melissifolia*)										■			
rock cress, shale barren (*Boechera serotina*)			■										
trillium, persistent wake-robin (*Trillium persistens*)											■		

Threatened & Endangered Species

	CA Klamath-Siskiyou	Centennial	Central Appalachians	FireScape Mendocino	FireScape Monterey	Great Plains	Northwest	Pike's Peak	Rio Grande Waterfund	South Central	Southern Blue Ridge	WA Dry Forests	Western Klamath Mts
birds													
condor, California (*Gymnogyps californianus*)					■								
eagle, bald (*Haliaeetus leucocephalus*)										■	■		■
falcon, peregrine (*Falco peregrinus*)											■		
goshawk, northern (*Accipiter gentilis*)									■			■	■
grouse, sage (*Centrocercus urophasianus*)		■											
owl, Mexican spotted (*Strix occidentalis caurina*)								■	■				
owl, northern spotted (*Strix occidentalis caurina*)	■			■			■					■	■
woodpecker, ivory-billed (*Campephilus principalis*)											?		
woodpecker, red-cockaded (*Picoides borealis*)										■			
mammals													
bat, big-eared (*Corynorhinus townsendii,* var. ssp.)										■	■		
bat, gray (*Myotis grisescens*)										■	■		
bat, Indiana (*Myotis sodalis*)			■							■	■		
bear, grizzly (*Ursus arctos*)		■											
fisher (*Martes pennanti*)	■			■			■						■
lynx (*Lynx canadensis*)		■										■	?
mouse, Preble's meadow jumping (*Zapus hudonius preblei*)								■					
wolf (*Canis lupus*)		■										■	■
wolverine (*Gulo gulo*)		■										■	
reptiles & amphibians													
frog, Oregon spotted (*Rana pretiosa*)							■						
frog, red legged (*Rana draytonii*)					■								
rattlesnake, timber (*Crotalus horridus*)			■								■		
salamander, Jemez Mts. (*Plethodon neomexicanus*)									■				

Threatened & Endangered Species

	CA Klamath-Siskiyou	Centennial	Central Appalachians	FireScape Mendocino	FireScape Monterey	Great Plains	Northwest	Pike's Peak	Rio Grande Waterfund	South Central	Southern Blue Ridge	WA Dry Forests	Western Klamath Mts
insects													
beetle, American burying (*Nicrophorus americanus*)										■			
beetle, valley elderberry longhorn (*Desmocerus californicus dimorphus*)				■									?
skipper, Pawnee montane (*Hesperia leonardus montana*)								■					
fish													
arctic grayling (*Thymallus arcticus*)		■											
salmon, chinook (*Oncorhynchus tshawytscha*)				■			■					■	
salmon, coho (*Oncorhynchus kisutch*)	■											■	
salmon, steelhead (*Oncorhynchus mykiss*)				■	■		■					■	
trout, bull (*Salvelinus confluentus*)							■					■	
trout, cutthroat (*Oncorhynchus clarki,* var. ssp.)		■						■					
molluscs													
Magazine Mountain shagreen (snail) (*Mesodon magazinensis*)										■			
rock pocketbook, Ouachita (*Arkansia wheeleri*)										■			

Managing Invasive Species

Many FLNs manage for one or more invasive plant species. In some cases, this is independent of their fire-related work, but in many cases, fire and invasive species are intricately related, each affecting the other in complex ways.

Prescribed fire training exchanges in the Great Plains help keep eastern redcedar from encroaching on grasslands in the north-central Nebraska'a Niobrara Valley (*left*) and in the Loess Hills of Iowa (*right*).

	CA Klamath-Siskiyou	Centennial	Central Appalachians	FireScape Mendocino	FireScape Monterey	Great Plains	Northwest	Pike's Peak	Rio Grande Waterfund	South Central	Southern Blue Ridge	WA Dry Forests	Western Klamath Mts
grasses													
cheatgrass (*Bromus tectorum*)							■						
fescue, tall (*Schedonorus arundinaceus*)										■			
Johnson grass (*Sorghum halepense*)										■			
medusahead rye (*Taeniatherum caput-medusae*)				■			■						
reed canarygrass (*Phalaris arundinacea*)							■						
silvergrass, Chinese (*Miscanthus sinensis*)											■		
trees													
eastern redcedar (*Juniperus virginiana*)						■				■			
mimosa (*Albizia julibrissin*)										■			
olive, autumn (*Elaeagnus umbellata*)			■										
princess tree (*Paulownia tomentosa*)										■	■		
tamarisk (*Tamarix ramosissima*)				■									
tree of heaven (*Ailanthus altissima*)	■		■	■		■				■	■		■

Invasive Species

forbs, shrubs, etc.	CA Klamath-Siskiyou	Centennial	Central Appalachians	FireScape Mendocino	FireScape Monterey	Great Plains	Northwest	Pike's Peak	Rio Grande Waterfund	South Central	Southern Blue Ridge	WA Dry Forests	Western Klamath Mts
barberry, Japanese (*Berberis thunbergii*)			■										
bittersweet, Oriental (*Celastrus orbiculatus*)			■								■		
blackberry (*Rubus pascuus*)										■			■
broom, French (*Genista monspessulana*)	■			■									■
broom, Scotch (*Cytisus scoparius*)	■			■									■
coltsfoot (*Tussilago farfara*)											■		
hemlock, poison (*Conium maculatum*)										■			
houndstongue (*Cynoglossum officinale*)		■											
hawkweed, orange (*Hieracium aurantiacum*)							■						
knapweed, diffuse (*Centaurea diffusa*)							■						■
knapweed, spotted (*Centaurea maculosa*)	■	■					■						■
knotweed, Japanese (*Reynoutria cuspidatum*)											■		
mustard, garlic (*Alliaria petiolata*)			■			■					■		
mustard, marlahan (*Isatis tinctoria*)													■
rose, multiflora (*Rosa multiflora*)										■	■		
sericea lespedeza (*Lespedeza cuneata*)										■	■		
spurge, leafy (*Euphorbia esula*)													■
St. John's wort (*Hypericum perforatum*)							■						■
tansy, common (*Tanacetum vulgare*)		■											
thistle, Canadian (*Cirsium arvense*)	■												
thistle, musk (*Carduus nutans*)										■			
thistle, star (*Centaurea solstitialis*)	■			■									■
toadflax, Dalmation (*Linaria dalmatica*)							■						
toadflax, yellow (*Linaria vulgaris*)		■											
vetch, crown (*Coronilla varia*)						■							
yam, Chinese (*Dioscorea polystachya*)											■		