



Cohesive Strategy Goals

- Resilient Landscapes •
- Safe & Effective Wildfire Response •

Collaborative Group - Meeting Key Outcomes

Meeting held November 18, 2020

Prepared by the Consensus Building Institute

Meeting in Brief

The Collaborative received a [presentation](#) by Eric Knapp, US Forest Service (USFS) Pacific Southwest Research Station (PSW) on using prescribed fire to improve resilience of plantations to wildfire.

The Collaborative strongly supported the proposal presented by the El Dorado County Water Agency (EDWA) to collaborate more closely with SOFAR to plan and protect the watershed given the multiple overlapping objectives for building water resilience and fire-resilient landscapes. EDWA will coordinate a next steps discussion, and the Collaborative will discuss how it would like to partner with EDWA when it develops its 2021 work plan.

The Collaborative formally approved the [Red Fir Strategy](#).

Next Meeting: January 13, 2021

Have an announcement you would like to share via the SOFAR list-serve / website? Send information to Stephanie Horii, CBI (shorii@cbi.org)

Meeting Overview

Presentation | SOFAR Science Talks

[\[Refer to presentation slides\]](#)

Eric Knapp, US Forest Service (USFS) Pacific Southwest Research Station (PSW), presented on using prescribed fire to improve resilience of plantations to wildfire.

Many foresters in the past have been reluctant to use prescribed fire in young tree stands due to concerns about killing or injuring trees and reducing growth. However, plantations are frequently lost in wildfires because high fuel loads (build-up of vegetation likely to burn) lead to fires too intense for small trees. Managing fuel loads in plantations is crucial to help reduce fire-caused tree mortality, which generally occurs through crown scorch or bole-charring (build-up of fuels around the tree base). Certain plantation structures (e.g., small tree size, even spacing, etc.) can increase a plantation's vulnerability to wildfire damage. Eric described the results of several studies investigating treatments designed to reduce fuel loading in young plantation stands.

Major findings from various studies include:

- **Whitmore fuel reduction study (2014)** - Raking around young trees (Ponderosa pine) did not significantly improve post-fire tree survival. Mastication+herbicide and mastication+burning were most effective at reducing fuels and improving tree growth (likely due to reduced competition with other vegetation). Manzanita shrub growth (seedlings stimulated by fire) surprisingly did not significantly increase, possibly because seedlings did not receive enough sunlight with the surrounding surviving trees/tree growth.
- **Shasta-Trinity NF prescribed burning (2017-2018)** – Prescribed burns were applied using different ignition techniques to minimize scorch (e.g., lighting fewer strips of land simultaneously, allow more time between lighting strips, spot firing at the tree center to allow burning outwards, “flanking firing” – lighting strips somewhat against the wind direction, and burning under cooler air temperatures).
- **Mill Fire backburn (2012) and Mendocino Complex Fire (2018)** – 2012 “backburning” (setting fire along a firebreak and burning into [against] the wind) conducted under a broader range of conditions, including at night with cooler temperatures and higher humidity. The lighter surface fuels contributed substantially to the plantations survival during the Mendocino Complex Fire. Shrubs were surprisingly not a significant fuel risk to tree survival; however, fire is still helpful to reduce trees' competition with shrubs.

Overall, Eric emphasized key takeaways, including:

- Minimizing fuels at all phases of plantation development is key
 - Site preparation prior to planting
 - Instead of lop and scatter with pre-commercial thinning or pruning, use pile burns or prescribed burns
- Managing understoring shrubs
 - Mastication, burning, herbicides, shading – can all provide long-duration control.
- Prescribed burning provides the greatest resilience to wildlife
 - Reduces litter and down woody fuels
 - Scorch can be controlled by how fire is applied and under what conditions
 - Can be done without sacrificing tree growth.

Resources mentioned during the presentation:

- + Knapp et al. 2011 – Behaviour and effects of prescribed fire in masticated fuelbeds – [View](#)
- + Fowler et al. 2010 – Effectiveness of Litter Removal to Prevent Cambial Kill-Caused Mortality in Northern Arizona Ponderosa Pine – [View](#)
- + Noonan-Wright et al. 2010 – Does Raking Basal Duff Affect Tree Growth Rates or Mortality? – [View](#)
- + Nesmith et al. 2010 – The Effects of Raking on Sugar Pine Mortality Following Prescribed Fire in Sequoia and Kings Canyon National Parks, California, USA – [View](#)
- + Kolb et al. 2007 – Review: Perpetuating old ponderosa pine – [View](#)
- + Zhang et al. 2019 – Resilience of ponderosa pine plantation to a backfiring operation during a mid-summer wildfire – [View](#)

Discussion

One individual asked how well would a plantation be resistant to fire if the pre-commercial thinned material were plowed into windrows on the plantation

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property and then burned. Eric responded that, in general, small tree survival will be higher by reducing fuels around those trees; however, it would be costly to move the windrows outside of the plantation. If the windrows remain in the plantation, then the small trees closest to the windrow may not survive a fire. The plantation managers will need to decide if it's acceptable to potentially lose a proportion of the trees but not the entire plantation. A potential added benefit is the burnt windrows may help support heterogeneity across the landscape.

Most trees in plantations consist of Ponderosa pines, and the Whitmore study found that young Ponderosa pines were actually fairly resistant to bole char (hence, management focused more on preventing crown scorching). Other species like Douglas fir, which has thinner bark when its young, may be more susceptible to bole-charring.

Additional studies indicate large-scale raking around large trees has varying benefits (e.g., maybe somewhat more effective with sugar pines, but less so with Ponderosa pines), and may not be worth the cost and effort at a large scale. Spot clearing around individual trees of interest is still a viable option. Additionally, managers should consider other factors like drought, disease, etc. that could increase trees' vulnerability to fire and therefore may warrant additional vegetation management like raking.

Individuals were uncertain about the level of wildlife habitat benefits resulting from "cat faces" (when a fire burns the inner cavity of a tree creating a small cave in the tree). A concern is if multiple fires lead to the tree ultimately falling over. Young trees do grow rapidly, and new bark may cover over previous burn scars.

Researchers are investigating whether young trees have a physiological response to fire, and whether that helps the trees become more resistant to stressors. For example, they are exploring whether fire activates greater pitch production in trees, thereby potentially making the trees more resistant to bark beetles.

Masticator equipment that can reduce the vegetation to smaller particle sizes may help decrease the fire risk, as the material becomes more compact on the ground (reducing fire behavior), and tends to decompose faster.

SOFAR Partners | El Dorado Water Agency

Ken Payne and Kyle Ericson, El Dorado Water Agency (EDWA), shared a proposal for the water agency to collaborate more closely with SOFAR to plan and protect the watershed given the multiple overlapping objectives between the two entities.

California needs to increase the pace and scale of efforts to improve forest health. The strategic removal of high-density smaller trees and fuels is essential to increasing long-term resilience of the headwater forests. This will require management, regulatory, and legal reforms. EDWA suggested changes in three main areas:

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1. Make long-term forest health the top priority for guiding agency rules, policy, and management practices
2. Define forest treatment needs and make the most of available fuels
3. Make greater use of tools that create opportunities for collaboration.

Potential collaboration opportunity concepts include: advocacy; monitor/pursue funding opportunities; support integration with land use projections; facilitation regional/state/federal forums for discussions; develop/support public outreach and education; add new elements to the Landscape Vision Committee or other subcommittees as needed.

EDWA proposed developing regional goals and strategies for protecting and improving the watershed. In some cases, EDWA will take direct actions to achieve an outcome; in other cases, EDWA's role will be supporting and assisting partners. General suggested approaches include:

- **Needs Assessment** – What are the highest priority issues / most critical problems to address?
- **Developing partnerships and resources** – Who is doing the critical work in this area, and what are partners' appropriate roles?
- **Policy** – Which partner can be most effective to address critical issues, and what actions can be done to effect change? What data / new science is needed to support advocacy? Are new laws needed?
- **Funding and investments** – What are the priority funding needs? What strategies should be used to seek new funding and distribute existing funding?
- **Design and Test New Ways of Doing Business** – What collaborative projects can demonstrate progress and how can those outcomes be shared and applied elsewhere?
- **Communications** – Can we develop a strong outreach and educational program targeted to voters, rate-payers, lawmakers, and private funding institutions for support? EDWA can commit to focus on educational efforts to promote and implement common programs with SOFAR partners.

Discussion

Overall, the Collaborative expressed strong interest in partnering with EDWA. Several individuals volunteered to coordinate with EDWA on next steps.

There was interest in seeing if EDWA had high-priority areas for watershed restoration, and if these areas aligned with any of SOFAR's current four focus areas (Crystal Basin, Headwaters Caples, Camino-Pollock Pines, and Chili Bar-Georgetown). EDWA indicated it did not see its role as leading in identifying priority areas; however, EDWA would be highly interested in supporting projects that others have identified as priorities and align with EDWA's watershed management goals.

Participants saw a strong nexus between water resilience and fire-resilient landscapes. Fuels management is recognized as a mutual priority for both water resilience and fire resilience (e.g., Association of California Water Agencies, ACWA, strongly supports fuels management). EDWA has also signed an agreement in 2005

with SMUD, EID, Georgetown, and El Dorado County, and often works with SMUD to explore issues like vegetation management in river canyons.

Working together to craft the messaging, developing projects, and documenting achievements (using several different metrics of interest like acres treated, greenhouse gas benefits, economic benefits, etc.) will help garner wider support and expand the diversity of funding sources. For instance, the governor's water portfolio, which mentions the importance of headwaters, indicates the State will likely offer more funding opportunities for watershed management.

Next Steps

CBI will send EDWA the list of volunteers who would like to meet with the EDWA team (likely in December). EDWA will coordinate the meeting. During the January 13 Collaborative meeting, the Collaborative will discuss how it wants to partner with EDWA when it develops its 2021 work plan.

SOFAR Planning | Red Fir Strategy

[\[Refer to final, approved Red Fir Strategy document\]](#)

The SOFAR Red Fir Management Strategy (Red Fir Strategy) provides decision support for USFS actions in red fir forests in the SOFAR study area by presenting information relevant to red fir management, and articulating goals and objectives for red fir management activities. The intent of the Red Fir Strategy is to provide a strategic framework and guidance for management of red fir forests, and is not a regulatory document replacing forest planning or forest policy.

SOFAR DECISION: The Collaborative learned about the Red Fir Strategy at the [October Collaborative meeting](#), and formally approved the Red Fir Strategy at the November 18 meeting.

Updates and Announcements

Upcoming Meetings

Collaborative	Landscape Vision Committee
<ul style="list-style-type: none">Jan 13 at 1:30	<ul style="list-style-type: none">Jan 28 at 1:00
Always check sofarcohesivestrategy.org for meeting location and latest information.	