CCST EXPERT BRIEFING SERIES
Evidence-based Forest Management Strategies for Improved Wildfire Resilience

Briefing held **JUNE 2019**

One Pager

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Photo: Forest treatment with thinning and prescribed burns. **Credit:** Modified from UC Berkeley

BACKGROUND

- Wildfires are a **common and natural occurrence** in many California ecosystems.
- Historically, forests in California **depended on fire** to control vegetation growth and to maintain a healthy and resilient ecosystem.
- California's pine/mixed-conifer forests were historically dominated by **low to moderate severity fires**, which primarily burned small trees and understory vegetation without killing older, larger trees.
- Over the last century, **tree densities** and **fuel loads** have increased in the absence of fire.
- Forests with high fuel-loads experience an increased susceptibility to dying from **bark beetles** or **drought,** and an increased propensity of **high severity fire**.
- Large patches of **high severity fire,** in which most or all trees in a given area are killed, can impede the ability of a forest to recover.
- Fire behavior (flame length, rate of spread) in fuel-loaded forests can exceed fire suppression abilities and **threaten lives and infrastructure** when a fire spreads uncontrolled into communities.

FOREST MANAGEMENT AND WILDFIRES

Prior to Euro-American settlement, an estimated **4.5 - 12 million acres** burned annually in California. Many of these fires were intentionally started by indigenous communities to manage natural resources, including game numbers, acorn crops, and basket making materials.

In the **late 19th and early 20th century**, the importance of fire for maintaining healthy forests was not well understood. Wildfires were thought to be always destructive, and policies to suppress wildfires were implemented in an effort to protect both people and natural resources.

There is now strong scientific consensus that a century of **fire suppression** has resulted in severe, unintended consequences to forest resilience and has promoted more destructive wildfires.

Forest Management Strategies

1. **Thinning:** the selective removal of small-diameter trees and shrubs by hand or mechanized equipment
2. **Prescribed Fire:** intentionally starting fires under specified conditions (the prescription) for a desired outcome
3. **Managed Fire:** allowing unintentional fire starts in select areas to burn under specified conditions

Researchers and land managers are working together to better understand how **forest management strategies**, including the reintroduction of fire in select areas, can improve the resilience of California's forests to wildfire while also reducing risk to lives and infrastructure.

SELECT EXPERTS

The following experts can advise on Wildfire Resilient Forests:

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EXAMPLES OF FOREST MANAGEMENT STRATEGIES

1

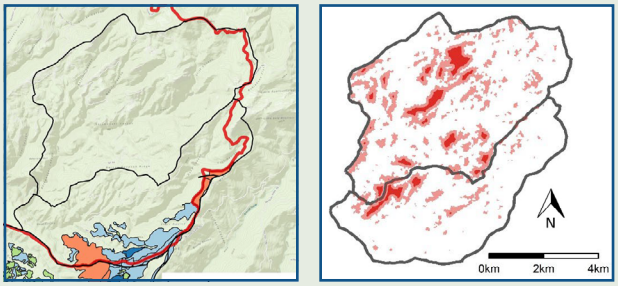
SCALING UP STRATEGIES

Previous management has narrowly focused on individual stands of trees. Research suggests that strategies need to broadly consider the whole landscape, such as an entire watershed, to impact the behavior of future wildfires.

Examples:

- Strategically placed landscape area treatments (**SPLATs**) are designed to impact fire behavior across an entire landscape while treating only a small percentage of the total acres.

- **Figure:** Following the **2013 American Fire**, a landscape with 18% SPLATs was found to have experienced **fewer large patches of high severity fire** and **greater seedling regeneration** than an adjacent untreated landscape.



Left: Two fireshed landscapes (■) within the 2013 American Fire perimeter (■), upper with no treatments and lower with SPLATs—prescribed burns (■) or forest thinning (■■).

Right: The fireshed with SPLATs had less high severity fire (■■).

Source: Modified from Tubbesing et al. 2019.

2

Source: Ames Gilbert

EMPOWERING LANDOWNERS

One third of the state's 33 million acres of forest is owned by private land owners. Ensuring these stakeholders have the resources and tools to implement and coordinate evidence-based management efforts is critical to achieving broader statewide goals.

Examples:

- **Photo:** UC Cooperative Extension workshops educate and train landowners in the use of prescribed fire.

- The **Forestland Steward** quarterly newsletter provides forestland owners with technical information on management strategies.

3

FOSTERING BIODIVERSITY

The reintroduction of fire to the landscape can be used to both manage forest resilience and to promote broader ecological benefits such as enhancing biodiversity.

Examples:

- **Figure:** The application of traditional fall prescribed burns by indigenous communities in oak woodlands can be used to promote native plant species, including native grasses.

- Prescribed and managed fires have been used in **Yosemite National Park** since the 1970s to maintain habitat diversity and promote native animal species.

Source: Modified from Don Hankins 2013

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