“Forest Thinning and Prescribed Fire – A Viable Tool to Restore America’s Forests”

NAFSR’s March 2021 position paper on “America’s Forest Management Crisis – A National Catastrophe” recommends six actions to address this crisis:

1. Landscape Treatments
2. Landscape Investments
3. Massive Development in the Wildland Urban Interface areas
4. Climate Change
5. Capacity
6. Significant Changes

This paper focuses on NAFSR’s support of the proper use of forest thinning and prescribed fire as one tool to help achieve those recommendations.

This position paper can be viewed at:

https://www.nafsr.org/docs/2021/033121%20America's%20Forest%20Management%20Crisis.pdf

NAFSR Statement

In September 2021, NAFSR released a statement expressing concern that the continuing wildfire disasters need to be addressed like the catastrophe they are. Further, NAFSR states that reducing fuels by thinning forests followed by prescribed burning—especially in the western mixed conifer and ponderosa pine forests—is essential. Such work must be increased quickly on a landscape scale if restoration efforts are to even begin to save National Forests and communities from the impacts of wildfire.

NAFSR concludes that this is an issue about which scientists and practitioners agree that thinned forests, especially when coupled with prescribed fire, do moderate fire behavior. More strategic landscape treatments are necessary to help avoid increasingly disastrous wildfires.

The NAFSR statement can be viewed at:

https://www.nafsr.org/advocacy/2021/092621%20Op%20Ed%20on%20Fire%20and%20Forest%20Management%20Final.pdf

What the Science Says

A preponderance of scientific studies demonstrates that proper forest thinning combined prescribed fire does moderate fire behavior.

In seasonally dry western forests that were historically dominated by fire-resistant species, restoring open, fire-tolerant canopy structure and composition, favoring larger tree sizes through forest thinning, and reducing surface fuels with prescribed fire can effectively reduce wildfire size and intensity.

Across a wide range of western forests, strategically placed landscape-level fuels treatments in priority firesheds can reduce the extent of high-severity wildfires and make landscapes less susceptible to extensive insect and disease outbreaks, both concerns which are increasing with the changing climate. A fireshed is conceptually like a watershed, though is defined as an area that encompasses similar wildfire risk and where the identification and prioritization of treatments can modify wildfire behavior (Bahro et al. 2007).

The Forest Service and other land managers have been working collaboratively to address prioritizing western firesheds to better coordinate fuels treatment across larger landscapes. With the changing climate, scientific studies are indicating that treatment areas need to be much larger in size and strategically placed in these firesheds.

These larger landscape approaches to analysis and treatment should be refined by more local collaborative initiatives, such as outlined in a recent paper from the Colorado Forest Restoration Institute. The paper focuses on how the Potential Wildfire Operational Delineation (POD) framework, an emerging collaborative spatial fire planning and decision support tool, can increase effectiveness and safety of fire operations, strategic multi-year restoration investment and planning, and co-managing wildfire risk.

The paper can be viewed at: https://fireadaptednetwork.org/changing-the-game-with-pods/

In July 2021, a group of leading scientists released *"Adapting western North American forests to climate change and wildfires: ten common questions"* that reviewed the science-based adaptation strategies for western North American forests including restoring active fire regimes and fostering resilient structure and composition of forested landscapes. The review addresses

common questions and assertions associated with climate adaptation and realignment treatments that run counter to a broad scientific consensus in the literature.

The paper can be viewed here:
https://esajournals.onlinelibrary.wiley.com/doi/10.1002/eap.2433

In August 2021, another group of leading scientists released *"Evidence for widespread changes in the structure, composition, and fire regimes of western North American forests*." This paper concludes that management which realigns or adapts fire-excluded conditions to seasonal and episodic increases in drought and fire can moderate ecosystem transitions as forests and human communities adapt to changing climatic and disturbance regimes. As adaptation strategies are developed, evaluated, and implemented, objective scientific evaluation of ongoing research and monitoring can aid differentiation of warranted and unwarranted uncertainties.

The paper can be viewed here:
https://esajournals.onlinelibrary.wiley.com/doi/10.1002/eap.2431

Additionally, in August 2021, a group of scientists reviewed the two previous papers and released *"Wildfire and climate change adaptation of western North American forests: a case for intentional management*." This paper highlights the main findings of both papers and offers recommendations for management.

The paper can be viewed here:
https://esajournals.onlinelibrary.wiley.com/doi/10.1002/eap.2432

In 2016, a systematic review of 56 studies addressing fuel treatment effectiveness in eight states in the western U.S. determined there was general agreement that thin and burn treatments had positive effects in terms of reducing fire severity, tree mortality, and crown scorch. In contrast, burning or thinning alone had either less of an effect or none, compared with untreated sites.

Most studies focused on carbon storage agreed that treatments do not necessarily store more carbon after wildfire but result in less post-wildfire emissions and less carbon loss in a wildfire due to tree mortality. Understory responses are mixed across all treatments, and the response of other ecological attributes (e.g., soil, wildlife, water, insects) to treatment post-wildfire is a data gap. Evidence is strong that thin and burn treatments meet the goal of reducing fire severity.

The paper can be viewed here: https://doi.org/10.1016/j.foreco.2016.05.021

Monitoring the Effectiveness of Treatments

The Forest Service annually conducts Fuel Treatment Effectiveness Monitoring (FTEM) that collects data to document the effectiveness of fuel treatments on wildland fire behavior when a wildland fire intersects with a previously applied hazardous fuels reduction treatment. FTEM measures the effectiveness of fuel treatment activities in protecting firefighters and the public from wildland fire and reducing the loss of structures, resources, and investments.

A 2018 report from Region 6 found that, of the 253 treatments sampled in which a wildfire met a fuel treatment, 153 altered fire behavior and 127 assisted with fire control operations. Specifically, that assistance included the ability to build line in front of the treatment area, the ability to allow direct attack, arresting or slowing fire spread, and the use of the treatment area for burnout operations.

The paper can be viewed here:
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd611322.pdf

Field Observations

Federal, State, and local agencies manage wildfire suppression through the Incident Command System in which a team of highly trained personnel guides suppression efforts. These personnel, from the Incident Commander to the seasoned firefighter, have decades of experience witnessing fire conditions and behaviors over many landscapes. A common theme among these professionals is how fuel treatments can be effective in moderating fire behavior to aid suppression efforts. Below are statements from some of these individuals about their recent experiences.

This summer, America watched with great apprehension as the Caldor Fire approached South Lake Tahoe. In a community briefing, wildfire incident commander Rocky Oplinger described how active management of forestlands assisted firefighters. “When the fire spotted above Meyers, it reached a fuels treatment that helped reduce flame lengths from 150 feet to 15 feet, enabling firefighters to mount a direct attack and protect homes,” *The Los Angeles Times* quoted him.

The Forest Service released a four-minute video titled “Expert Opinion: Fuel Treatment Areas” that focused on the success of fuel treatment areas in the Caldor Fire.

The video can be viewed here:
https://wildfiretoday.com/2021/10/21/forest-service-video-about-fuel-treatments-and-the-caldor-fire/

And, in a *Sacramento Bee* interview in which fire researcher Scott Stephens was asked how much consensus there is among fire scientists that fuels treatments do help, Stephens answered: “I’d say at least 99%. I’ll be honest with you, it’s that strong; it’s that strong. There’s

at least 99% certainty that treated areas do moderate fire behavior. You will always have the ignition potential, but the fires will be much easier to manage."

In October 2021, Joe Stutler, Area Commander of the Area Command Team #1, provided the following insights. "During the last decade, I have personally served as either the incident commander, operations section chief, or area commander on approximately 100 Type 1 or Type 2 wildland fire assignments.

Other than those extreme weather events, e.g., winds, or critical resource shortages like aircraft and/or engines or crews, modified fuels treatments simply work, those treatments are even more effective when combined with a prescribed fire.

The significant observation is those treatments need to mirror the existing fire regime. In grass and chaparral fuels, if those treatments are dated or older than five years, the effects are not as successful. In dry site ponderosa or similar fuels, there are longer post treatments times to be effective; however, variables like slope, aspect, and elevations need to be considered.

On at least 20 wildland fire assignments, strategically placed treatments have made the difference in containment, in some cases reliance on resource typing and/or aircraft was significantly changed due to reduction in fire behavior and resistance to control."

"Of course, the exceptions become glaring and lead to the myth that fuels treatments don't make any difference. The wind/wildland fire events in Oregon this past year is an example being used currently, and the numbers are staggering.

Of the 1.2 million acres burned, 455,000 occurred on some of the most intensively managed forests in the Northwest. I would offer this personal observation: when we experience 80 mph winds for 72 hours, the Walmart parking lot may not be a safe place. Given the increase in extraordinary events, it is even more urgent to create resilient landscapes to be successful on unplanned and planned ignitions."

Following are two photographs taken of the 2021 Bootleg Fire in Oregon that burned over 413,000 acres. The photographs are of the same area at different angles, highlighting the effectiveness of forest thinning combined with prescribed fire.

What should we do?

A paradigm shift is needed to protect both public and private forestlands and communities within these ecosystems. Although the rate of hazardous fuels treatment has increased, despite uncertain annual appropriations, it is not fixing the problem. The scale of the fires and

community impacts have far outpaced the scale of the efforts to prevent them, and this trend is projected only to get worse under ongoing climate change scenarios.

There needs to be a dramatic increase in the number and size of fuel treatments across all landscapes, and in a geographically explicit and systematic way. For any progress to be made, plans need to be coordinated and tracked over relevant regional areas, and strategic fuel treatment programs need to be developed. In many of the critical at-risk areas in the West, two to five times more area needs to be treated than currently are treated—about 70% of some landscapes. This would involve forest thinning followed by or in conjunction with prescribed fires to ensure our forestlands and communities can be resilient to the natural fires they need when those fires occur.

Increases in forest fuel treatments will require a commensurate increase in funding and in tools, such as Master Stewardship Agreements, to be achievable. In many parts of the West, the infrastructure necessary to carry out the projects in the forest and process the wood products coming from those projects has been closed or mothballed or never existed. This infrastructure needs to be restored, and new products and markets developed, so that the woody material has somewhere other than to go to burn piles and direct carbon release into the atmosphere. This will require funding to purchase or refurbish equipment and hire and train employees.

In addition, there is the critical issue of the Forest Service's workforce capacity to lead this paradigm shift. In July 2019, NAFSR issued a report, "Sustaining the Forest Service, Increasing Workforce Capacity," to the Secretary of Agriculture. The report outlines the need to address the agency's capacity to increase the pace and scale of critical restoration work on national forest lands.

This report can be viewed at:
https://www.nafsr.org/advocacy/2019/072619%20Workforce%20Capacity%20Study.pdf

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