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http://www.eri.nau.edu/
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Hearing entitled, "The Devastating Impacts of Wildland fires and the Need to Better Manage our Overgrown, Fire-prone National Forests"

Chairman McClintock, Representative Tsongas, and members of the Committee, thank you for the opportunity to talk to you about fire, forest restoration and solutions to restore healthy forests.

My name is Diane Vosick. I am the Director of Policy and Partnerships at the Ecological Restoration Institute at Northern Arizona University. Our Institute, under the direction of Dr. Wally Covington, is well known for scientific research on how to restore western forest ecosystems and lower fire risk to communities. In addition to examining the biological responses to forest restoration we also examine the economic and social implications of forest restoration throughout the West. Also, and perhaps most important, we take the best available knowledge about restoration and communicate it in a language that is accessible to a wide variety of audiences, including collaborative groups and land managers who are designing and implementing forest restoration approaches at large scales. We have over 350 scientific papers published in peer review journals testing forest restoration approaches and related subjects.

My testimony today will briefly recap: 1) Why the West is burning; 2) What science tells us we can do, 3) How we know it works.

Why is the West burning?

The fact is that for thousands of years the West has burned, albeit in different ways than it does today. Prior to Euro-American settlement the ponderosa pine dominated areas of the West burned frequently as a result of lightning strikes and Native American ignitions. Tree densities in ponderosa pine forests were much lower and the forest had a diverse grass, flower and shrub understory depending on where you were in the forest. During this time fire would primarily stay on the ground, burning through grass, while occasionally torching into the crown of small groups of trees. This fire, on the ground, limited tree seedling establishment, keeping the number of trees within natural conditions and sustainable conditions, that is, within the carrying capacity of the land.

In the late 1800s people began changing the forest. As ranching moved westward livestock removed the grasses that typically carried fire, leaving bare soil available for trees to germinate. By the early 1900s any form of fire was viewed as the enemy of a productive forest and a threat to human safety. As a result of reduced competition from grasses and the absence of low intensity fires, the forests filled in with an overabundance of small trees that contribute to today's historically unprecedented fuel loads and unnatural crown fire.

These overstocked forests impact other natural resources as well, such as reduced snow pack accumulation (essential for surface water flow and ground water recharge), reduced forage production, and steadily accumulating fuel loads at the landscape scale. Finally, as we all know the forest in this condition has become liability, threatening not only ecologic health, but also economic livelihood and the social well-being of rural communities.

It's worth noting that scientists beginning with Aldo Leopold predicted the current forest crisis beginning 75 years ago. More recently, in 1994, Dr. Wally Covington was senior author on a paper which stated that the West could anticipate exponential increases in the severity and extent of catastrophic fire. In that same paper he suggested that there was only a narrow window of opportunity to take preventative actions to restore forest health and minimize the losses of civilian and firefighter lives as well as the mounting damage to our nation's natural resources. We all know now how accurate those 1994 predictions have become.

What can be done?

There is abundant scientific research that began in the 1890's that guides the development of restoration treatments for ponderosa pine and related frequent fire forests. This research analyzes the outcomes of restoration treatments and provides confidence that we are on the right path to restoring forest health. This broad body of science allows us to:

- determine pre-settlement forest conditions and determine how many excess trees there are on the landscape and how many should be removed;
- determine how fire regimes (frequency and intensity) have changed over the last century so we can determine when and how to reintroduce managed fire;
- determine how too many trees impact the health of individual trees and the overall resilience of the forest;

- determine that overall there are positive ecological responses to thinning and prescribed burning—the key elements of any attempt to restore ecosystem health in ponderosa pine and related ecosystems;
- demonstrate that restoration treatments substantially reduce fire hazard by thinning trees to decrease tree canopy density, break up interconnected canopy fuels, raise the crown base height, and reduce accumulated forest floor fuels and debris with prescribed fire. Where tree density is great, fire alone is inadequate. Without thinning, fire can lead to increased mortality, especially among old growth trees, and transition from a controlled surface fire to an uncontrolled crown fire. Excessive tree density is the typical case over most of the ponderosa pine and dry mixed conifer types throughout the West.

One caution about treatments, we do not advocate a "one-size fits all approach", but rather that treatments should be based on a specific location, its natural condition and therefore sustainable numbers of trees, and its relationship to the broader forest and local communities. In this sense, ecological restoration should not be viewed as a strict recipe or a rigid set of treatments. Rather, ecological restoration should be viewed a broad framework for restoring and enhancing not only ecosystem health, but also sustainable human uses of the land.

A second, critical element for success is to increase the pace and scale of restoration treatments. Fires occur at the scale of hundreds of thousands of acres. In order to reverse the trend of mega-fire on federal land, NEPA must occur on large scales in order to increase efficiency. In addition, the problem won't be solved just by building moats around rural communities. Recent mega fires start in the back country and move like a torpedo across the landscape. Smart treatment planning will configure treatments to reduce the potential for miles of backcountry fuels while simultaneously providing restoration around key landscape features and irreplaceable habitat.

How do we know restoration and hazardous fuels reduction works? What are the consequences of inaction?

In January 2012, the Office of Wildland Fire at the Department of Interior asked the Ecological Restoration Institute to conduct a third-party analysis of several persistent questions asked by the Office of Management and Budget and the Government Accountability Office about the effectiveness of fuel reduction treatments. We assembled a group of noted wildfire economists to examine five questions:

1. Have the past 10 years of hazardous fuel reduction treatments made a difference? Have fuel reduction treatments reduced fire risk to communities?

2. What are the relative values of treatment programs at the landscape scale?

3. How can we improve current and future economic returns to restoration-based hazardous fuels reduction treatments?

4. What are the fuel treatment, Wildland Urban Interface, and climate change effects on future suppression costs?

5. When or will investments in fuel reduction treatments lead to a reduction in suppression costs?

Rather than going into detail on the answers to each of these questions, I will focus on how we know treatments work and how they can be more effective. Copies of the full report have been provided to you.

The answers are straightforward and reinforce what I have said earlier in this testimony---we need to be more aggressive about solving the underlying problems of forest health and excess fuel accumulation by implementing restoration treatments strategically across the landscape. Our study provides ample economic and ecological evidence for why this makes sense.

- Using an evidence-based approach informed by the best available science, similar to the approach used in medicine to identify effective therapies, we concluded that fuels and restoration treatments can reduce fire severity and tree mortality in the face of wildfire. Treatments also increase the amount of carbon stored on site long term.
- In addition, various wildfire simulations show that treatments can change fire behavior and fire severity and increase fire-fighting effectiveness, thus reducing suppression costs in some circumstances.
- Treatments are shown to be effective in protecting communities in wildfire simulations and in real wildfire experiences. HOWEVER, if treatments occurred at broader scales—such as outside the Wildland-Urban Interface, then there would be a greater impact on reducing damage from large fires.
- We can improve the economic and ecological effectiveness of treatments by acting before forests become too departed from their natural conditions.
- Finally, one of our key findings is that if present development trends in the WUI continue and warmer and drier conditions persist, we will see acceleration of increases in fire suppression costs.

One of the key questions we were asked was when investments in federal fuel treatments will offset federal suppression costs. As I mentioned previously, well placed hazardous fuel reduction and restoration treatments can reduce suppression costs. However, the question is insufficient to illuminate all the collateral benefits of treatments that go beyond suppression savings. Also it does not address the full cost of catastrophic wildfire on all sectors of society if we fail to take action.

The case study of the Schultz Fire (which is included in the full report) provides a grim example of what happens when we fail to act. The Ecological Restoration Institute in partnership with the W.A. Franke College of Business sought to calculate the full cost of the fire and the post-fire flooding that impacted Flagstaff and Coconino County following the fire in June of 2010. Through surveys and interviews we calculated that the full cost of the 15,000 acre Schultz fire is between $133 and $147 million. The cost was spread across 4 federal agencies, 3 state agencies, 3 utilities, local municipalities, nonprofits and citizens. One of the largest costs was nearly $60 million in lost property values associated with the event, and one of the most devastating losses was of a 12-year old child. In contrast, had we treated every acre that burned at the high cost of $1,000 per acre we would have spent $15 million dollars and saved between $118 and $132 million.

In conclusion:

- The evidence shows that fuels treatments are ecologically and economically effective.
- In order to get ahead of the cost of large and severe fire, more treatments will be needed outside the Wildland-Urban Interface.
- By treating degraded landscapes sooner we can maximize economic and ecological benefits.
- And finally, development in the Wildland Urban Interface and Intermix should be managed to reduce risk.

Thank you for the opportunity to speak before the Committee.

We respectfully submit the two studies referenced in this presentation as part of our testimony:

The Efficacy of Hazardous Fuel Treatments:
http://library.eri.nau.edu/gsdl/collect/erilibra/index/assoc/D2013004.dir/doc.pdf

A Full Cost Accounting of the 2010 Schultz Fire:
http://library.eri.nau.edu/gsdl/collect/erilibra/index/assoc/D2013006.dir/doc.pdf