Testimony Before the Subcommittee on Forests and Forest Health, Committee on Resources, U.S. House of Representatives

Oversight hearing:
Wildfires and the National Forest: An Update on the 2002 Wildland Fire Season

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Good morning. Thank you, Mr. Chairman and members of the Subcommittee, for the opportunity to share my recommendations with you about fire and forest management.

I am a fire ecologist. I have taught and done research on fire ecology and management for more than 17 years. I often advise federal and state agencies, and nongovernmental organizations about fire effects and land management issues. In general, I promote a broad and flexible perspective on ecological restoration and forest management.

Here are my 8 recommendations. I'll then make my case and conclude.

My recommendations

1. **We need an aggressive program of fuels management including BOTH prescribed fire and thinning from below, focused in the urban-interface.** Such efforts are included in both the National Fire Plan and in the Western Governors Association Cohesive strategy and related implementation plan. We need effective fire detection, suppression, and rehabilitation, but fire suppression without proactive fuels management will not reduce long-term costs, whether those costs are measured in dollars, soil erosion, houses burned, or large, formerly fire-resistant trees killed. Unfortunately, an increasing percentage of the National Fire Plan budget is going to fire suppression, which will make the situations worse rather than better if not complemented by fuels management and prescribed burning.

2. **We need to develop a process for local definition of Wildland Urban Interface (WUI) and the surrounding fuel risk zone.** Until then a simple rule may be needed to focus our attention on the areas within ¼ to ½ mile from the edge of the houses. Risks in WUI are very locally associated with the pattern of subdivision, roads (i.e. one way roads vs. two-way), local fire management capability, local topography and weather, and types of fuel.

3. **We must work from zones of agreement.** There is broad consensus, not only among scientists and managers, but across a diverse public that

- The priority should be protecting towns, and
- Fuels management is needed. We can substantially reduce fire intensity and reduce fuel loads without cutting the large and old trees.
- Involve local communities in prioritizing areas for treatment.
- Accomplish the projects using small-scale, community forestry with local jobs and benefits. This will address a great challenge, that there is currently little commercial market for the small trees that need to be thinned.

4. **We should empower local people and communities to work collaboratively with state and federal land management agencies.** I support the collaborative framework in the Western Governors' Association Implementation plan for the 10-year comprehensive strategy http://www.westgov.org/wga/initiatives/fire/implem_plan.pdf).
   I am part of two collaborative efforts that have been very successful:
   - The Bandolier working group includes scientists from 4 universities and the Forest Service, 2 environmental groups, and a wildlife biologist from the state of New Mexico. We have jointly coauthored a forthcoming paper outlining principles of forest restoration in the Southwest (Allen, C.D., M. Savage, D.A. Falk, K.F. Suckling, T.W. Swetnam, T. Schulke, P.B. Stacey, P. Morgan, M. Hoffman, and J. Klingel. In Press. Ponderosa pine ecosystems: A Broad Perspective. Ecological Applications.)
   - The Collaborative Forest Restoration Program, a USFS program has "given the pen" to local communities and organizations who compete for grants. These communities have many creative ideas for reducing fire risk and restoring forests on state, tribal, city and federal lands. These are small-scale, community-based efforts that result in local jobs and local benefits.

5. **We must resist the temptation to suppress fires that don't threaten communities.** Fire is integral and vital to healthy forest ecosystems.

6. **We must identify the thresholds of stand density and other conditions beyond which thinning must precede prescribed burning.** In forests below the threshold, reintroducing fires could be done without long-term effects that are unacceptably adverse. Knowing this could help us identify the minimal level of thinning needed where burning was an option.

7. **Monitor and evaluate effectiveness.** We don't have all the answers, and yet we must begin fuels management. Thus, we must invest in monitoring to ensure we learn as we go.

8. **Address planning "gridlock", but not by removing public involvement and environmental regulations**.

-*Supporting science*

I will focus our attention on the fire-adapted forests at low elevations, such as ponderosa pine, that historically burned in frequent, low-intensity fires. These forests, now mostly classified as being in condition class 3, have been greatly altered over decades by past management practices, including logging, fire suppression, and intense livestock grazing. These forests are dense with small trees, but they have few old and large trees and low biological diversity. Both human and forest communities are increasingly vulnerable to intense crown fires. Protecting communities and restoring more natural, resilient conditions will require thinning small trees and reintroducing low-intensity surface fires. Such forests have burned

extensively this year, often with severe ecological effects and threats to people.

We have two different fire management problems before us: 1) protecting people and their property, and 2) restoring forest integrity and resilience.

Fuels management within the urban-interface
The first problem is how to protect communities. This can be addressed with fuels management within the urban-interface, a relatively narrow zone in the vicinity of houses and other structures. There is strong scientific consensus, based upon empirical studies, fire behavior modeling, and much anecdotal experience, that altering fuels will alter subsequent fire behavior. Foresters call the needed prescription for dry forests, such as ponderosa pine forests, "thin from below" because it removes the smaller trees while leaving the bigger trees. The small trees and surface fuels contribute most to fire risk, as they provide "ladders" for the fires to climb from the surface into the tree crowns. Forests where "ladder fuels" are limited and tree crowns (or the crowns of groups of trees) are separated won't support a crown fire. Thus, "thinning from below" to remove the smaller trees, e.g. those 8-10 inches in diameter or less, greatly reduces the intensity with which fires will burn through a forest. The goal of such fuels management in the urban-interface should be to create defensible space and ensure that when fires burn through the forest, they burn as surface fires. *We can significantly reduce the risk of high intensity fires without thinning to very low densities, and without removing old and large trees.*

Without subsequent burning, however, fuels will accumulate on the forest floor. Seedlings establish, needles fall and grass grows that will fuel fast-running surface fires unless these are burned. Logging doesn't reduce these fuels. Neither does grazing, since it doesn't remove the pine needles that rapidly accumulate and fuel fires in ponderosa pine forests. It also eliminates critical surface fuels needed for low intensity fires to spread. Repeat burning treatments will be required.

Although reducing the accumulations of fuel in the forest will modify fire behavior, it will not eliminate large fires. However, treatments can increase the likelihood that the things we value, including natural, economic and cultural assets, will survive large fires. Fire suppression can be more effective when there is defensible space around towns. Home owners must also take responsibility for maintaining fire-safe buildings and home sites.

Restoring forest health, integrity and resilience?
Many people ask if such thinning will restore forests. The short answer is this. Thinning the small trees from ponderosa pine-Douglas fir forests *can be a first step* in ecological restoration. However, *unless fires return to the forests, the benefits of thinning are short-lived.* Thinning can reduce over-crowding, and thus increase the health and vigor of the remaining trees, but only if it is done very carefully to minimize roads, soil compaction, introduction of weeds, and damage to residual trees.

Large and old trees and snags must be left standing, even if they are diseased, dying or dead. They are important to many wildlife species and ecosystem functions. They also provide "insurance" because they often survive surface fires and can speed post-fire recovery. *After treatment, the forest must be structurally diverse and non-uniform*. Most critically, fires must occur relatively frequently but at irregular intervals.

"*Do we know what restored forests look like?"* Yes, at least for ponderosa pine/Douglas-fir forests. Earlier this summer, I sampled in such forests that had burned 5 to 7 times since 1943. The forests were structurally

diverse, with many old and large trees and snags, scattered small trees. The forests are relatively open. Most strikingly, the trees are not evenly spaced. There are denser clumps interspersed with openings. Grasses, shrubs, and forbs are abundant, vigorous, and diverse. Native species predominate. These forests support a diverse array of wildlife (birds, rodents, mammals, and insects).

The forest I sampled is in the Rincon Wilderness in Arizona, but restored forests exist outside of wilderness areas. West of Spokane, Washington, the Spokane Indians manage their pine forests with fire while achieving jobs and protecting wildlife and cultural values. There are many new projects in New Mexico, including one in the Jemez Mountains in New Mexico, not far from the Cerro Grande fire. You can also visit Ponderosa Pine State Park near McCall, Idaho.

There is much less scientific agreement on the restoration treatments needed in other forest types, such as subalpine fir or western white pine forests, except that restoring fire as a process is critical.

Restoring forest health and integrity is a very different problem than how to protect people and their property. No doubt, we must learn to live with fires, for there will be other fire years. That means we will need to learn how to manage forests to ensure that both the human and natural communities are relatively resilient to fires when they do occur. That will require careful thinking about forest management beyond the urban-interface.

Fire management must be more than fire suppression
This is not the first big fire year, nor will it be the last. Excluding fires forever is not an option. Fires will inevitably occur when we have ignitions in hot, dry, windy conditions. If there is enough fuel available, fires will burn intensely. It is one of the great paradoxes of fire suppression that the more effective we are at fire suppression, the more fuels accumulate and the more intense the next fire will be. Therefore, fire management must include much more than fire suppression.

Fire and land management must be grounded in an understanding of the complexity and diversity of forest ecosystems, and must recognize that fire is ecologically important. In forests, fires consume fuels, recycle nutrients and encourage new plant growth, but the frequency, effects, and ecosystem resilience (the time for recovery) varies greatly. Fires also alter the structure and composition of forests. Thus, fires are an integral part of many forest ecosystems.

Traditional approaches to management, such as logging the old and large trees or suppressing all fires, will perpetuate the problem. For instance, it is VERY IMPORTANT to leave the large and old trees in the forest, even if they are dying or dead. An approach that combines understanding/mimicking the natural system in ways that are sensitive to, but not driven by social, political and economic pressures, appears to be the best solution to achieve both ecological sustainability and social acceptance. Here, we must be very strategic in focusing prescribed burning efforts where they will do the most good within landscapes. Unfortunately, we don't yet know how to do this very effectively, so it is critical that we go slow. We can initiate pilot projects and monitor them carefully to learn from them about what will make our efforts more effective.

"Gridlock" and "analysis paralysis"
Every time that wildfires threaten people and their property throughout the West, we are tempted to blame someone, but blaming is misguided. Many people feel that the land management agencies are in a planning gridlock because of NEPA, ESA, and other regulatory acts. According to the GAO, environmental challenges have not slowed 98% of fuel management actions. Most of the inability to effectively get the

plans done, decided and implemented is due to internal agency problems. In particular, 1) poor decision making and planning project management by agency line and staff officers (i.e. lack of good team coaching), 2) lack of training/education in the regulatory act planning process; and 3) lack of training/education in recent science of social and ecological systems, and associated restoration. These challenges must be addressed, but not by limiting public involvement and environmental regulations.

~~5.~~

Conclusion

We do need aggressive fuels management including BOTH prescribed fire and thinning from below, in the urban-interface.

We must work with communities and collaborate across agency boundaries to identify zones of agreement. Build consensus on what treatments are acceptable and where, so that we can move ahead.

We must think beyond fire suppression to fire management, adapting our management to the complex and diverse forest conditions.

Be prudent, and acknowledge the limitations of our knowledge. There is broad scientific and management consensus on the need for and approach to treatment in the urban-interface. There is some agreement on how to restore ponderosa pine forests. There is less agreement on how to restore forests that historically supported mixed and stand-replacing fire regimes at longer intervals. Luckily, many, but not all (e.g. whitebark pine forests) of those forests are not in condition class 3 because they are less "out-of-whack".

We must be patient. The fire risk problem took decades to develop; solving it will take time. "Impatience, over-reaction to crown fire risks, extractive economics, or hubris could lead to widespread application of highly intrusive treatments that may further damage forest ecosystems" (Allen et al. In Press).

In dry forests, restoring ecological integrity will require thoughtful planning to ensure management that is ecologically appropriate and socially acceptable. Fire suppression, thinning, prescribed fire, and other treatments have their place in managing forests, but they are not cure-alls for all circumstances. We need all of these tools and more to manage public lands. There is an emerging consensus among groups with widely divergent views that ~~aybe add something about an emerging national consensus on the use of~~ thinning small trees and burning in dry forests is both useful and needed within the urban-interface. It would be a mistake to ignore this and go back either to business as usual or to a total fire suppression mentality.

I extend my sympathy to the people who have lost their homes, and to the many others whose lives have been disrupted by fires. We owe it to those people and to those of future generations to learn from recent and past fire events. We must work proactively together to address the fuels and fire risk problems, and to manage our natural resources in ways that will sustain the health and integrity of both our forest and human communities.

Thank you.

I welcome your questions.

References cited

Allen, C.D., M. Savage, D.A. Falk, K.F. Suckling, T.W. Swetnam, T. Schulke, P.B. Stacey, P. Morgan, M. Hoffman, and J. Klingel. In Press. Ponderosa pine ecosystems: A Broad Perspective. Ecological Applications.

Government Accounting Office. 2002. Wildland Fire Management: Improved Planning Will Help Agencies Better Identify Fire-Fighting Preparedness Needs. GAO-02-158. March 29, 2002. Available on http://www.gao.gov/

USFS. 2002. The Process Predicament: How Statutory, Regulatory, and Administrative Factors Affect National Forest Management. Available on http://www.fs.fed.us/projects.

In fire-adapted ecosystems, like the ponderosa pine-Douglas-fir forests that grow at low elevations in~~of~~ the West, periodic fires

- Reduce accumulated forest debris and thin the small trees, thereby reducing the risk of intense crown fires and protecting human lives and important resources such as public and private property, timber, water quality, fish and wildlife habitat, and long-term air quality.
- ~~Kill small trees, prune lower branches and favor large trees, thereby creating open forests and a more fire-safe environment for forest visitors and inhabitants.~~
- Recycle nutrients and water tied up in forest litter, thereby naturally fertilizing surviving plants
- Rejuvenate grasses and shrubs, thereby improving wildlife forage
- Often enhance structural and species diversity
- Enhance the survival of large trees currently threatened by competition from dense small tress and by crown fires fueled by the small tree ladder fuels
- Restore the natural role of fire as an ecological process and the historical structures and function of fire-dependent ecosystems where fires has been suppressed, thereby maintaining natural forests.