Forest Health Crisis in San Bernardino National Forest:
Implications for the West

Testimony of Jay Jensen

Western Forestry Leadership Coalition

Legislative Director

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Chairman Richard Pombo

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Members of the House Resource Committee, thank you for the opportunity to testify before you today to present critical and timely information on the condition of our western forests. My name is Jay Jensen. I am the Legislative Director for the Western Forestry Leadership Coalition (Coalition), a group of western State Foresters[1], western USDA Forest Service Regional Foresters, and western USFS Research Station Directors[2]. The coalition is a federal-state partnership representing the expertise and experience of these 34 western forestry leaders who have organized to help tackle many of the current resource issues we face in the west.

You are here today to discuss the forest health crisis in San Bernardino National Forest, but as you will see, the problem of bark beetles in the west is not unique to Southern California. The Coalition and its members are seriously concerned about what western bark beetles are doing to our forests and communities throughout the west. We greatly appreciate this opportunity to speak with one voice on this bark beetle issue and would like to present the findings of a report entitled, Western Bark Beetle Report: A Plan to Protect and Restore Western Forests (www.WFLCcenter.org). Requested by the House Resources Subcommittee on Forests and Forest Health, the USDA Forest Service in cooperation with the Western Forestry Leadership Coalition released the report in April of 2002.

Historical Role of Bark Beetles

Today I would like to discuss the important recommendations of the report, but first allow me to present the larger context of western bark beetle impacts in relation to Lake Arrowhead's situation. Bark beetles in western forests have been present for millennia. They are an endemic species, that is one that is native to the area, and have a very important natural role to play in keeping forest ecosystems healthy that should be recognized. They act as "agents of change." Forests are dynamic and beetles contribute a healthy level of disturbance in the forest. Within their historic natural range of variation, they can act as a low-intensity disturbance in the forest, maintaining a proper balance of numbers of trees and forest ecosystem structure. Similar to fire, these low-intensity disturbances are an integral dynamic in keeping healthy forests.

However, when our forests are unhealthy, the normal balance that exists is disrupted by numerous factors. In an unhealthy forest, the natural low-level disturbances forests that are easier and less costly in terms of dollars and lives, disappear. Instead, unhealthy forests can lead to high-level catastrophes that threaten the myriad of resources the public values in our forests; clean water, wildlife habitat, scenic beauty, timber, and clean air. Many of our western forests are no longer resilient to bark beetle outbreaks. No longer are forests able to withstand their effects, thus preventing the beetles from playing the role of an acceptable "agent of change."

The reasons why beetles are able to act outside their normal disturbance role is a complex one, but can be simply summed up by saying there are too many trees in the forest. Due to diminished active management in forests as a whole and decades of efficient wildfire suppression, forested lands have grown overcrowded. I am here to relay that many of our forests throughout the west are overstocked, over-mature, and diversity in species and age. Just as people are more susceptible to disease when in crowded environments, trees are forced to compete for more limited resources like water, sun and nutrients. Forests in these conditions cannot withstand natural stresses such as drought. With the ongoing droughts that are affecting much of the west compounding the problem, it becomes clear that trees and whole forests become extremely susceptible to health threats such as the bark beetle. In these conditions, beetles act outside of their natural range of variation and result in devastating impacts to forest communities and perhaps more importantly, human communities.

Values At-Risk

Our forests do not stand in isolation from the communities within and around them. On the contrary, people depend on them. The human communities around Lake Arrowhead are a perfect example. Within their branches they hold much of what we as a society value and to some degree, take for granted every day. Forests provide benefits to urban and rural communities in the forms of recreation, wood products, clean and adequate water, wildlife habitat, scenic quality and jobs. As a whole, these items define our quality of life. When our forests are devastated by a wildfire outbreak, the forests and the resources that we hold so dear are at risk of deteriorating. This is what we risk when bark beetles are allowed to operate outside their natural range of variation.

FIGURE 1: Projected acres of western forests impacted by bark beetles.

Western Impacts

Our western bark beetle report found that over the next fifteen years, twenty-one million acre of western forests[3] are at high risk of experiencing significant tree mortality caused by bark beetles [See Figure 1 – “Forest Health”; page 3].

Combined with continuing drought, we have a recipe for disaster, like the one we see here in Lake Arrowhead. Dead, dry acres of trees wait for a match or lightening strike to erupt into a wildfire affecting people and the communities that live and depend on these forests. Figure 2 [“2002 Fires in the West,” page 4] is a powerful visual that relates

FIGURE 2: Relationship between forest health and wildfires, 2002 wildfire season

exactly to what we are talking about. It shows the direct relationship between the condition of the land and the occurrence of wildfires from the 2002 wildfire season. You will note that the major wildfires from 2002 coincide with areas that are in the worst condition class. In straight-forward terms, fires are occurring primarily where forests are unhealthy.

The truly unfortunate situation is that the problem is not getting better on its own. Table 1 [“Acres of mortality,” page 5] shows the acreage impacted from bark beetles over the past six years. As you can see, we are moving on an exponential scale where the number of trees that have died over the past two years has more than doubled from 1.9 million acres to 4.1 million acres.

1997
1998
1999
2000
2001
2002

Region 1
259
281
432
395
546
920

Region 2
53
141
166
206
447
573

Region 3
91
41
20
59
154
716

Region 4
170
118
113
96
206
279

Region 5

47
29
33
78
847

Region 6
214
172
280
256
457
751

Region 10
573
335
288
121
104
58

Total
1,361
1,136
1,327
1,165
1,992
4,144

Notes:

1) Data source: National database of insect and disease aerial detection survey.

2) In 1997, Region 5 mortality data listed causal agent as "Unknown",

therefore 1997 does not included data for Region 5.

TABLE 1: Acres of mortality from bark beetles by USFS Region by Year (millions of acres)

This information presents an ominous case for the challenge ahead of us in the west, yet there is an answer. By actively managing the threatened acres of our forests, we can restore them to a healthy condition and avoid creating more situations like Lake Arrowhead. We have, within our knowledge and skills, the ability the avoid this. Specific actions can restore our forest to good health and reduce the threats to communities. The Western Bark Beetle Report- A Plan to Protect and Restore Western Forests, focuses on three courses of action; prevention, suppression and restoration, all of which must be applied across all ownerships and boundaries to be effective.

Prevention

I would submit to you that prevention is the best option of the three to pursue and makes the most sense. If one can prevent or diminish unwanted bark beetle outbreaks before they occur, costs, impacts and disruptions are all minimized. A good analogy is our own health. It is smarter to see a doctor regularly for preventative health measures. The same applies to bark beetles and other forest health threats. Preventative bark beetle efforts are aimed at returning the land to a more natural condition where a mosaic of species and forest age classes exist. Ultimately, prevention treatments such as thinning forests (removing excess trees) and prescribed fires (intentionally set fires with management objectives) will result in lower overall fuel accumulations and fewer “ladder fuels” which allow flames from wildfire to spread from normal ground fires, high into the canopy. The end-result is a forest functioning within the normal and historic range of variation.

Suppression

If preventative measures fail or are not in place, the next option is to suppress the bark beetle outbreak. Unfortunately, suppression efforts tend to be the most costly and least effective option to undertake. Suppression strategies call for expedited treatments in order to limit the negative impacts of ongoing outbreaks. Emphasis should be placed in high-valued areas such as threatened and endangered species habitat, recreation sites, and watersheds that provide drinking water. Suppression actions include removal of potential and infested host material; the use of pheromones to capture beetles and at times, the limited use of pesticides to protect high-value trees during an outbreak.

It is important to note that these suppression strategies can have limited effectiveness in eradicating a bark beetle outbreak. However, suppression efforts may give resource managers valuable time to design and implement prevention and restoration treatments that will reduce further bark beetle spread and return forests to a more resilient condition in the future.

Restoration

In some sense, restoration is the final goal of all our actions. We want to return forests to a healthier condition so they are more resilient to bark beetle outbreaks. When trees are healthy, they can fend off these natural predators with their own defense mechanism; the tree’s own sap and pitch. This should be a guiding goal in all our efforts. The approach to restoration involves re-establishing proper tree spacing and an appropriate diversity of tree species for the site through target tree removals and planting. Again, the challenge here is the magnitude of the problem ahead. As much of the west’s forests are in poor health (estimates are as large as 190 million acres of federal land in either condition class 2 or 3), much work needs to be done to restore these lands to a point where bark beetles can return to their natural range of variability and act within its historic role as an agent of change.

Research

A word needs to be said about the continued need for research and development on bark beetles. We already know much about the interaction of unhealthy forests and outbreaks of bark beetles. Enough so that we can take action and have the confidence in knowing what we are doing will improve the situation. However, in order to become more effective and responsive in our response capabilities, continued improvement in our prevention, suppression and restoration abilities is prudent.

We can benefit from continually improving research efforts that include the following:

· Improved methods to predict where, when and how much bark beetle activity will occur on forested landscapes.

· Clarified results and interactions between bark beetle populations, wildfires and prescribed fires.

· Technologies for using natural attractants and repellents.

· Development of economical and environmentally safe strategies to protect priority forest resource values.

· Continuing education and outreach to improve understanding of the ecological role of disturbances caused by insects, disease and fire.

Conclusion

Lake Arrowhead is not an isolated situation. It is clear that much of the west faces similar threats from bark beetle outbreaks. The difference between current and historic outbreaks is the scale of interaction between bark beetles and their hosts. Present day western forests are much more susceptible to large-scale tree mortality caused by bark beetles and which is exacerbated by drought.

The urgency is upon us. We risk damaging and losing the forest resources Americans value so deeply. The evidence is clear that we need to actively manage our forests to have any chance in improving our forests' health. Strategic direction is already laid within the National Fire Plan and the guidance of the 10-year Comprehensive Strategy Implementation Plan. We must now make a long-term commitment to prevent, suppress and restore bark beetle impacted forests that involves all interested stakeholders as partners and approaches the issue of bark beetles across all ownerships.

We all can learn much from what plays out here in Lake Arrowhead, but we must continue public discourse on what is an acceptable level of beetle activity so we know what our management response should be.

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[1] Includes the U.S. Territorial Foresters in the Pacific

[2] includes the Forests Products Lab Director in Madison, WI

[3] There are 362 million acres of western forests.