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WRITTEN STATEMENT FOR THE RECORD OF

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OVERSIGHT HEARING ON

Crisis on our National Forests: Reducing the Threat of
Catastrophic Wildfire to Central Oregon Communities and the Surrounding Environment

BEFORE THE
COMMITTEE ON RESOURCES
UNITED STATES HOUSE OF REPRESENTATIVES

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INTRODUCTION

My name is Dr. Thomas M. Bonnicksen. I am a forest ecologist and professor in the Department of Forest Science at Texas A&M University. I am also a visiting scholar and board member of The Forest Foundation in Auburn, California. I have conducted research on the history and restoration of America's native forests for more than thirty years. I have written over 100 scientific and technical papers and I recently published a book titled America's Ancient Forests: from the Ice Age to the Age of Discovery (Copyright January 2000, John Wiley & Sons, Inc., 594 pages). The book documents the 18,000-year history of North America's native forests.

Contact information is located at the end of this written statement.

UNHEALTHY AND DANGEROUS Forests

Our national forests are growing older and thicker, some reaching astronomical densities of 2,000 trees per acre where 40-50 trees per acre would be natural. A forest can stagnate for many decades or even centuries under such crowded conditions. Consequently, plant and animal species that require open conditions are disappearing, streams are drying as thickets of trees use up water, insects and disease are reaching epidemic proportions, and unnaturally hot wildfires have destroyed vast areas of forest.

Since 1990, we have lost 50 million acres of forest to wildfire and suffered the destruction of over 4,800 homes. The fires of 2000 burned 8.4 million acres and destroyed 861 structures. The 2002 fire season resulted in a loss of 6.9 million acres and 2,381 structures destroyed, including 835 homes. These

staggering losses from wildfire also resulted in taxpayers paying \$2.9 billion in firefighting costs. This does not include vast sums spent to rehabilitate damaged forests and replace homes.

The 2003 fire season is shaping up to be potentially as bad. Fire danger is very high to extreme in much of the Interior West, Northwest, and portions of California and the Northern Rockies due to overgrown forests, an extended drought, and insect damaged trees.

Not only are fires destroying America's forests, bark beetles and other insects are killing trees on a scale never before seen. Forests in Arizona, the Northern Rockies, and California have been especially hard hit by beetles.

I have been working in California's forests since the late 1960s. Never have I seen anything more dangerous than the overgrown, beetle-ravaged forests of the San Bernardino and San Jacinto Mountains. I am concerned for the safety of people living in communities surrounded by these forests.

About 90 percent of the pines will be dead when the beetles end their rampage. Then, forest communities like Lake Arrowhead and Idyllwild will look like any treeless suburb of Los Angeles. Whole neighborhoods are already barren of trees where houses once hid in a thick forest.

This disaster affects everyone who cares about America's forests, but it is especially serious for the people who live and recreate in these mountains. Dead trees are falling on houses, cars, and power lines, and they could easily fuel a catastrophic wildfire. That's why arborists are cutting trees at a frantic pace, but they cannot keep up with the insects.

Unfortunately, it is too late for the San Bernardino and San Jacinto Mountains. The original pine forest will be gone soon. We must start over, and we must do it fast before a wildfire turns what's left of the forest into brush and communities into rubble.

WHY forests are unhealthy and dangerous

If we looked back two hundred years, 91 percent of our forests were more open because Indian and lightning fires burned regularly. These were mostly gentle fires that stayed on the ground as they wandered around under the trees. You could walk over the flames without burning your legs even though they occasionally flared up and killed small groups of trees. Such hot spots kept forests diverse by creating openings where young trees and shrubs could grow.

Fires burned often enough in historic forests to clear dead wood and small trees from under the big trees, and they thinned some of the weak and diseased big trees as well. These were sunny forests that explorers described as open enough to gallop a horse through without hitting a tree. Open and patchy forests like this also were immune from monster fires like those that recently scorched Oregon, Arizona, Colorado, and California.

Our forests look different today. They are crowded with trees of all sizes and filled with logs and dead trees. You can barely walk through them, let alone ride a horse.

Now monster fires and hordes of insects are devouring trees with unprecedented ferocity because our forests are so dense. The role of drought in causing the problem is overstated. Drought contributes to the crisis, but it is not the underlying cause. There are simply too many trees.

In the case of Southern California, the drought added more stress to an already unhealthy and dangerous forest, so bark beetles took control. They made the wildfire danger even more critical by killing trees, turning them into instant fuel. The smallest spark could cause a human catastrophe.

Trees are so crowded they have to divide what little moisture is available in the soil. During normal rainfall years, the trees have barely enough moisture to produce the sap needed to keep out the beetles. They cannot resist attack during dry years. A healthy forest can survive a beetle attack during a drought with only moderate mortality. A thick and stressed forest cannot. Therefore, the drought triggered the insect epidemic, but it didn't cause it.

We know how we got into this fix: forest management stalled because environmental activists, government officials, and politicians engaged in endless debates on how to look after our forests. Central to the debate

is that environmentalists want thick forests. They lobbied for years to convert forests to old growth, which they define as dense, multi-layered, and filled with dead trees and logs. Meanwhile, trees grew and forests became thicker because they care nothing about politics. Now insects riddle our trees with holes and wildfires turn them into charcoal.

The debates continue, and bark beetles have taken control of the San Bernardino and San Jacinto Mountains, as well as other western forests. It is time for people to shape the destiny of their forests instead of leaving the decision to mindless insects and the harsh indifference of wildfires.

MYTHS AND REALITIES ABOUT RESTORING HEALTHY FORESTS

Some groups perpetuate myths about managing our national forests that they think help their cause. This does not serve the public interest. Our national forests are the people's forests. They belong to all of us and they should serve all of our needs. All of us also deserve to participate in making informed decisions about our forest heritage.

Myth 1: Some groups argue that removing standing and fallen dead trees killed by wind, insects, or fire will not reduce the fire hazard.

Experience and logic say that is false. Ask anyone with a fireplace if logs burn. If the dead trees are not removed, they will fall into jackstraw piles intermingled with heavy brush and small trees. These fuels become even more critical when they are dispersed among large live trees that escaped destruction. The logs will become bone dry by late summer, even earlier during a drought. Any fire that reaches these mammoth piles of dry fuel could unleash the full fury of nature's violence. This has happened before.

The first Tillamook Burn in 1933 in Western Oregon blackened 240,000 acres and dropped ash on ships 400 miles at sea. The second burn in 1939 brought the total to nearly half a million acres. However, the third fire in 1945 rushed through 173,000 acres, much of it in the earlier burns that were now filled with down timber and young trees.

This time the fire destroyed everything, including nearly all the young trees and even seed stored in the soil. It took a massive effort in the 1950s and 1960s to restore the forest by planting 72 million seedlings, many of which were hand planted by school children and volunteers.

We should not let this happen again. Acting quickly to rehabilitate a wind or insect ravaged forest, or a burned forest, creates long-term benefits that far outweigh any short-term changes that may be produced.

For example, during the winter of 1995-1996, a windstorm caused an extensive blowdown of timber over about 30,000 acres in the area burned by the 1999 Megram Fire in northern California. This increased fuel loadings from 5-50 tons per acre to 100-300 tons per acre. The Forest Service accurately predicted that a wildfire of the size and type of the Megram Fire would occur after the blowdown.

The Megram Fire burned 125,000 acres before it was controlled. Treated portions of the blowdown were less severely affected by the fire than untreated areas. The most effective treatment involved removing the majority of the logs. In addition, most damaged trees with less than 20 percent live crown were cut and removed. Then the slash was piled and burned, followed by understory burning. The remaining forest had 60 percent canopy closure, and numerous standing dead trees and logs were left for wildlife. This treatment reduced high severity mortality from the Megram Fire to 3 percent of the acres treated. In contrast, treatment without piling and burning increased the incidence of high severity mortality, while treatment with just piling and no burning cut mortality by nearly half.

Myth 2: Some groups argue that massive beetle infestations and wildfires are a natural way for forests to thin and rejuvenate themselves.

On the contrary, when human interference creates the conditions that allow beetles to thrive and fires to spread over vast areas that never burned that way in their known history, the resulting devastation cannot be natural. It is human-caused. Rather than deny our role we must accept responsibility for the crisis we created and correct the problem.

Myth 3: Some groups argue that logging contributes to fire.

This may have been true a century ago when branches and twigs often were left on the ground after

harvesting. Current regulations and science-based forest management require removing such material. The result is a forest that is healthy and fire resistant rather than a fire hazard. Modern forestry has made huge strides in the last 50 years, yet some groups continue to play on our emotions to advance their agendas – frequently advocating extreme positions like ‘no-cut’ policies that have devastating effects on our forests.

Myth 4: Some groups argue that thinning beyond 200 feet of a home adds no additional protection.

First, many house are located among the trees, so clearing around the house means removing the forest in which they live. After all, big trees do burn and they drop flammable needles on roofs and decks. Even then, I would not live in such a house if thick forests filled with dead trees and piles of logs surround it. It matters little how clear the area around a house is if a 10-story wall of flame burning at 2,000 degrees gets close to it. Certainly, people should reduce fuels around their homes because it does help a little. I just could not recommend it as the only defense against wildfire.

Myth 5: Some groups argue that thinning narrow strips of forest around communities, or fuelbreaks, is more than adequate as a defense against wildfire.

They think swarms of chewing insects and roaring wildfires coming in from surrounding public lands cannot penetrate these flimsy barriers. They could not be more mistaken.

One obvious problem with fuelbreaks is that forest communities are spread out, with homes and businesses scattered over huge areas. It would be impractical, if not impossible, to create an effective thinned "zone" to encompass an area so large.

In addition, fuelbreaks are only valuable if firefighters are deployed who can attack the fire when it enters the area, drops to the ground, and moves along the forest floor. If no one is present to fight the fire in the fuelbreak, fire behavior studies show that the fire will accelerate through the cleared space—at ground level rather than through tree crowns, as in thick and overgrown forests—and erupt out the other side.

Fuelbreaks won't protect anything unless they are fully staffed by firefighters at precisely the right time. That is highly unlikely in a big fire because there are just too few people available to fight the fire. Furthermore, there is always the danger of firefighters being trapped, which is another reason to avoid being in a fuelbreak during a monster fire.

Even then, a catastrophic fire, roaring through hundreds of square miles of unthinned, overgrown forest is no respecter of narrow fuelbreaks. Fires often jump over railroad tracks and even divided highways. Furthermore, firebrands—burning debris—launched up to a mile in advance of the edge of a wildfire, will destroy homes and communities no matter how much cleared space surrounds them. In fact, the Los Alamos Fire of 2000—a prescribed fire that got out of hand—burned many homes while sparing the surrounding thinned trees and other vegetation. The reason: Catapulted embers landed on roofs.

Ironically, groups that want fuelbreaks instead of well-managed forests fail to realize that they are unnatural, sterile, and unsustainable. Removing all the little trees, and standing dead trees and logs, on a fuelbreak drastically reduces wildlife habitat. It also means there is no reproduction to replace big trees that die. Likewise, thinning the big trees on a fuelbreak to reduce the density of the canopy to improve fire resistant makes the forest even more unnatural. When done, a fuelbreak may resist crown fires, but it looks like a sea of telephone poles with nothing growing underneath.

Like providing clearings around homes, fuelbreaks are a necessary part of a comprehensive community protection program. I just could not recommend them as the primary defense against wildfire.

Myth 6: Some groups argue that there is no need to manage large areas of forest between communities.

We must face the truth. Preservation does not work to solve the fire crisis because trees and shrubs keep growing and producing more fuel. Prescribed fire does not work because it is ineffective and unsafe in thick forests. Likewise, surrounding communities with fuelbreaks, and ignoring the area in between them, won't stop monster fires by themselves. Ultimately, a fuelbreak is most often used as a relatively safe place to set fires that deprive the wildfire of fuel. This means that we are sacrificing whole watersheds to fire and adding to the area burned.

The reality is that there isn't any substitute for fixing the real problem. "No-cut" policies and total fire suppression have created forests that are dense, overgrown, tinderboxes where unnatural monster fires are

inevitable. That means managing the forest to prevent fires in the first place. We have to restore our forests to their natural, historical fire resistance. Thinning and restoring the whole forest is the only way to safeguard our forest heritage, make our communities safe, and protect our critical water sources.

Myth 7: Some groups argue that all fires are good and forest management is bad.

They use this argument intentionally to divert public attention away from forests and focus it instead on communities. The truth is that today's monster fires are bad for forests and management is the only way to stop them.

When a monster fire finally stops, it leaves a desolate landscape scarred by erosion and pitted with craters that formed where tree roots burned. The habitat for forest dwelling wildlife is destroyed, small streams are boiled dry, fish die and their habitat is smothered by silt and debris. The fire also bakes the soil so hard water cannot get through, so it washes away by the ton. All that is left are the blackened corpses of animals and fallen and standing dead trees. Often there are too few live trees left to even reseed the burn and the area soon becomes covered with a thick layer of brush that prevents a new forest from becoming established for many years.

Historically, fire was part of America's forests. However, the monster fires we see burning nearly all of our forests today are unnatural. In the past, such fires burned only a few types of forest, and then only infrequently. Most forests burned often and gently, which kept them open and resistant to large fires.

Furthermore, a historic forest was a mosaic of patches. Each patch consisted of a group of trees of about the same age, some young patches, some old patches, intermingled with bare spots and open meadows.

It was a mosaic of patches. Patches of younger trees, bare spots, and open meadows served as natural firebreaks, while the weak and diseased trees under larger trees burned off frequently without turning into infernos.

The variety of patches in historic forests helped to contain hot fires. Most patches of young trees, and old trees with little underneath did not burn well and served as firebreaks. Still, chance led to fires skipping some patches. Therefore, fuel built up and the next fire burned a few of them while doing little harm to the rest of the forest. Thus, most historic forests developed an ingenious pattern of little firebreaks that kept them immune from monster fires.

Today, the patchiness of our forests is gone, so they have lost their immunity to monster fires. Fires now spread across vast areas because we let all patches grow thick, and there are few younger and open patches left to slow the flames. That is what is happening throughout the West.

This is even more serious because monster fires create even bigger monsters. Huge blocks of seedlings that grow on burned areas become older and thicker at the same time. When it burns again, fire spreads farther and creates an even bigger block of fuel for the next fire. This cycle of monster fires has begun. Today, the average fire is nearly double the size it was in the last two decades and it may double again. Worst of all, these monster fires are converting natural fire-resistant forests into unnatural and dangerous forests.

Myth 8: Some groups argue that, if management is unavoidable, then deliberately set fires, or prescribed fires, are the best way to solve today's wildfire crisis.

It is naive to believe we can have gentle fires in today's thick forests. Prescribed fire is ineffective and unsafe in such forests. It is ineffective because any fire that is hot enough to kill trees over three inches in diameter, which is too small to eliminate most fire hazards, has a high probability of becoming uncontrollable.

Even carefully planned fires are unsafe. Each 20,000 acres burned in a fire is likely to produce one escaped fire. That means there could be as many as 243 escaped fires a year just from prescribed burning. That is unacceptable.

Not only that, there are very limited opportunities to burn. All the factors, such as fuel moisture, temperature, wind, existence of defensible perimeters, and available personnel, must be at levels that make it relatively safe to conduct a prescribed burn. This happens so rarely that it would be impossible to burn large enough acreage each year to significantly reduce the fire hazard.

Some groups also overlook what it was like when fires burned freely. Explorers often complained in their journals about the pall of smoke hanging over mountains and valleys. Today, health hazards and air pollution restrictions make extensive burning difficult and unpalatable. The public won't stand for smoky skies from prescribed fires and burned homes from inevitable escapes.

Myth 9: Some groups argue that we should use taxpayer money to solve the wildfire crisis rather than involve private enterprise.

A minimum of 73 million acres of forest needs immediate thinning and restoration to begin solving the fire crisis. Another 120 million also need treatment. Assuming that in most of these forests the same area burned once each 15 years on average historically, that means that each year about 4.9 million acres of seriously overstocked forest will have to receive an initial treatment. Subsequent maintenance treatments also must be done on a 15-year cycle since fuels will continue to accumulate. In short, the fuel reduction process will last forever.

So, what would it cost to do the job right? Using average costs, and assuming that most if not all forests will require mechanical or hand treatment before prescribed burning, and assuming that prescribed burning will be feasible on all acreage, the total cost for the initial treatment would be \$60 billion, or about \$4 billion per year for 15 years. Then it would cost about \$31 billion for each of the following 15-year maintenance cycles. In other words, an unending stream of tax money would be required to restore and sustain a healthy fire resistant forest. No one will pay this enormous cost.

We cannot succeed without a partnership with the private sector because there is too little public money to do the job. That means private companies harvest and thin only the trees required to restore and sustain a healthy fire resistant forest. In exchange, they get to sell the wood and public expenditures are minimized. This is just common sense—why allow our forests to burn if we can use them in a way that also restores them?

Restoring healthy forests is essential

Restoring healthy forests is the only effective way to address the fire crisis. However, fire is not the sole reason to restore our forests. Healthy, diverse, and ecologically sustainable forests of native species also support a wide range of wildlife and fish, protect water supplies, enhance local economies, and provide the public with scenic and recreational opportunities.

Even so, the fire crisis must be resolved quickly and decisively. That means providing relief from excessive environmental and other regulations that impede the process of restoring healthy forests. We should not doom later generations to the unending cycle of destruction from fire and insects that we see today. Let's stop the debates, take action now, and do what is necessary to protect and restore our forest heritage.

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