

Death Of A Forest: Why we Should Care

By: [Thomas M. Bonnicksen, Ph.D.](#)

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In late June 2011, I was standing in a forest with a few friends on the southern side of Lake Tahoe. It was a cool sunny day and the surrounding snow-capped mountains were picturesque. A perfect day, except no one was talking. My friends looked around in astonishment because they had never seen a forest like this before.

It was silent. There was no rustling of tree branches in the wind, no hammering sounds of woodpeckers, no birds were singing, even the familiar sound of buzzing insects were absent. Everyone acted with reverence as if standing in a cemetery. The sight of death was everywhere. The trees looked like charred bones, the ghostly skeletons of what used to be a living forest that was now dead. A forest that will remain dead for a very long time because there are almost no seed trees left to bring it back to life.

We were standing in what was left of the forest killed by Tahoe's Angora Fire that burned in June and July of 2007. I wanted to see how my friends would react to what they saw. They are like most people who only see wildfires on TV or read about them in newspapers. They have no personal experience with wildfires and little time to dwell on the news. Once the fire is off the front page it is over and out of mind. That is, unless you see it yourself.



Aftermath of California's Angora Fire in June of 2011. Tom Bonnicksen took this photograph near Lake Tahoe while touring a group of friends through the burn area. He would not allow his friends to walk thorough this scene for fear of falling trees and limbs. He reports there were other trees 300-600 year old trees within the burn area that could have been saved.

The Angora Fire is only one of many burned forests, communities of smoldering homes, acrid smelling air, and foot-deep ash I have trudged through over the years. In each case, I tried to understand what went wrong and what we can do to keep it from happening again. After so many years and so many wildfires, I am still not immune to the deep sense of loss I feel when a forest dies. It also is impossible not to feel empathy for people who not only lost their homes, but also their collection of photographs, letters, videos, and other valuables.

I have been doing these forensic studies on numerous wildfires since the U. S. Senate and U. S. House Committees on Natural Resources sent me to investigate the 1988 Yellowstone Fires. I spent many days walking and flying in helicopters over Yellowstone looking at the landscape while some of the fires were still burning. I also interviewed and spent time in the field with Park Service scientists and evaluated data in their office. Afterward, I provided Congress with a report and oral testimony.

By any measure, the Angora Fire of 2007 was small, burning just 3,100 acres and destroying 254 homes. That same year more than 85,700 wildfires burned 9.3 million acres, and four of those fires burned more than 250,000 acres. These fires also destroyed 5,200 structures. Even so, the Angora Fire illustrates in microcosm how and why wildfires are devastating the American West, destroying lives, and despoiling our natural history.

The Angora Fire provides a glimpse into what it is like for people living in forest communities throughout the West to have a roaring 300-foot wall of flame at 3,000 degrees Fahrenheit rushing at them and engulfing their homes and the surrounding trees in a crackling inferno.

Firefighters and residents who experienced the Angora Fire told me that the air was so thick with smoke that fire engines and cars blocked roads because no one could see where they were going. Firefighters couldn't do much anyway because burning debris carried by downslope winds rained like napalm, setting trees and houses on fire throughout the community. High winds also blasted flaming pinecones and branches through windows where they set homes on fire from the inside. Over 100 homes were blazing before the fire ever reached the edge of the community.

It didn't matter whether homeowners thinned trees on their property and taken other precautions to create defensible space. Everyone was vulnerable because burning debris came from half a mile away and simply fell from the sky on their houses. After the fire, I saw houses with metal roofs lying on their foundations and houses with few trees on the property that were entirely gone. Other homes that should have burned escaped the flames even though thickets of trees grew around them.

The one narrow shaded fuel break built by the Forest Service failed. The widely spaced trees on the fuel break were saved, but that was not the purpose of building it. It was supposed to help save the community. The flames simply dropped to the ground and rushed through dry grasses under the trees destroying most of the houses on the other side.

The fire also came at houses from stream corridors that snaked through the community. Extremists had insisted on letting lodgepole pine trees grow wild along these streams. As a result, the fire raced through them spreading outward as it went burning even more houses before the main fire front had a chance to reach them.

Today the community is half-empty. Debris from burned homes is gone although foundations still show where they stood. The dead trees are also gone; leaving what was a forested community looking like a city suburb except for all the blackened stumps. Some homeowners returned to rebuild but most took the insurance money and left. Other people moved in and told me they thought their house would now be safe. They have no idea how easily or hot a brush-covered dead forest can burn.

After the fire, the Forest Service spent what little money they had to clear dead trees in a narrow belt to create a fuel break around the community. They also planted a few trees in this belt in the hope that it might become something like a forest in the future. Since there are almost no seed trees left, the Forest Service also started planting some trees among the dead trees. This limited effort will not do much, but it's a start.

Many people blame the Angora Fire on an illegal campfire. That was the point of ignition, but it wasn't the cause of the wildfire. Sources of ignition are everywhere. It could be lightning, catalytic converters, backyard barbeques, arson, campfires, highway accidents, or anything else. Likewise, many people like to blame wildfires on global warming or drought.

The source of ignition, drought, or a warming climate doesn't matter; a fire can't burn without fuel. The real cause of the Angora Fire, and most wildfires in the West including the ones I examined, is excessive and unnatural accumulations of fuel.

Historically about 60 trees per acre grew in the forest burned in the Angora Fire but when the fire started, there were 273 trees per acre. This dense forest of taller trees, intermixed with dead trees, grew above a

tangled mass of smaller trees. Adding to this immense fuel load were 25 tons per acre of litter, duff, down dead wood, and shrubs covering the ground. All that was needed to turn this massive pile of fuel into the Angora firestorm was dry weather, strong winds, and a chance ignition.

Since fuel is the cause of wildfires, you would think that otherwise intelligent people could solve the problem, apparently not. The solution is too obvious and too easy. Restore our forests to their historic crown-fire resistant condition by removing excess trees. Instead, we have to make it too controversial, too expensive, and too complicated, and therefore almost impossible to accomplish.

Thinning trees to reduce fuels in the Tahoe Basin would cost from \$650 per acre to as much as \$3,500 per acre. Taxpayers can't afford to pay that much to restore Tahoe's forests let alone the 73 million acres of public forest in critical need of restoration in the West. It's no wonder many forests look like weed-filled vacant lots.

Extremists use these exorbitant costs as a weapon to stop the management needed to restore our forests and prevent horrific wildfires. They demand that we pay the cost with taxpayer money, knowing that we can't afford it. They also know that we could significantly reduce public expenditures if private companies helped us thin our forests. Then companies could sell the wood to cover their expenses and make a profit. Unfortunately, extremists also use lawsuits to block this common sense approach to solving the wildfire crisis so they can keep forests untouched.

The truth is that taxpayers still pay the bill. We spend nearly \$2 billion a year fighting wildfires and all we get are dead forests, ruined homes, clogged waterways, polluted air, and suffering families. Then we spend billions more to clean up the mess.

Not only that, but extremists who thought a forest would be kept untouched now find that it becomes a war zone during a wildfire where almost anything goes just to put the fire out. Aircraft roar overhead dropping chemical retardant, firefighters cut trees and scrape away soil to create fire lines, and bulldozers push through the forest like battle tanks to build roads. After the fire, rehabilitation involves cutting hazard trees, planting grass to prevent erosion, and many other activities that further change the forest.

When the fire is over, and everyone goes home, a formerly untouched forest now looks like a battlefield. Rocks that exploded because of intense heat look as if peppered with bullets. Blackened corpses of animals not incinerated in the fire are scattered here and there. Upright trees create pits that look like bomb craters, standing dead trees seem as if gunfire ripped them apart, and dirt roads torn up by bulldozer treads scar the landscape.

You might think that we should do everything we can to rebuild a burned forest. Think again. Extremists believe a black forest is just as nice as a green forest. Even some people in government service believe this. To illustrate, a government employee told me "we want whatever fire gives us." Not surprisingly, extremists file lawsuits to stop the restoration of burned forests. This includes their unsuccessful attempt to block small projects to help rehabilitate the Angora Fire area. Where is Gifford Pinchot when we need him?

As a forest ecologist and historian, I feel deeply about the unnecessary and tragic loss of our natural history caused by wildfires. America has the most magnificent and historically significant landscapes on earth, and wildfires are destroying them. This includes many very old trees the Angora Fire killed that we can't replace for centuries to come.

The most recent example is the 2011 wildfire in Texas that killed 95 percent of "The Lost Pines" in Bastrop State Park. This forest is unique; it is an island of Loblolly Pine standing on isolated hills in the center of the state. It is a priceless relict of the Pleistocene, or Ice Age, when a larger forest shrank as the climate warmed thousands of years ago.

The same thing happened in 2003 when the Cedar Fire swept over Cuyamaca Rancho State Park in San Diego County, California. It killed 95 percent of the pine trees, leaving almost no seed trees behind so very few seedlings have starting growing. Again, this forest is an isolated remnant of the Ice Age marooned on a mountaintop surrounded by chaparral. Who knows when, or if, it will ever comeback.

The climate is warming, as it has done many times over hundreds of thousands of years after a cold period or ice age. Scientists are still debating how much greenhouse gas emissions contribute to this warming trend. Extremists remain undeterred and insist that we take draconian measures to curb greenhouse gas

emissions anyway. They also refuse to allow us to reduce fuels in public forests even though wildfires maybe the single most important source of emissions.

I created the Forest Carbon and Emissions Model (FCEM) to study the role of forests in producing greenhouse gas emissions. For example, estimated combustion emissions from the Angora Fire had a global warming potential of 156,170 tons of carbon dioxide. That is the combined effect of carbon dioxide, methane, and nitrous oxide, and is the equivalent of emissions from 28,166 cars driven for one year.

Forests emit even more carbon dioxide when dead trees decay after a wildfire because most of the wood remains unburned. As a result, adding emissions from post-fire decay brings the estimated total from the Angora Fire to 571,543 tons of carbon dioxide, or the equivalent of driving 105,503 cars for one year.

The window of opportunity for removing fire-killed trees while they still have economic value lasts less than two years, and that time is long past for the Angora Fire because of opposition from extremists. That means we can no longer harvest dead trees to generate money needed to plant a new forest. Taxpayers will have to pay the cost, which is why we are doing so little to restore the forest. Thus, the dead trees keep decaying and emitting carbon dioxide while brush gradually covers the mountainsides instead of trees.

FCEM estimates that we could have recovered 98 percent of the carbon dioxide sent into the atmosphere from the Angora Fire over the next 100 years partly by removing dead trees before they decay and converting them into solid wood products that store carbon. Then we could have used the money from harvesting to plant young trees to absorb the remainder of the lost carbon dioxide from the atmosphere while also bringing the forest back to life.

I also used FCEM to look at the bigger picture by estimating seven years of combustion and post-fire decay emissions from wildfires for the entire state of California. The results show that greenhouse gas emissions were the equivalent of driving 50 million cars for one year. There are only 14 million cars on California's highways. That means they would all have to be taken off the road and locked in a garage for 3 1/2 years to make up for accumulated emissions of just a few years of California's wildfires.

According to government statistics, California wildfires also permanently deforested 882,759 acres of public and private land during the seven years covered by this study. Permanently deforested means burned forests that cannot recover naturally due to the lack of seed trees. Trees were planted on only 120,755 acres. As a result, California's forests are disappearing at the rate of 109,000 acres each year, and the greenhouse gases they emitted from wildfires will stay in the atmosphere for centuries.

Taken to the national level, the conclusion is obvious - reducing the number of wildfires and restoring burned forests will significantly reduce greenhouse gas emissions and ensure that we can pass our forest heritage on to future generations. The rallying cry today is to take our country back. I say it also is time to take our forests back.

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