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Dead trees don't fuel megafires

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In the western United States, warming temperatures and insects like pine beetles and bark beetles have killed trees across more than half a million square kilometers of forest in recent decades, leading to widespread concern that abundant dead fuels may lead to megafires in our forests.

Two recent large-scale long-term studies have determined that the area burned by wildfires is unaffected by the large areas of dead trees created in recent insect outbreaks. These studies found weather effects like heat, dryness, and wind drove the size of forest fires with no effect of dead trees from insect outbreak on the area burned. These studies expand upon previous work by several other scientists that found dead trees do not influence forest fire severity. All these scientific results directly refute the claims made by politicians, timber companies, and US Forest Service officials that increased bark beetle activity will increase wildfire size or fire severity.

For example, U.S. Secretary of Agriculture Tom Vilsack, who oversees the US Forest Service, has repeatedly claimed that tree die-offs "increase the risk of catastrophic wildfires" as he

asks for increased funding for his agency.

The authors of the scientific studies that refute Mr. Vilsack's claims suggested that public policy actions should shift away from logging in the name of reducing fire risk, and re-focus on adapting homes, structures, and communities to the effects of warmer temperatures, increased drought, and increasing forest fire frequency. Wild Nature Institute scientist Monica Bond, who has studies forest fire ecology said, "Logging does not change fire behavior, our forests are naturally resilient, if we could just have the courage to leave trees alone before and after fires, forests will self-regulate and continue to provide us with life-giving clean air and water. Homes can be made fire-safe by retrofitting, and that is where our money should be directed."

Contrary to popular accounts, wildfire acres in recent years are not at all unprecedented in ancient or modern history. Studies of charcoal in sediments dating back 8,000 years show vast areas burned in hot fires during droughts, just like today. According to the National Interagency Coordination Center, a total of less than 10 million acres burned in U.S. wildfires in 2015. Yet during the 10-year hot and dry period from the late 1920's to the late 1930's an average of 30 million acres burned every year.

The false assumption that outbreaks raise fire risk is driving far reaching policy decisions involving logging that costs U.S. taxpayers hundreds of millions of dollars. Bond said, "Far from being a threat, high-severity fire and insect outbreaks actually provide great benefits to

forests and many wildlife species. Logging—including thinning in the name of fire reduction, and salvage logging of burned trees—is actually the greatest threat to our western US forest ecosystems."

Forest fires, insect outbreaks, and other disturbances are natural elements of healthy, dynamic forest ecosystems in the western United States, and have been for millennia. Scientific research has documented that many species of plants and animals increase in numbers and density following high-severity forest fire and insect infestations. Bark and Pine Beetle populations are important resources for bats, birds, and small mammals.

Western forests have evolved to self-thin their trees when the forest becomes thick, through forest fires, insects, or disease. These processes cull the weak and make room for the continued growth of stronger trees. Fallen dead trees are recycled in the forest nutrient cycle to feed the soil. After forest fire or beetle outbreaks, green forest naturally regenerates without any need for expensive human interventions. Tree seedlings sprout and grow, and nitrogen-fixing shrubs and forbs replenish the soil and curb erosion. In the meantime, standing dead trees, snags, and logs provide critical shelter for many types of animals, from woodpeckers and bluebirds to flying squirrels and Pacific fishers.

More information: Learn more about the science of dead trees and forest fire at :

Robert A. Andrus et al. Fire severity unaffected by spruce beetle outbreak in spruce-fir forests in southwestern Colorado, *Ecological Applications* (2016). DOI: 10.1890/15-1121

Sarah J. Hart et al. Area burned in the western United States is unaffected by recent mountain pine beetle outbreaks, *Proceedings of the National Academy of Sciences* (2015). DOI: 10.1073/pnas.1424037112

Nathan Mietkiewicz et al. Relative importance of climate and mountain pine beetle outbreaks on the occurrence of large wildfires in the western US, *Ecological Applications* (2016). DOI: 10.1002/eap.1400

Journal information: Ecological Applications , Proceedings of the National Academy of Sciences