

## Scientific paper challenges assumptions about bark beetles' link to wildfires

January 29 2013, by Lynda V. Mapes

Don't blame bark beetles for catastrophic wildfires such as the blaze that blackened more than 23,000 acres of Kittitas County in Washington state last summer, some scientists say.

In a peer-reviewed paper published this week in *Natural Areas Journal*, scientists say they found through a literature review that bark beetles do not substantially increase the risk of crown fire in lodgepole pine and spruce forests, as commonly assumed.

Instead, they concluded, the fires are primarily caused by dry conditions exacerbated by <u>climate change</u>. And as long as severe droughts continue, so will wildfires, regardless of beetle populations, the scientists determined.

The paper's findings are similar to those reached by University of Wisconsin researchers in 2010. That research team used NASA satellite data to identify large swaths of beetle-killed forests near <u>Yellowstone</u> National Park. The team compared maps of recent fires with the maps of beetle-killed forests.

They were surprised to learn large fires did not appear to occur more often or with greater severity in forest tracts with beetle damage. In fact, in some cases, beetle-killed forest swaths seemed less likely to burn because the fire stalled out in the <u>dead trees</u> that had lost their needles and branches.



The common link between beetles and fire wasn't what they had assumed - beetle-killed trees stoking fire - but something else: climate change. Warmer, drier weather was fueling both <u>drought</u> and beetle populations.

After combing through hundreds of scientific studies, another team of scientists has reached a similar conclusion, that beetle-killed trees don't necessarily stoke crown fires. They, too, concluded that depleted stands of beetle-killed trees might pose less, not more, risk of crown fire because of gaps caused in the <u>forest canopy</u> as branches drop. And the scientists found that drought, not beetle damage, was the real fire risk.

"It's natural enough to look at a landscape that is covered with trees recently killed by bark beetles and, therefore, worry about fire risk," said Dominik Kulakowski, assistant professor of geography and biology at Clark University in Massachusetts and a co-author on the Natural Areas Journal paper.

"But if you look into the long-term ecology of these forests, there is a high fire risk under drought conditions, even when the trees are green and the landscape looks beautiful. Conversely, if we are not in drought conditions, the actual risk of wildfire is going to be fairly low, regardless of the effect of <u>bark beetles</u>."

Further, beetle damage can have the effect of thinning forests, reducing the ability of crown fires to spread.

"If you look at a forest that was affected by beetle outbreak five or 10 years ago, you are talking about something like trying to set fire to a row of telephone poles; there is less to carry the fire," Kulakowski said.

The authors of the Natural Areas Journal paper, including another scientist from Colorado State University, also found that as long as



severe droughts persist, so will the risk of wildfire - beetles or not - as forests dry out. Climate change poses the real threat to forest health because of both drought and warmer winters.

Beetle populations can flourish without a killing winter cold. Department of Natural Resources surveys have found more acres of bug-infested forests in Washington than in the past 40 years, with about a third of the state's forestland east of the Cascades at risk for die-off and tree damage from bugs and disease.

Of course, that could create more fuel on the forest floor, which could stoke ground fires, cautions Glenn Kohler, a forest entomologist with state DNR. "These things can cut both ways," he said.

Kohler cautioned that the understanding of causes and prevention of wildfire in the West is evolving: "The jury is still out."

Meanwhile, the best defense for homeowners living in wildfire country is to clear away combustibles near the home, Kohler said. "It's all about fuel, whether it's alive or dead, and if you reduce the amount of fuel, crown fires are less likely to happen."

Homeowners also are encouraged to thin trees around their property to ward off beetles by reducing competition among the trees, Kohler said.

Scott Black, of the Xerces Society, a Portland, Ore.-based nonprofit group dedicated to invertebrate conservation, is a co-author of the paper in <u>Natural Areas</u> Journal. He said the findings do sound a cautionary note on large-scale thinning operations on bark-beetle-killed trees as a way to control fire.

It won't solve the problem, he cautioned, and could do more harm than good by adding roads to forested areas and fragmenting habitat, or by



causing siltation in streams.

Kulakowski argued that picking the right tool for the job also is the best use of limited money and staff. "The reality is that, if our goal is to protect homes and communities, we have limited resources, and the best way is removing flammable material from the immediate vicinity. If you do this to every single home in the western U.S., you will end up treating a much smaller area than if you go after these bark-beetle outbreaks."

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