

RESOURCES:

Mountain pine beetles don't cause more forest area to burn in wildfires - study

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Responding to warmer, drier conditions, mountain pine beetles have killed millions of acres of trees in the western United States since the late 1990s. In their wake, the native pests leave swaths of forest fading from red to ghostly gray as they die, leading many to fear these forests are more likely to burn in a wildfire.

But a new study, published yesterday in *Proceedings of the National Academy of Sciences*, contradicts this widely held belief, concluding that the total area burned in forest fires across the West each year between 2002 and 2013 was not affected by the mountain pine beetle outbreak.

The researchers looked at three major fire years -- 2006, 2007 and 2012 -- and compared Forest Service-derived maps of where beetle outbreaks occurred with maps of where forest fires burned.

They found that of the nearly 25 million acres hit by wildfire in those years, only 5 percent of the burned area overlapped with a recent mountain pine beetle infestation.

Managing forests affected by mountain pine beetles is a particularly difficult and expensive task for Western land managers, as there is little that can be done to stop the progression of the pests. The 2014 farm bill authorized the Forest Service to spend \$200 million annually through 2024 to treat infested forests.

The new study concludes, "Our results refute the assumption that increased bark beetle activity has increased area burned; therefore, policy discussions should focus on societal adaptation to the effects of the increasingly important driving factor: climate warming."

'Undisturbed forests burn just fine'

According to Sarah Hart, lead author of the new study and a postdoctoral researcher at the University of Colorado, Boulder, factors other than mountain pine beetles may be more powerful when it comes to forest fire risk.

she said. "Perhaps the alterations to fuels made by mountain pine beetle aren't as important as the weather conditions that are actually promoting wildfire."

Monica Turner, an ecologist at the University of Wisconsin, Madison, who was not involved in the research, said the study is a good reminder that many Western forests, such as those dominated by lodgepole pines, are naturally predisposed to burn under certain conditions, whether or not the trees were attacked by mountain pine beetles.

"There has long been this perception that when the beetles come through and kill trees ... people have just assumed that that would increase the likelihood of fire occurring," Turner said. "The undisturbed forests burn just fine -- that's their natural regime."

Turner recently co-authored a study in *PNAS* concluding that a mountain pine beetle outbreak also doesn't make it more difficult for a forest to recover after a major wildfire (*E&ENews PM*, Sept. 29, 2014).

Turner said there may be good reasons to remove beetle-killed trees from a forest, however. For example, the dead trees may be a hazard to people working in the forest or nearby infrastructure. Land managers also might be interested in salvaging for timber, she said.

But Turner said, "If the rationale is to change the fire regime, I don't think the evidence supports that."

Pine beetles may still spur dangerous blazes

Matt Jolly, a research ecologist with the Forest Service's Rocky Mountain Research Station who also was not involved with the study, said he didn't disagree with Hart's findings, but he stressed that there are other ways a beetle-killed forest might be considered a wildfire hazard.

"It's easy to conceive of two fires, one burning in a mountain pine beetle-affected stand and one burning in a healthy, uninfested stand -- when those two fires burn, they could easily burn the same amount of area, but the behavior of those two fires can be vastly different," Jolly said.

Jolly explained that fire behavior is influenced by several things, namely weather; a source of ignition like a lightning strike; and the condition of fuels, or trees and other plant material that might burn. Understanding how mountain pine beetles affect fuels and fire behavior is especially important for crews that might be trying to contain a blaze, he said.

"We know that mountain pine beetle-affected foliage not only ignites faster, but also it burns at a faster rate because of the lower moisture content," Jolly said. "It releases energy faster, and it essentially contributes to the development of an aggressive and rapidly spreading fire."

Hart said Jolly was right to point out the study doesn't come to any conclusions about wildfire behavior, saying more on-the-ground research is needed to understand how blazes act in beetle-killed forests.

"I would still say that we're a little uncertain about how fire behavior might be affected by mountain pine beetles," she said.

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