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Pine beetle outbreaks turn forests into carbon source

The Associated Press

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DENVER: An outbreak of mountain pine beetles in British Columbia is doing more than destroying millions of trees: By 2020, the beetles will have done so much damage that the forest is expected to release more carbon dioxide than it absorbs, according to new research.

The study, led by Werner Kurz of the Canadian Forest Service, estimates that over 21 years trees killed by the beetle outbreak could release 990 megatons of carbon dioxide into the atmosphere roughly equivalent to five years of emissions from Canada's transportation sector.

The outbreak has affected about 33 million acres, or about 51,562 square miles, of lodgepole pines. Bark beetles also have killed huge swaths of pines in the western United States, including about 2,300 square miles of trees in Colorado.

"When trees are killed, they no longer are able to take carbon from the atmosphere. Then when dead trees start to decompose, that releases carbon dioxide into the atmosphere," Kurz said.

That could exacerbate global warming that contributed to the outbreaks in the first place. Warmer temperatures have allowed beetles to survive farther north and at higher elevations.

"This is the kind of feedback we're all very worried about in the carbon cycle a warming planet leading to, in this case, an insect outbreak that increases carbon dioxide into the atmosphere, which can increase warming," said Andy Jacobson, a carbon cycle scientist for the National Oceanic and Atmospheric Administration in Boulder, Colo.

Boreal forests in Canada generally have been steady "carbon sinks," absorbing more carbon dioxide than they emit. Kurz's team expects the forest it studied to recover, but says that even by 2020 it may not be the carbon sink it previously was.

"This long-term effect, personally I find it frightening," said Jacobson, who was not involved in the study, which is being published this week in the journal Nature.

Using computer models, Kurz's team estimated that the maximum annual beetle impact in the study area in south-central British Columbia was 20 megatons of carbon. Forest fires in all of Canada produce an average of 27 megatons per year.

Kurz's team says the effect of pine beetles and other insects is significant and should be included in models of how much atmospheric carbon the world's forests can store.

"Many other insects also impact the forest carbon cycle," Kurz said. While outbreaks of other insects such as spruce beetles may be much smaller, their cumulative effect is significant, he said.

"If events such as this occur in other geographic parts of the world, then they really ought to be accounted for," Kurz said.

Correction:

Notes:



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