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UNBC studying pine beetle's effect on climate



Photo courtesy UNBC The view from a 33 m tall instrument tower reveals a pine forest almost completely attacked by mountain pine beetles.

By Arthur Williams
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Could the mountain pine beetle epidemic and the associated increase in logging be contributing to global warming?

UNBC researcher Art Fredeen believes it's likely and is conducting research – in partnership with UBC and the B.C. Ministry of Forests and Range – to determine how much of the greenhouse gas carbon dioxide will be put into Earth's atmosphere because of the beetle infestation.

"We're likely looking at a positive feedback loop. The mountain pine beetle has been favoured by these warm winters linked to climate change," Fredeen said. "[And] if trees are cut down or killed by the pine beetle, they don't absorb carbon anymore. Climate change may be a final result."

Two 100-foot-tall instrument towers near Crooked River Provincial Park and Kennedy Siding east of Mackenzie will monitor the change in carbon dioxide levels in standing, beetle-killed forests and clear-cut areas. The Kennedy Siding site was completely green last year when the first tower was built, but is now 95 per cent infected.

Four cubic metres of wood produces approximately one tonne of carbon dioxide if burned or allowed to decay, Fredeen said.

"The calculation I did suggests that all the dead pine – assuming you have 95 per cent kill – would amount to one year's worth of [greenhouse gases from] of all the fossil fuels burned in the province," he said. "In the absence of an absolutely catastrophic fire... that will be amortized over decades, as long as the trees are standing."

Logging the beetle wood will likely increase the rate of carbon dioxide release, he said.

"A lot of the products we make from trees have fairly short life spans – even lumber."

In addition, healthy forests consume between one and two tonnes of carbon dioxide per hectare per year. Fredeen said one critical part of the research project is to find out if new growth in beetle-killed and clear-cut areas match the carbon dioxide consumption of mature forests.

"I think the initial take on what's happening should be out in maybe a year," Fredeen said. "Then there is the longer-term big picture. That should be out in about two years."

Funding for the project was provided by Canadian Foundation for Climate and Atmospheric Science and the B.C. Forest Sciences program.

Fredeen is a forest ecophysiologicalist focused on studying how forest management and natural disturbances impact carbon storage in sub-boreal forests.

He has a doctorate from the University of California, Berkley and has been a professor at UNBC for 13 years.