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Study: Help Fight Global Warming Through Intensive Management of California Forests

Intensive management of some California forests could be a significant tool in the battle against global warming by offsetting the annual impact of carbon dioxide (CO₂) emissions from more than 877,000 cars a year, according to a new peer-reviewed study by researchers for Sierra Pacific Industries.

Carbon dioxide is a significant greenhouse gas and a major contributor to climate change. In their study, "How California's forests store carbon and improve air quality," the researchers found that over the next 100 years harvesting, planting and growing new trees across SPI's available land using intensive management approaches could ultimately and sustainably reduce CO₂ in the atmosphere by more than five million metric tons a year.

"That's because trees and other plants found in forests are proven, reliable, and cost-efficient factories that capture carbon dioxide currently in the atmosphere and store it for long periods of time as carbon, both in the forest and as products that come from our forests" said Cajun James, Ph.D., Sierra Pacific's research and monitoring manager. "Younger, faster-growing trees absorb the most CO₂ and give off the most oxygen.

"By following intensive management practices to harvest and replant most of our lands over the course of 80 to 100 years, we found we can actually increase the ability of our forests to store carbon by about 150 percent," she said.

Stored carbon remains "sequestered" in the wood, potentially for hundreds of years, even after harvest in the form of houses, furniture and other wood products.

Taking data from 2,586 separate and distinct plots in two watersheds, the researchers compared the carbon-sequestering capability of three common forest management techniques used in California, all of which meet California's Forest Practice rules.

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They also projected the results from a widely accepted theoretical "baseline" model in which the forest age distribution is in perfect balance, where harvest equals growth each year.

Researchers found the theoretical model potentially removed the most CO₂ from the atmosphere and that the intensive management technique came closest to matching it at the end of 80 years.

Another model, referred to as "selection management" in which trees are cut selectively from a forest, relies on natural regeneration rather than replanting after harvest. This scenario was found to generate the least carbon reduction over a century.

A "custodial management" approach results in the selective harvesting of about 10 percent of the forest trees every decade. This scenario is the least concerned with harvesting for wood products and results in significantly less carbon reductions than found under the intensive management scenario. This scenario also relies on natural seed fall for regeneration.

The "intensive management" scenario provides for harvesting and replanting about 1.25 percent of forest lands suitable for that approach every year. This is the approach that comes closest to the theoretical model and results in the greatest carbon reductions of the three scenarios currently employed in the state.

The study calls on policymakers to adopt forest management protocols that accurately assess forests and wood products total carbon and CO₂ sequestration over time, and encourages participation by forest landowners.

Sierra Pacific owns 1.6 million acres of private commercial forests in California – approximately 10 percent of the state's 16 million acres of commercial forest land.

"This study shows that by pursuing intensive management in less than 10 percent of California's commercial forests, we can offset the polluting impact of 877 thousand vehicles," says Mark Pawlicki, manager of government relations for Sierra Pacific. "That's a remarkable contribution to the effort to rein in global warming."

In addition to Dr. James, the authors of the study are consulting biometrician Dr. Bruce Krumland and Dr. Penny Eckert of Tetra Tech E.C.

The full study is available at Sierra Pacific's Web site, www.spi-ind.com, under the Our Forests Tab in the Research and Monitoring section.

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