

Land Use Changes May Help Oregon Mitigate Climate Change, Study Indicates

March 22, 2018

Oregon could eliminate an estimated 17 percent of carbon emissions from its forest ecosystems in the next century by increasing the amount of forested area and lengthening times between harvests, according to a new study from the University of Idaho, Oregon State University and EcoSpatial Services LLC.

A team of scientists — led by Beverly Law, a professor in the College of Forestry at OSU; [Tara Hudiburg](#), an assistant professor in U of I's Department of Forest, Rangeland and Fire Sciences in the College of Natural Resources; and U of I postdoctoral researcher Jeffrey Kent — analyzed how different forest management strategies in Oregon altered the annual net amount of carbon stored in the state's forests and net carbon emissions entering the atmosphere. Their study is titled "Land Use Strategies to Mitigate Climate Change in Carbon-Dense Temperate Forests" and was published this week in the journal [Proceedings of the National Academy of Sciences](#).

States like Oregon that plan to meet the goals set at the Paris climate accord must reduce their net greenhouse gas emissions. The study focused on Oregon's forests, which range from fire-prone woodlands to the wet coastal forests where trees can live for more than 800 years. The study incorporated decades of regional observations into a model of Oregon's forest ecosystems and estimated how different forest management strategies affected future emissions as the climate changes.

The study's model predicts that Oregon can increase the annual accumulation of carbon in its forests by 56 percent by 2100. To reach that number, Oregon would need to increase the land covered by forests, restrict harvest on public lands and increase the amount of time between harvests on private land. Specifically, the study calls for restricting harvest on public lands by 50 percent and lengthening harvest cycles on private land from approximately 45 years to 80 years to take advantage of the trees' prime growing years. Part of the reforestation process would include converting almost 314,000 acres — roughly five times the size of Klamath Lake — of grass cropland to Douglas fir, which could lower the state's annual irrigation needs by more than 8 trillion cubic feet by 2100.

"The forests can work for us — without much of an effort on our part — to help meet our greenhouse gas targets," Law said.

In addition, the proposed forestry management techniques would likely increase water availability and biodiversity of forest species. The study found that the conversion of half of the harvest residue, which is usually left on the forest floor, to bioenergy did not decrease emissions.

The study is part of a larger project that will evaluate how land use affects carbon storage across the Western United States. The models used by the study could be applied to other temperate regions.

"If Oregon is serious about reducing their carbon footprint, Oregon can use its forests to reduce their emissions and this is the best way to do it," Hudiburg said. "Let trees do what they do."

This project, "EaSm2 Forest Die-Off Climate Change and Human Involvement in Western North America," was funded under the USDA NIFA grant No. 2013-67003-20652. The total amount of federal funds received by U of I for the project will be \$517,975, which amounts to 100 percent of the total cost of the project.

Media Contacts:

Tara Hudiburg

Assistant Professor, Department of Forest, Rangeland and Fire Sciences, University of Idaho

208-885-7044

thudiburg@uidaho.edu

Beverly Law

Professor, College of Forestry, Oregon State University

bev.law@oregonstate.edu

Leigh Cooper

Science and Content Writer, University of Idaho

406-781-4969

leighc@uidaho.edu

About the University of Idaho

The University of Idaho, home of the Vandals, is Idaho's land-grant, national research university. From its residential campus in Moscow, U of I serves the state of Idaho through educational centers in Boise, Coeur d'Alene and Idaho Falls, nine research and Extension centers, plus Extension offices in 42 counties. Home to nearly 12,000 students statewide, U of I is a leader in student-centered learning and excels at interdisciplinary research, service to businesses and communities, and in advancing diversity, citizenship and global outreach. U of I competes in the Big Sky and Western Athletic conferences. Learn more at uidaho.edu