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Accounts,” logging practices in western Oregon are undermining the state’s climate adaptation goals by using an “accounting trick” that takes credit for carbon dioxide absorbed in forests conserved by nonprofits, small landowners and state agencies, giving the illusion that the industry is carbon neutral.

“Those big trees in those older forests are big sticks of carbon on the landscape,” said Dominick DellaSala, one of the report’s authors and president and chief scientist at the GEOS Institute. “Up to two-thirds of that carbon is released quickly to the atmosphere after accounting for stores in wood products.”

Planting new trees to replace the old doesn’t make up for that carbon loss, he said; “those young stands, for the first 15 years or so, are a source of carbon dioxide pollution.”

He explained that in an area where a young stand of trees is growing out of a recent logging event, more carbon is emitted into the atmosphere than the trees are able to take in. Discarded branches and needles, or logging slash, that’s been left on the ground decomposes rapidly, sending previously stored carbon up into the atmosphere. Additionally, carbon in the upper soil layer is released when the soil is disturbed during the operation, and carbon left over from photosynthesis is released during the night when the young trees respire.

“So it’s a cumulative process of release that you get in a younger stand, which is acting as a carbon source,” he said, “as compared to an older stand, which is acting as a carbon sink.”

Linc Cannon disagrees with DellaSala’s findings. Cannon is the director of forest resources and taxation at Oregon Forest and Industries Council, which represents the timber industry. He said he’s been looking at carbon in forests for about 10 years.

He points to the Intergovernmental Panel on Climate Change, which in 2007 stated in its summary on forestry, “In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fibre or energy from the forest, will generate the largest sustained mitigation benefit.”

He said the carbon stored in trees is already part of the “natural carbon cycle,” and will inevitably get released sooner or later, whether it be through decay, wildfire, or slash and biomass burning after logging.

Bigger, older trees experience accelerated growth and an increased ability to absorb larger amounts of carbon, according to the findings of a team of 38 international researchers published in science journal *Nature* in 2014. It’s a study that’s been cited as a reason for preserving old growth forests and leaving larger trees on the landscape.

Maguire, at OSU’s College of Forestry, said this study “was the talk of the town for a while. Some people vehemently disagreed; some agreed. It’s one thing to say I agree with that or I don’t agree, but it’s a different thing to say I have data that would suggest otherwise. The thing that really annoys me about my own profession is when people will claim something and you know darn well it’s



PHOTO BY EMILY GREEN

On a tour through Zena Forest, located in the central Willamette Valley, owners Sarah Deumling and her son Ben stop to tell their audience about how they look to the forest to tell them what trees will grow best. Sara explains that in this patch of woods, the Douglas fir trees are healthier because they are growing alongside maple, and the two species have a symbiotic relationship.

their opinion and they have no substantial data to back it up. That’s not the way we should be doing things. That just hurts our profession.”

The Oregon Global Warming Commission has convened a Forest Carbon Subcommittee to answer questions about the interplay between the carbon content of Oregon’s forests and current logging practices. This was initiated in response to the report that called out the timber industry for its carbon dioxide emissions.

The subcommittee is expected to have its report and recommendations to the governor and Legislature before the start of the 2017 legislative session, said DellaSala, who sits on the subcommittee.

The subcommittee is a mix of stakeholders, including forest and environmental scientists and timber industry representatives. Cannon, who sat on the initial committee that looked at forest carbon emissions for the commission, also plans to attend every meeting.

DellaSala said that with OSU environmental scientists Beverly Law and Mark Harmon at the table, he has “confidence that the best science will be used to assess carbon from forestry operations.”

Whether the group can agree on recommendations, he said, is yet to be seen.

Different way of doing business

Following a morning drizzle on a temperate afternoon in May, the owners of Zena Forest Products, Sarah Deumling and her son Ben Deumling, led a group of policymakers and other interested parties on a tour of their sustainable forest.

The Deumlings, like Hayes, have been experimenting with methods for producing timber in a way that incorporates ecological benefits.

Ben began the tour by explaining how his family manages its 1,300 acres in the Willamette Valley, just northwest of Salem.

While federally protected wilderness areas are the most biologically diverse and environmentally beneficial, they cost money to maintain rather than generating a profit, he said.

On the other end of the spectrum, a tree plantation is the least biologically diverse and beneficial to the environment, but it’s the most profitable.

The trick, he said, is to find a balance between the two, where the forest benefits commonwealth resources, such as clean

water and wildlife, but also generates a profit, making its upkeep viable for the landowner.

“We’ve been working on how to make it profitable for 30 years, and I think we’ve figured it out,” he said.

They harvest some Douglas fir, and older hardwood trees that they mill on sight, along with wood from neighboring forests. They also make their own high-end flooring and custom wood products.

But they don’t clear cut, they don’t compact the soil, and they use minimal amounts of herbicide, said Sarah Deumling, a grandmother who’s known to take her aggression out on invasive species with a small hand saw, hacking them down rather than spraying them with herbicide.

“If all you have is a row of trees because you sprayed everything else, you’ve killed the frogs, the slugs – and carbon is absorbed by this green stuff on the ground,” she said.

The Deumlings’ forest contains a wide variety of trees, including Douglas fir, oak and maple, and has a multilayer canopy – much like a native forest.

They spot harvest trees that have reached a particular value, cutting them down with chainsaws and pulling them out by chain so as not to disturb the forest floor with additional road building.

“Forests like this, healthy and diverse – here’s where I win,” she said. “They don’t blow over in a wind storm. When we get a heavy rain, the soil acts as a sponge because it’s not compacted, and insect infestations and disease don’t explode because they are usually species specific, and we have variety here.”

Plus, she added, “hardwoods don’t burn as much.”

Much of their forest management is based on a German model that Sarah calls “near to nature forestry.” Her husband was a forester in Germany before persuading his employers to invest in Zena Forest. He died in 1996, and now his wife and son own and manage the property, with hopes that the next generation of Duumlings will continue their legacy.

Hayes, who manages his own three forests using similar methods, said German foresters moved toward more sustainable practices after they ran into serious problems with the loss of soil productivity after years of intensive-harvest tree plantations – much like is being practiced on a large scale in Oregon.

The big shift

Hayes said foresters such as himself and the Duumlings are now looking to the next stage: Phase V, where that perfect balance of ecology and profit is achieved.

His company, Hyla Woods, is Douglas fir dominant and profitable, he said.

But a lot needs to happen before Phase V is viable for the industry as a whole.

While Sarah Duumlings may be able to hack away blackberry bushes with a hand saw, for a company like Weyerhaeuser or Stimson Lumber, it just isn’t practical or economically viable. Plus, Zena Forest enjoys the help of volunteers who believe in its owners’ mission.

“If it’s really going to work economically,”