

SCIENCE

# How Small Forests Can Help Save the Planet

By ERICA GOODE SEPT. 26, 2016

BIRKENFELD, Ore. — Eve Lonquist’s family has owned a forest in the mountains of northwest Oregon since her grandmother bought the land in 1919. Her 95-year-old father still lives on the 157-acre property. And she and her wife often drive up from their home just outside Portland.

But lately, Ms. Lonquist, 59 and recently retired, has been thinking about the future of her family’s land. Like many small-forest owners, they draw some income from logging and would like to keep doing so. But they would also like to see the forest, with its stands of Douglas fir, alder and cherry, protected from clear-cutting or being sold off to developers.

“For us, the property is our family’s history,” she said.

More than half of the 751 million acres of forestland in the United States are privately owned, most by people like Ms. Lonquist, with holdings of 1,000 acres or less. These family forests, environmental groups argue, represent a large, untapped resource for combating the effects of climate change.

Conserving the trees and profiting from them might seem incompatible. But Ms. Lonquist is hoping to do both by capitalizing on the forest’s ability to clean the air,

turning the carbon stored in the forest into credits that can then be sold to polluters who want or need to offset their carbon footprints.

“Trees are the No. 1 way in which carbon can be removed from the atmosphere and stored in vegetation over the long term,” said Brian Kittler, the western regional office director for the Pinchot Institute for Conservation, which has a program in Oregon to help the owners of family forests develop potentially profitable carbon projects.

Larger forests around the world have already been enlisted as carbon storehouses, through programs like the United Nations initiative for Reducing Emissions From Deforestation and Forest Degradation, or REDD, that encourage forest conservation worldwide in exchange for credits that can be sold on the global carbon markets.

Some large timber companies, including Potlatch, have also entered the markets, reducing their logging to levels below legal limits in order to receive millions of dollars in credits.

But so far, small-forest owners, even conservation-minded ones like Ms. Lonquist, have not rushed to embrace market-based carbon storage. Many do not even know it exists, and those who do often find the complexities bewildering.

Some owners believe, wrongly, that to enter the carbon markets they must forgo all income from logging. And some, reluctant to forfeit the ability to quickly turn their trees into cash, have balked at signing a contract to keep a forest standing for 15 to 125 years.

Even more daunting, the expense of bringing a forest to the carbon market — a process that involves taking an inventory of the trees, assessing the forest’s carbon content, estimating future growth, and submitting to several levels of auditing — has been so high that it would eliminate any profit for most small landholders.

Environmental organizations like the Pinchot Institute and the Nature Conservancy have for years been searching for a way around these hurdles by educating landowners about the markets’ potential for generating income and finding ways to decrease the costs.

“Traditionally, your only tool to generate revenues has been periodic timber harvest,” said Josh Parrish, director of the Nature Conservancy’s **Working Woodlands program**, which is working with the owners of private forests in Pennsylvania and Tennessee. “The nice thing about carbon is essentially people are being paid to improve forest management.”

In fact, if small-forest owners can get past the barriers, the carbon markets can be profitable, providing an initial flush of money and then regular yearly payments in much smaller amounts.

The carbon credits from Ms. Lonquist’s forest could bring an estimated \$235,000 over the first six years, and about \$6,000 a year after that, said Kyle Holland, the managing director of Ecological Carbon Offset Partners, a California firm that helps small-forest owners enter the carbon markets.

Ms. Lonquist and her family could still log on a limited basis, as long as they stuck to a plan for managing the forest and maintained a steady level of carbon storage through the forest’s continued growth.

The economic case for private owners entering the carbon markets is likely to get stronger. Forests, especially in areas like the Northwest, where trees grow tall and thick, tend to draw higher prices than many other conservation measures. And with last year’s **Paris climate pact**, some analysts expect carbon prices, now about \$3 to \$12 per ton in the United States, to rise.

Mr. Kittler said the conservation institute, which is subsidizing the preparation of Ms. Lonquist’s forest with the help of a grant from the Department of Agriculture and has partnered with Mr. Holland’s firm for the Oregon project, hoped it would encourage more private owners to enter the markets. Ms. Lonquist and other owners will be given a choice of selling credits on the global market or on California’s market, created under the state’s 2006 Global Warming Solutions Act.

Recent developments in forestry may help make the prospect more appealing by lowering the initial costs to landholders. Mr. Holland’s company, for example, has developed a digital tool — a smartphone equipped with a laser to measure distance and an inclinometer to measure height — that he believes will greatly reduce the

expense of conducting a forest inventory, which typically costs \$40,000 to \$100,000 or more, depending about the amount of land.

With the specialized smartphone, landholders can take an inventory themselves, photographing and measuring the diameters and heights of their trees. The photos and data are sent to the company's office in California, where an expert forester goes through the images, identifying the species and checking for damage to the branches or crowns, among other things. Probability models are used to calculate the amount of carbon stored in the forest.

The mathematical proofs developed by the company have been submitted to a scientific journal, Mr. Holland said.

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Using traditional methods, a forester conducting an inventory averages three or four forest plots per day and can spend months completing an assessment at a cost of \$350 a plot, he said. But Logan Sander, a forester who used the smartphone to inventory Ms. Lonquist's forest and recently demonstrated it for two visitors, said he was averaging 30 to 35 plots a day, with the entire job taking only a week to complete.

Individual forest owners who sign up for Mr. Holland's service pay a \$75 application fee and receive the smartphone. If, after conducting an inventory, they choose to move forward with the carbon project, they pay the company \$1,350 to complete the process.

Some small properties do not store enough carbon to make even that effort worthwhile. The price of carbon, Mr. Holland said, has to be \$10 or more per ton "to make it pencil out" for the owner. And novel methods like Mr. Holland's still need approval from the companies that verify forest inventories or serve as official market registries.

But Jessica Orrego, the director of forestry for the American Carbon Registry, said such advances might be the key to bringing in small-forest owners.

"We're fully supportive," she said. "We're advocates of innovation. We think it's extremely important in the carbon market."

Ms. Lonquist, who owns the forest here with two brothers and her wife, Lynn Baker, is still considering whether entering the carbon markets would make sense for her family.

The commitment — 125 years if the credits are sold in the California market — gives her some pause, she said.

"That's well beyond our lifetime, and that's a commitment that goes with the property," she said.

She can imagine, though, what she might be doing 20 years from now.

"Maybe I'd just be at home growing carbon," she said. "And maybe that's the best thing."

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