Forest conservation can have greater ecological impacts by allowing sustainable harvesting

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New research at the University of Missouri has found that forest owners at greater risk of illegally cutting trees from their forests prefer to participate in conservation programs that allow sustainable timber harvesting. The findings of the study, conducted by Francisco Aguilar and Phillip Mohebalian, could be used to craft conservation contracts that are more likely to be accepted by forest owners and might succeed in preventing deforestation and forest degradation.

Ecuador contains approximately 2 percent of the Amazon basin, but hosts 44 percent of the Amazon's bird species and enormous tree diversity. To prevent deforestation and degredation, Ecuador's national government developed the Socio Bosque program, a conservation program that pays private forest landowners to protect their forests.

"Money has an effect, but it's not everything," said Aguilar, associate professor of forestry at the School of Natural Resources in MU's College of Agriculture, Food and Natural Resources. "We found that among high-risk forest owners, long-term contracts that allow sustainable timber harvesting are more agreeable. On the other hand, forest owners at lower risk preferred programs that have short-term contracts and offer greater financial incentives."

In 2016, a report by the Brazilian government found that the rate of deforestation in the Amazon had increased by 29 percent on top of a 24

percent rise the year before, indicating a rapidly accelerating pace of forest loss. Still, the rate remains lower than it had been more than a decade ago, before anti-deforestation policies were introduced. In spite of these laws, primary forests continue to be logged illegally, causing forest degradation.

Aguilar and Mohebalian administered surveys to owners and surveyed forests in Ecuador over the course of nine months. The participants were presented with hypothetical contracts based on the Socio Bosque program. Landowners preferred contracts with longer durations and allowances for controlled timber harvesting, even if those contracts offered less monetary compensation. They also preferred contracts issued by local governments or non-governmental organizations (NGO's) compared to those issued by the Ecuadorian national government.

An important aspect of the study was its focus on forests at a high risk of deforestation, as owners of these forests are traditionally less likely to participate in conservation programs.

"Conservation programs often are biased toward protecting areas that are ecologically important, but have lesser economic value in alternative land use options," said Mohebalian, who worked on the research while completing his doctorate at MU. "Low-risk forest owners often are more willing to receive money in exchange for enrolling their forests in conservation, because they would have conserved their forests even without the additional incentives. We wanted to evaluate how a conservation program could reverse that bias, so we looked at the design of conservation contracts that appeal to forest owners who are most likely to cause deforestation or degradation in the future."

Based on the results of the study, Aguilar suggests more private funding from corporations and international organizations would help ease the financial burden on the Ecuadorian government, especially since

landowners often view outside organizations as more economically reliable than the central government. This likely accounts for their preference for contracts administered by NGO's and local governments.

The study, "Design of tropical forest conservation contracts considering risk of deforestation," was published in Land Use Policy.

More information: Phillip M. Mohebalian et al. Design of tropical forest conservation contracts considering risk of deforestation, *Land Use Policy* (2017). DOI: 10.1016/j.landusepol.2017.11.008

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