

Incentives for carbon sequestration may not protect species

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Paying rural landowners in Oregon's Willamette Basin to protect at-risk animals won't necessarily mean that their newly conserved trees and plants will absorb more carbon from the atmosphere and vice versa, a new study has found.

The study, to be published this month in the *Proceedings of the National Academy of Sciences*, analyzed hypothetical payments that were given to landowners to voluntarily take their acreage out of production for conservation. Scenarios conserving different types of land were also developed. The study then examined the relationship between the absorption of carbon, a contributor to global warming, by trees and plants and the protection of 37 different types of animals under each of these scenarios and payment schemes.

"The main thing we found is that if you want to conserve species, that policy might not be compatible with carbon sequestration," said co-author Andrew Plantinga, a professor in the Department of Agricultural and Resource Economics at Oregon State University. "On the other hand, if you want to get carbon out of the atmosphere, it's not clear that will be good for species."

He and seven others wrote the report: "Efficiency of Incentives to Jointly Increase Carbon Sequestration and Species Conservation on a Landscape."

The take-home message, he said, is this: "When you think about policies

targeted to private landowners, government has to be careful about how it does this because it may achieve one objective but at the expense of something else."

The researchers created five scenarios in which different types of land were taken out of production in the Willamette Basin, which consists of a flat valley floor and the surrounding forested Coast and Cascade ranges. They applied three different budgets to each scenario. In the first budget, an entity (for example, the government or a land trust) had \$1 million to give to landowners each year. The other annual budgets were for \$5 million and \$10 million.

In the first scenario, all landowners were eligible for the financial incentives. The result was that the precarious animals, which excluded fish and insects, increased as much or more than they did in the four other scenarios. Also, the amount of atmospheric carbon was about the same as it would have been if the landowner hadn't accepted payment.

In the second scenario, only land whose natural state is prairie, oak savanna, wetland or late-succession conifer forest was eligible for the money. The result was that species increased but in one model, the carbon level decreased from what it would have been without the financial inducement.

In the third scenario, only owners who can significantly increase the forest coverage on their land were eligible for the incentive payments. Consequently, the amount of carbon removed from the atmosphere increased but the at-risk animals hardly increased, and in one model they even decreased.

In the fourth scenario, only land dense with streams was eligible for payments. There was a negligible increase in species and carbon sequestration.

In the last scenario, payments were given to parcels deemed important for the conservation of terrestrial vertebrate species in the basin. The animals increased but carbon stayed about the same.

Based on these findings, the study concluded that the conservation of species generally is maximized when landowners who accept financial incentives restore habitats that are relatively rare on the current landscape. Carbon sequestration, on the other hand, is maximized when landowners who accept payments restore forests.

Source: Oregon State University

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