Restoring biodiversity in deforested ranches one tree at a time

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Taken on a silvopastoral farm in Guaviare, Colombia. Credit: Alliance of Bioversity and CIAT / N.Palmer

Argote said that one general conclusion is that minimizing fragmentation and enhancing connectivity in Amazon human-modified forested

landscapes is key for conservation. A "one tree at a time" approach is needed to engage local communities, and co-design with them conservation agreements to protect natural habitats within their properties and introduce new patches of natural habitats to connect and preserve those small forest relics that they still have on their farms.

"We don't have hard evidence about if there has been an uptick in the small, medium and big mammals, but we can say that this type of action/implementation strategies has increased the movement of birds, particularly migratory birds," Argote said.

"At first, it was not easy to implement restoration initiatives in this region, with a strong vocation for extensive livestock. However, in recent years several national and local governmental and non-governmental institutions (such as the Universidad de la Amazonia [UNIAMAZ] and CIPAV) have done enormous work with the communities of environmental awareness and have generated evidence of the potential of the Silvopastoral Systems as a strategy for re-conversion of these highly fragmented ecosystems. For example, we know Silvopastoral Systems (1) reduce[s] heat stress in livestock, which improves animal performance and well-being, (2) can increase wildlife diversity and improve water quality, (3) protect the soil from water and wind erosion, while adding organic matter to improve soil properties and (4) increases the productivity and well-being of local communities," Argote said.

Co-designed research boosts regional restoration efforts

This research is part of the Alliance of Bioversity and CIAT's Sustainable Landscapes for the Amazon (SAL) project, which aims to provide national environmental authorities and local farmers with scientific evidence on the role of more sustainable land management alternatives play in adapting to climate change, while improving other ecosystem services and the socioeconomic benefits for farmers.

"When it came to the vegetation, the research team knew which species and how to combine them, including native species from the Alliance seed bank," she said adding that legumes, pastoral forage and woody trees that could be harvested for timber were part of the tailoring of solutions to each farm.

"At each farm, the farmer helped design the area; everything was co-designed," Argote said. "We also signed conservation agreements with the farmers that they are going to protect remnant forests and the vegetation at the water's edge."

More information: Karolina Argote et al, One Tree at a Time: Restoring Landscape Connectivity through Silvopastoral Systems in Transformed Amazon Landscapes, *Diversity* (2022). DOI: 10.3390/d14100846

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