New maps highlight habitat corridors in the tropics

February 3 2014

Tropical forest in Martinique near the city of Fond St-Denis. Credit: Wikipedia

A team of Woods Hole Research Center (WHRC) scientists created maps of habitat corridors connecting protected areas in the tropics to incorporate biodiversity co-benefits into climate change mitigation strategies. Drs. Patrick Jantz, Scott Goetz, and Nadine Laporte describe their findings in an article entitled, "Carbon stock corridors to mitigate

climate change and promote biodiversity in the tropics," available online in the journal *Nature Climate Change* on January 26.

Climate change and deforestation are changing tropical ecosystems, isolating organisms in protected areas that will change along with climate, threatening their survival. Nearly every animal and plant species requires travelling some distance for nutrition, reproduction and genetic diversity, but few conservation or climate mitigation strategies take the connections between conserved lands into account. These habitat corridors are essential for longer-term biodiversity conservation, while also providing opportunities for climate change mitigation in the form of carbon sequestration and avoiding emissions from deforestation.

According to lead author Dr. Jantz, "Maintaining connectivity of forest ecosystems provides ecological and societal benefits ensuring long-term species survival and providing room for ecosystems to reorganize in response to climate change and protecting ecosystem services that people depend on." Co-author Dr. Goetz sees corridors as "avenues for migration of flora and fauna" needed for their survival "under the climate change we're already committed to."

The team used a high-resolution data set of vegetation carbon stock (VCS) to map 16,257 corridors through areas of the highest biomass between 5,600 protected areas in the tropics. For Dr. Jantz, "the VCS corridor approach informs global frameworks for land management based climate change mitigation by showing which forests contain significant carbon stocks and are important for tropical biodiversity."

Part of the study focused on the Legal Amazon, where the team used economic and biological information combining species richness and endemism with economic opportunity costs and deforestation threats to prioritize optimal corridors. For Dr. Goetz, "Conserving tropical forests ultimately requires prioritizing the services they provide to people in a

local setting. Identifying lands locally valuable for agriculture or other high-value uses, considering biodiversity and the threat of deforestation, our analysis provides both maps and a framework for realistic conservation planning."

Dr. Laporte adds, "Because it is unlikely all remaining tropical forests can be protected, the corridors defined by this study provide a way to prioritize lands in the context of the multiple benefits of tropical forest conservation."

According to Dr. Thomas E. Lovejoy, a Senior Fellow at the United Nations Foundation, "This represents a significant step towards the kind of integrated planning and management essential for sustainable development."

More information: Jantz, P., S. Goetz, and N. Laporte. 2014. Carbon stock corridors to mitigate climate change and promote biodiversity in the tropics. *Nature Climate Change*. DOI: 10.1038/NCLIMATE2105

Provided by Woods Hole Research Center