

Study shows efforts in mangrove conservation and restoration paying off

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Mangrove forests, such as the one in Sundarbans, Bangladesh, are long known for storing large amounts of carbon in the trees and soil. Credit: Samiul Mohsanin

In recent years, mangrove deforestation has raised alarms about increased carbon emissions into the atmosphere. Research led by the

Singapore-ETH Center shows that the net amount of carbon released from deforestation between 1996 and 2016 globally is only 1.8%, or less than 0.1% of global CO₂ emissions. The new approach of quantifying net losses of mangrove carbon stocks is the first to take into account mangrove expansion through conservation, restoration and natural establishment.

The study is the first to take into account the expansion of mangroves—through natural and human forestation—in quantifying net losses of [mangrove carbon](#) stocks. Previous estimates only considered the negative effects of deforestation, but not the possibility that new mangroves would grow. The new method combines improved global datasets on mangrove coverage and carbon densities with new research quantifying how much carbon is typically lost when a mangrove becomes deforested. Using the new method, carbon loss estimates are 66% lower than previous models.

The low net loss of mangrove carbon stocks was surprising, according to Dr. Dan Richards, from the Singapore-ETH Center, who led the research. He is currently the principal investigator of the Natural Capital Singapore project. "Mangrove deforestation is often portrayed as an ongoing crisis, but our study, among recent pieces of work, shows that there has actually been considerable success in slowing down deforestation around the world." In fact, in some parts of Mexico and Myanmar, there was more carbon stored in mangroves in 2016 than in 1996.

Despite the apparent success of conservation efforts in protecting mangroves from deforestation, there is no room for complacency. "Mangroves hold some of the highest densities of carbon in any ecosystem. Effective conservation and restoration still require considerable management effort and investment to maintain these low rates of net loss," said Dr. Benjamin Thompson from Monash

University, who co-authored the study. Moreover, lessons learned from mangrove [conservation](#) and restoration activities could be extended to benefit other ecosystems. "Tropical peatlands are another ecosystem with large stocks of carbon that have seen high rates of [deforestation](#) in recent decades," says Dr. Lahiru Wijedasa from the National University of Singapore, who is the final author of the study.

More information: Daniel R. Richards et al, Quantifying net loss of global mangrove carbon stocks from 20 years of land cover change, *Nature Communications* (2020). [DOI: 10.1038/s41467-020-18118-z](https://doi.org/10.1038/s41467-020-18118-z)

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