

# Indigenous control of land leads to better reforestation outcomes

June 5 2023, by Justin Jackson

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Researchers at the Australian Catholic University, Australia; Columbia

University, New York; and the University of Massachusetts teamed up to investigate secondary forest growth in previously deforested areas. In their paper, "Collective property rights lead to secondary forest growth in the Brazilian Amazon," published in *Proceedings of the National Academy of Sciences*, the researchers found that collective property rights with local stakeholders in Indigenous territories lead to higher reforestation rates.

The team compared secondary [forest](#) growth on land inside Indigenous territories to growth on land outside. The Indigenous-controlled forests experienced a 2.21% to 5% increase in growth with trees that were 2.2 to 2.8 years older.

A secondary forest is the regrowth after an area has been cleared of its original forest vegetation, whether through agricultural clearing, logging or natural fire. Secondary forests have been getting increased attention, partly due to the rampant loss of original forests and because they are a natural source of carbon sequestration.

In the increasingly talked about, lethargically acted-upon effort to counter [global warming](#), nations around the globe have individually committed to protecting, planting, and reforesting land as part of climate change agreements. The commitments add up to an area of new forest larger than the United States.

The Brazilian Amazon is home to 726 Indigenous territories covering 13.8% of Brazil. There are more than 250 Indigenous groups speaking more than 150 distinct languages. Four hundred eighty-seven Indigenous territories have established rights to their territories, while most others are in the process of establishing their legal control.

The study compared Indigenous controlled territories to those seeking legal control and non-Indigenous controlled areas. Secondary forest

cover was calculated using MapBiomas annual land use images. The authors stacked pixel-level land use between 1986 and 2019 to identify pixels switching from nonforested to forested land use classification.

A geographic regression discontinuity design was employed, comparing mapped pixels that fall right inside of Indigenous lands to pixels that fall just outside of the borders. This allowed researchers to compare similar lands under dissimilar control.

The data shows that the Indigenous territories with Indigenous legal control have the highest rates of secondary forest recovery. The researchers suggest that collective property rights were a significant factor in the growth as it allows local stakeholders to make decisions about how their land is used.

Even if the planet was not facing carbon-induced climate change, deforestation negatively affects land quality by increasing [soil erosion](#), decreasing soil nutrients, causing loss of springs and natural waterways, damaging habitats, and endangering local species. Secondary forest regrowth can rebound land from many of these effects, mitigate biodiversity loss, and provide new habitats for threatened species.

The Amazon rainforest is also an intensely dense location of biological diversity that has been a significant source of pharmaceutical compounds used around the world. About 40% of pharmaceuticals are derived from plants and most of those were discovered in the Amazon with more likely yet to be discovered.

**More information:** Kathryn Baragwanath et al, Collective property rights lead to secondary forest growth in the Brazilian Amazon, *Proceedings of the National Academy of Sciences* (2023). [DOI: 10.1073/pnas.2221346120](https://doi.org/10.1073/pnas.2221346120)

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Citation: Indigenous control of land leads to better reforestation outcomes (2023, June 5)  
retrieved 20 March 2024 from <https://phys.org/news/2023-06-indigenous-reforestation-outcomes.html>

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