

New study finds logged tropical forests are surprisingly vibrant and need protection

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Mount Santubong, Sarawak, Borneo. Credit: Unsplash/CC0 Public Domain

Logging affects many of the world's tropical forests, and such forests are often considered degraded because they have lost vegetation structure, biomass and carbon stocks. But there has rarely been analysis of whether the ecological health and functionality of these ecosystems are similarly degraded.

A new study by researchers at the University of Oxford, finds that

logged rainforests are treasure-troves of healthy ecological function and should not be written off for oil palm plantations.

Lead author Professor Yadvinder Malhi, Professor of Ecosystem Science at the Environmental Change Institute at the University of Oxford says, "We were very surprised by how much more energy was flowing through the logged forests compared to the old-growth forest, and that it was flowing through the same diverse range of species found in the old-growth forest. We had not expected the logged forest to be so ecologically vibrant."

The research, "Logged tropical forests have amplified and diverse ecosystem energetics," published in *Nature* tackles this issue through the perspective of ecosystem energetics—the cascade of energy from plants to mammals and birds through the food they consume.

The research team combined more than 36,000 tree, root, and canopy measurements with [population data](#) on 248 [vertebrate species](#) from old-growth forests through logged forests to oil palm plantations in Borneo.

Remarkably, the study found that the ecological energy flow through the logged forest was 2.5 times greater than in the [old-growth forest](#), before collapsing in the oil palm plantations. The logged forest supported similar or greater densities of almost all bird and [mammal species](#).

The authors emphasize that old-growth forests still hold immense ecological value and high carbon stocks, and need to be left intact where possible. But this study questions the labeling of logged forests as "degraded" when they are so ecologically vibrant. Such labeling can mean these logged forest landscapes are seen as lower priorities for protection and are cleared to make way for agriculture such as oil palm.

Professor Malhi concludes, "In [tropical forests](#), and probably in many

other ecosystems, not everything that looks broken, is broken."

The study required meticulous counting of almost all bird and mammal species in the remote study sites, as well as measuring the growth rates of trees and their leaves and roots.

Dr. Matthew Struebig, co-author and Reader in Conservation Science at the University of Kent, added, "In the [early morning](#), ornithologists listened out for birds, while evenings were spent catching bats in special traps. Meanwhile, trail cameras and cage traps over 77,000 combined nights provided much-needed information on secretive and elusive mammals, from tree shrews, sun bears and elephants."

Dr. Terhi Riutta, co-author, Post Doctoral Researcher at the University of Exeter, said, "This work would not have been possible without the many years of detailed fieldwork by our partners and research assistants in Malaysia, often in very tough conditions."

Professor Robert Ewers, co-author at the Department of Life Sciences at Imperial College London, added, "Ecologists often just study one aspect of an ecosystem, like its trees or its birds. This study shows how meticulous and joined-up research across a wide range of species can yield surprising and important new insights into the nature of [ecosystems](#) in a human-dominated world."

More information: Yadvinder Malhi, Logged tropical forests have amplified and diverse ecosystem energetics, *Nature* (2022). [DOI: 10.1038/s41586-022-05523-1](https://doi.org/10.1038/s41586-022-05523-1).
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