

Single-largest biodiversity survey says primary rainforest is irreplaceable

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As world leaders prepare to discuss conservation-friendly carbon credits in Bali and a regional initiative threatens a new wave of deforestation in the South American tropics, new research from the University of East Anglia and Brazil's Goeldi Museum highlights once again the irreplaceable importance of primary rain forest.

Working in the north-eastern Brazilian Amazon the international team of scientists undertook the single-largest assessment of the biodiversity conservation value of primary, secondary and plantation forests ever conducted in the humid tropics. The study was partly funded by the UK Government's Darwin Initiative and their findings are reported in the latest edition of the *Proceedings of the National Academy of Sciences*.

Over an area larger than Wales, the UEA and museum researchers surveyed five primary rain forest sites, five areas of natural secondary forest and five areas planted with fast-growing exotic trees (Eucalyptus), to evaluate patterns of biodiversity.

Following an intensive effort of more than 20,000 scientist hours in the field and laboratory, they collected data on the distribution of 15 different groups of animals (vertebrates and invertebrates) and woody plants, including well-studied groups such as monkeys, butterflies and amphibians and also more obscure species such as fruit flies, orchid bees and grasshoppers.

"We know that different species often exhibit different responses to deforestation and so we sought to understand the consequences of land-use change for as many species as possible," said Dr Jos Barlow, a former post-doctoral researcher at UEA.

At least a quarter of all species were never found outside native primary forest habitat – and the team acknowledges that this is an underestimate.

"Our study should be seen as a best-case scenario, as all our forests were relatively close to large areas of primary forests, providing ample sources for recolonisation", said Dr Barlow.

"Many plantations and regenerating forests along the deforestation frontiers in South America and south-east Asia are much further from primary forests, and wildlife may be unable to recolonise in these areas.

"Furthermore, the percentage of species restricted to primary forest habitat was much higher (40-60%) for groups such as birds and trees, where we were able to sample the canopy species as well as those that live in the forest under-storey".

These results clearly demonstrate the unique value of undisturbed tropical forests for wildlife conservation. However, they also show that secondary forests and plantations offer some wildlife benefits and can host many species that would be unable to survive in intensive agricultural landscapes such as cattle ranching or soybean plantations.

"Although the protection of large areas of primary forest is vital for native biodiversity conservation, reforestation projects can play an important supplementary role in efforts to boost population sizes of forest species and manage vast working landscapes that have already been heavily modified by human-use" says Dr. Carlos Peres, who leads the UEA team.

But, when carbon-credits from Reduced Emissions from Deforestation and Degradation (REDDs) are tabled for the first time at the Bali meeting next month, decision makers should beware of seeing fast-growing exotics such as eucalyptus as a carbon sink solution to the world's emissions problems. If agreed upon by world leaders REDDs offer an extraordinary opportunity to generate funds to support the long-term protection of large areas of

intact forest habitat.

Pristine forests are home to over half of all terrestrial species in the world and their loss would impoverish the planet. “Far better to save primary forest from deforestation in the first place,” says Carlos Peres. “That way we maximize both the biodiversity and carbon value of whole landscapes.”

Source: University of East Anglia

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