

Exotic tree plantations can disturb local wildlife

June 7 2022



Coprophanæus lancifer, the largest dung beetle species in the study region.
Credit: Hannah Griffiths

Initiatives using non-native tree species can impact tropical insects in neighboring forests, according to an international study.

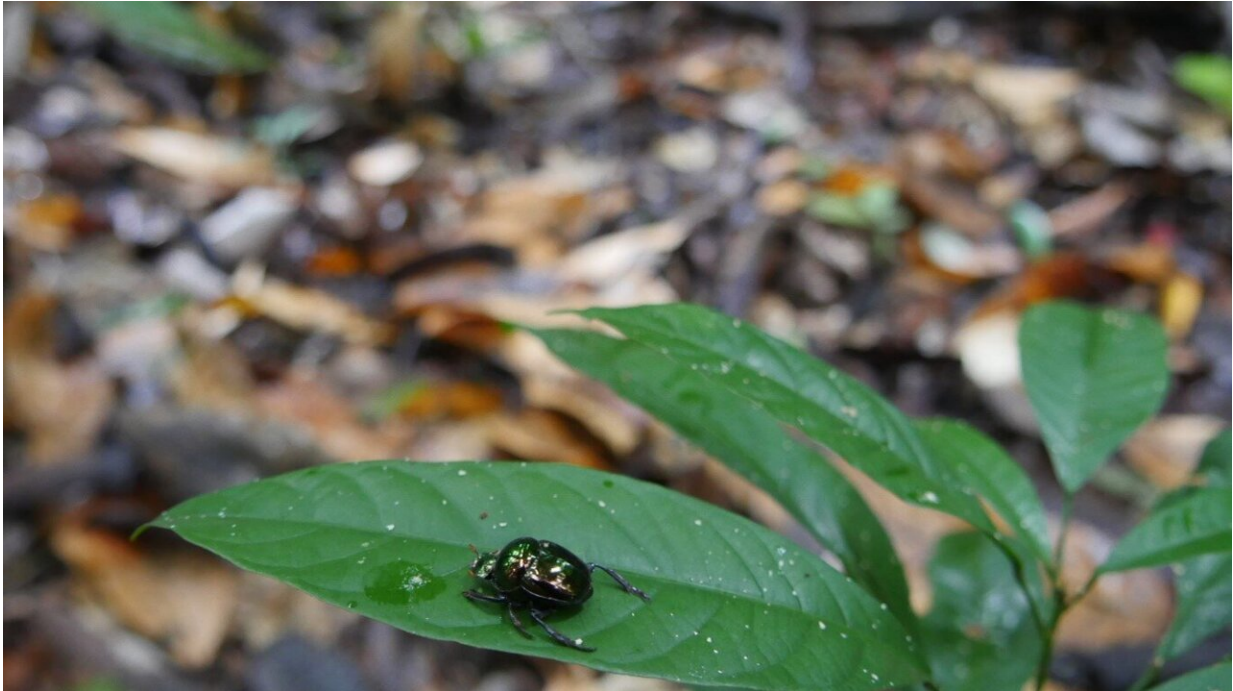
Scientists at the University of Bristol and Federal University of Western Pará, in Brazil have found that Eucalyptus [plantation](#) edge effects radiates up to 800 meters into the interior of nearby Amazonian forests, when applied to ecologically important dung beetles.

As the world seeks to mitigate human-induced [climate change](#), planted forests have become widespread restoration strategy across the globe. However the findings, published today in *Forest Ecology and Management*, suggest that while well-intentioned, exotic tree plantations can have a wider influence on the native biodiversity of hyperdiverse tropical forests.

In ecology, edge effect research investigates how biological populations or communities change at the boundary of two or more habitats.

To further understand the edge effect, the team of scientists traveled to the Amazon Rainforest and collected over 3,700 dung beetles from 49 species to evaluate how Eucalyptus plantations affect the insect biodiversity in neighboring Amazonian forests.

"Our findings for dung beetles offer new insights into the importance of considering how proximity to exotic tree plantations can affect tropical [forest](#) biodiversity," said Dr. Filipe França of Bristol's School of Biological Sciences, and co-supervisor of the lead author.



Canthon fulgidus, a roller-dung beetle species in the study region. Credit: Dr Filipe França

He said: "Importantly, edge effects varied across dung beetle responses and were species-specific. For example, we found more dung beetle species far away from Eucalyptus plantations, but some species also thrived and had higher abundances closer to plantation edges."

This means that some [dung beetles](#) may be more sensitive to changes in forest environment closer to exotic tree plantations than others edge-affiliated and generalist species.

"Understanding multi-[species](#) responses to anthropogenic disturbances is crucial to tackle the current biodiversity crisis and our findings are vital for forest managers and conservation planners aiming to maintain forest-specialist biodiversity in native ecosystems across the tropics," explained

Professor Rodrigo Fadini from the Federal University of Western Pará.

"Edge effects from exotic tree plantations and environmental context drive dung beetle assemblages within Amazonian undisturbed forests" by Maria Katiane Costa, Filipe França, Carlos Brocardo, and Rodrigo Fadini in *Forest Ecology and Management*.

More information: Edge effects from exotic tree plantations and environmental context drive dung beetle assemblages within Amazonian undisturbed forests, *Forest Ecology and Management* (2022).

Provided by University of Bristol

Citation: Exotic tree plantations can disturb local wildlife (2022, June 7) retrieved 7 May 2024 from <https://phys.org/news/2022-06-exotic-tree-plantations-disturb-local.html>

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