

RESILIENCE OF TROPICAL ECOSYSTEMS – FUTURE CHALLENGES AND OPPORTUNITIES

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Editors

Chris J Kettle and Ainhoa Magrach
Ecosystem Management
Department of Environmental
System Science
Universitaetstrasse 16, CHN G75.1
ETH Zurich
8092 Zurich Switzerland

Cover Design

Wendy Martin

Front cover photo

Hirzi Luqman

Back cover photo

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Concept & Layout

roman.tschirf@gmail.com

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TRANSIENCE OF LOGGING ROADS IN CONGO BASIN RAINFORESTS

Fritz Kleinschroth^{1,2}, Sylvie Gourlet-Fleury², Plinio Sist², John R. Healey¹

¹Bangor University, School of Environment, Natural Resources and Geography, Bangor, UK, fritz.kleinschroth@cirad.fr

²CIRAD, Biens et services des écosystèmes forestiers tropicaux, Montpellier, FR, fritz.kleinschroth@cirad.fr

Logging roads are considered to be drivers of tropical forest degradation by fragmenting the forest and opening it for human and biological invasions. However, most secondary logging roads are abandoned after a short period of timber harvesting. Little is known about long-term forest recovery on and around these roads and about the persistence of their impacts on biodiversity. We used a time series of satellite images dating back 27 years to determine the time when roads had been abandoned after logging. We then sampled roads of different ages in seven logging concessions in South-East Cameroon. At each site we carried out plot-based vegetation inventories on a gradient from the former roadway up to 50 m into the adjacent logged forest. On the roadway we identified a clear succession trajectory, with pioneers being gradually replaced by non-pioneer-light-demanders and shade-bearers. Abundance of regenerating commercial timber species was 10-times higher on the roadway than in the closed forest, although the abundance of all other groups of species showed an opposite trend. Tree species richness was lower on the roadway than in the forest but it increased with time after abandonment. The invasive herb *Chromolaena odorata* occurred on recently abandoned roads but disappeared almost entirely within 10 years. Roads abandoned more than 10 years ago no longer seemed to be penetrable for any type of motorized traffic. Our results highlight the role of logging roads as transient elements in the landscape with road-related impacts on forest ecosystems being less persistent than expected. Moderate openings of canopy and exposure of soil can even facilitate the establishment of light-demanding timber species. Invasive weeds do not obstruct this process. Poachers seem to lack resources to systematically clear roads and therefore cannot use them with motorcycles for a long time. Given these patterns of fast vegetation recovery, we advocate use of greater effort to fully obliterate roads after use instead of reserving them to be re-opened in subsequent harvest cycles.

Merian Award Applicant