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ABSTRACT SUBMISSION TEMPLATE

The Ecological Response of Lianas to Long-Term Tropical Forest Fragmentation

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Understanding forest dynamics within remnant fragments of tropical forest is a vital priority if we are to manage them effectively for biodiversity conservation. Lianas (woody vines) are well known to interact antagonistically with trees, and if they flourish in older forest fragments they may promote detrimental ecological impacts and fragment degradation. We assessed liana assemblages in remnant rainforests of the Atherton Tablelands of north Queensland, Australia, which were fragmented up to a century ago. We surveyed 10 remnant forest patches ranging from 17 to 920 ha in area, and five large intact-forest control sites. A total of 75 sampling plots (20 × 20 m) were established, with five plots per site. All tree and liana individuals ≥10 cm and ≥1 cm dbh (diameter at breast height), respectively, were enumerated, measured and permanently tagged. A total of 5130 tree and liana stems were recorded. We evaluated the relationship of fragment area and environmental and disturbance parameters to liana abundance and biomass. It is apparent that lianas often increase dramatically in abundance in historically fragmented forests, especially those with large amounts of forest edge or recurring canopy disturbance. Where lianas are hyper-abundant they alter tree-community composition and reduce forest carbon storage. If lianas benefit markedly from rising atmospheric CO_2 levels or other global-change phenomena, then they will become even more dominant in fragmented forests of the future.