

# FOREST FRAGMENTATION DRIVES ATLANTIC FOREST OF NORTHEASTERN BRAZIL TO BIOTIC HOMOGENIZATION

**Theme:** Impacts of Local and Global Changes on the Atlantic Rain Forest

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Our aim was to examine whether the tree flora of the Atlantic forest of northeastern Brazil has experienced detectable taxonomic homogenization via the proliferation of native pioneer species in response to habitat loss and fragmentation. Biotic homogenization was examined across the Atlantic forest of northeast Brazil, i.e. a 56,000 km<sup>2</sup> piece of tropical forest and a distinct centre of species endemism in South America. We assessed a dataset consisting of 5,122 tree records and compared the similarity of tree floras from 12 semi-natural sub-regions of the Atlantic forest between two time periods: pre-1980 (plant records between 1902 and 1980), and post-1980 (between 1981 and 2006). To understand the mechanisms leading to biotic homogenization (1) tree floras were ordered (via non-metric multidimensional scaling – NMDS) by date (pre/ post 1980) based on species occurrence and frequency, (2) NMDS axes were regressed against the proportion of those species that increased their occurrence post-1980 (i.e. the winner species), and (3) patterns of geographic distribution and frequency of particular life-history traits were examined across winner species and a control group. Tree floras across the Atlantic forest became ca. 20-40% more similar to each other post-1980, but patterns of species similarity were also influenced by between-plot geographical distance. NMDS ordination clearly segregated pre- and post-1980 floras with a clear signal of floristic convergence. Furthermore, winner tree species were largely composed of short-lived and small-seeded pioneer species that exhibit wide geographic distributions. Our results suggest that tropical forest biotas are susceptible to taxonomic homogenization (i.e. increasing levels of similarity) in the context of severe human-disturbance via the proliferation of particular groups of native species comprised mainly by ecologically-plastic, generalist species. We are thus extending the concept of homogenization