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Avian Responses To Amazonian Land-Use Change

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The 6.2 million km^2 of Amazonian forests play host to the greatest expression of tropical biodiversity on the planet and are imperilled by the world's highest rate of forest destruction - nearly 6000 km^2 per year. Here we present data on avian responses to habitat loss, subdivision and degradation from three different deforestation frontiers (Alta Floresta, Paragominas and Santarem/Belterra) of varying landscape histories in the eastern Brazilian Amazon. Although we found patch size to be the most important predictor of species richness, forest structural integrity (patch quality) was crucial in determining species composition, with degradation driving a predictable loss of forest-dependent species and increase in more disturbance-tolerant, geographically wide-ranging species. Forest bird species richness was correlated with changes in tree species richness, suggesting that both structural integrity and tree diversity are important in providing the conditions for high species packing. Although older secondary forests played host to many disturbance intolerant forest bird species, younger secondary forests were found to be relatively depauperate and dominated by edge forest species. Using a combination of published inventories, specimen records and documented sight-records dating back to the turn of the 19th century, we are also able to investigate historical changes in the land bird communities of eastern Pará state, Brazil and found abundant evidence for local extinctions of many forest-dependent species taking place over a century ago. Additional work on deforestation modelling coupled with systematic reviews suggest that the importance for avian conservation of south-eastern Amazonia has been underestimated, with vocal and phylogenetic data revealing a widespread underestimate of restricted-range species, many of which will qualify as threatened on the global Red List.