**Is there a longitudinal gradient in species richness in the tropics? A case study using the family Graphidaceae**

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Graphidaceae is the largest family of tropical lichen-forming fungi and is also among the best studied. In this study, we compare species richness across a longitudinal gradient, from the Neotropics through the African and eastern Paleotropics, focusing on well-studied countries such as Mexico, Costa Rica, Colombia, Brazil, Madagascar, India, Sri Lanka, Thailand, the Philippines, Papua New Guinea, Japan, and Australia. We assembled a global list for species of Graphidaceae reported for these countries and reconciled taxonomic and nomenclature differences for each entity. Sampling bias was corrected by employing niche distribution modeling. We then corrected total richness per country by log area and biome diversity to arrive at globally comparable richness scores. As a result, we detected two longitudinal richness gradients: whereas species richness overall and mean species richness per genus appears to be higher in the Neotropics, genus or biotype richness appears to be higher in the eastern Paleotropics. Using species composition, we applied cluster analysis and multidimensional scaling to arrive at a structured global metacommunity map for tropical Graphidaceae.

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