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Centres of Diversity and Narrow Endemism for Flowering Plants in the Mata Atlântica and their Potential Threats

CLAUDIA RAEDIG¹, SVEN LAUTENBACH²

¹*Cologne University of Applied Sciences, Institute for Technology and Resources Management in the Tropics and Subtropics, Germany*

²*Helmholtz-Center for Environmental Research - UFZ, Department for Computational Landscape Ecology, Germany*

Abstract

The importance of the Mata Atlântica as centre of extraordinary species richness and endemism is well-known, but distribution patterns for many angiosperm species are still unknown. In view of the ongoing degradation and destruction of the last remaining forest fragments in the Mata Atlântica, detailed knowledge about distribution patterns, in particular of endangered species, is essential. However, the tropics in general are under-collected and the taxonomical identification of the specimen collected is often difficult. Furthermore, heterogeneous sampling effort, concentrating on few sampling locations and selected plant species, obstructs the detection of broad-scale distribution patterns. In this study, we used an interpolation approach (at 1° grid resolution) which is adjusting for heterogeneous sampling effort, to analyse monographic data of 667 angiosperm species occurring in the Mata Atlântica, including non-tree species. We identified two diversity centres, one large centre covering the coastal belt between the western tip of Paraná and the centre of Espírito Santo, and a second centre south of Bahia. We further located centres of narrow endemism, which are characterised as areas holding many species with a narrow distribution (less than five adjacent 1° grid cells). These centres of narrow endemism are located along the Serra do Mar mountain range, stretching from São Paulo to Rio de Janeiro, in the centre of Espírito Santo, in Minas Gerais and south of Bahia. The combination of maps of narrow endemism and maps of protected areas as well as maps of forest and population development scenarios recognises areas most threatened by anthropogenic impacts.

Keywords: Angiosperms, interpolation approach, Mata Atlântica, narrow endemism, protected areas, species richness