Evolutionary approach for mapping biodiversity priorities in Brazil

Ubirajara Oliveira*[1], Adriano Paglia[1], Antonio Brescovit[2], Claudio Carvalho[3], Daniel Silva[4], Daniela Teixeira[5], Felipe Leite[6], João Batista[1], João Barbosa[5], João Stehmann[1], John Ascher[7], Marcelo Vasconcelos[5], Paulo Marco[8], Peter Löwenberg-Neto[9], Priscila Dias[10], Viviane Ferro[11], Adalberto Santos[1], and Britaldo Filho[1]

[1]Universidade Federal de Minas Gerais (UFMG) – Brazil
[2]Instituto Butantan (IB) – Brazil
[3]Universidade Federal do Paraná (UFPR) – Brazil
[4]Instituto Federal Goiano (IFGoiano) – Brazil
[5]Independent researcher (NI) – Brazil
[6]Universidade Federal de Viçosa (UFV) – Brazil
[7]National University of Singapore (NUS) – Singapore
[8]Universidade Federal de Goiás (UFMG) – Brazil
[9]Universidade Federal da Integração Latino-Americana (UFILA) – Brazil
[10]Universidade Federal de Lavras (UFL) – Brazil
[11]Universidade Federal de Goiás (UFG) – Brazil

Abstract

We have built a model to map biodiversity priorities across Brazil that integrates evolutionary approach with a set of biodiversity variables. The model uses a comprehensive dataset (circa of 500 thousand geo-records) on vertebrates, arthropods and angiosperms from which we derived indices of beta-diversity, species richness, area of endemism, endemicity, phylogenetic endemism and phylo-beta-diversity. Results indicate that 10% of the Brazil has high biological relevance for conservation with relatively good sampling effort. These areas encompass 87% of the species and 92% of the evolutionary lineages contained in our dataset. Sensitivity analyses show that the use of few biodiversity variables or only one group of organisms (vertebrates for example) is not sufficient for identifying biodiversity conservation priorities. Yet, vast areas of Brazil, especially in the Amazon, still lack biological inventories, making it impossible to compare their relevance in relation to other areas where biological knowledge is high. Some regions with high biological relevance are located in areas of deforestation pressure or of highly fragmented forest remnants, making them either a conservation or a restoration priority.

Keywords: Biodiversity conservation priorities, evolutionary conservation

*Speaker