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GEOGRAPHIC POSITION OF SAMPLE GRID AND REMOVAL OF UNCOMMON SPECIES AFFECT MULTIVARIATE ANALYSES OF DIVERSE ASSEMBLAGES: THE CASE OF ORIBATID MITES

A POSIÇÃO GEOGRÁFICA DA GRADE DE COLETA E A REMOÇÃO DE ESPÉCIES INCOMUNS AFETAM ANÁLISES MULTIVARIADAS DE ASSEMBLEIAS DE ÁCAROS ORIBATÍDEOS

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Large-scale environmental monitoring programs can be made more cost-effective through shortcuts such as reduction of sampling effort and the use of surrogates. We revisited a large-scale dataset composed by 161 species recorded in 72 plots distributed over an 8 X 8 m sampling grid in the rainforest. Samples of litter and soil were collected and mites were extracted with a Berlese-Tullgren apparatus. We delimited smaller 5 X 5 km grids in 16 possible positions within the larger grid. We evaluated which fraction was more important to explain environmental and spatial patterns in the species composition: known environmental or spatial filters representing unknown causes of aggregation. We used soil clay content, litter quantity, soil pH, number of trees, and distance to the nearest stream as environmental predictors. The spatial filters were generated using Moran Eigenvector mapping through the Principal Coordinates of Neighbor Matrices technique. To evaluate the influence of these fractions on the species composition, we used partial Redundancy Analysis. Using Principal Coordinates Analysis, we evaluated if reduced matrices, discarding less-frequent species, could identify the relationships captured with the complete dataset. The effect of environmental variables on oribatid-mite community composition was low, and each smaller grid position produced different results. Soil clay content and pH were the main factors associated with oribatid-mite distributions. The effects of unknown spatial patterns were greater than the environmental ones. Independently of the grid position, similar results were obtained for analyses with all oribatid-mite species, to the results obtained from analyses of only the most frequent species. Sets of more frequent and easily identifiable species proved to be a reliable surrogate for the complete assemblage in monitoring programs.
Keywords: biodiversity surrogate; distribution pattern; grid position; monitoring species.
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