



Conference Abstract

Drivers of diversification in a continental radiation of ground beetles (Coleoptera: Carabidae: Lachnophorini)

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Abstract

Understanding the factors responsible for spatial heterogeneity in species diversity is a major challenge in evolutionary biology. The Amazon Basin harbors the highest species richness for a variety of groups, yet whether the Amazon is a cradle or museum of diversity continues to be an open debate. In this study, we evaluate the phylogenetic relationships of an assemblage of beetles found in seven different habitats within a lowland tropical rainforest in the Ecuadorian Amazon in order to evaluate if the patterns of diversification are consistent with an adaptive radiation or represent the accumulation of species in proportion to time since divergence from a common ancestor. We combined molecular sequence data with morphometric and ecological data to examine the relationship between species diversification and disparity in eco-morphological traits. Phylogenetic analyses identified 8 clades of lachnophorines. A lineage through time analysis revealed a constant rate of divergence. Geometric morphometric analyses based on 46 landmarks revealed significant morphological shape variation among species within clades that correlated with habitat occupancy. Species with a slender pronotum tended to occur in open environments, such as sandy beaches adjacent to water, whereas species with shorter, broader pronotum and elytra inhabited leaf-litter and arboreal habitats. In addition, we found evidence of morphological convergence related to habitat use indicating that

Lachnophorini radiation in the Amazon-Basin is accompanied by local ecological adaptation.

Keywords

Morphological disparity, adaptive radiation, rates of phenotypic evolution, geometric-morphometric, ecological speciation.

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