



Halffter's Mexican Transition Zone, beetle generalized tracks, and geographical homology

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Abstract

Aim Halffter's Mexican Transition Zone is a complex area in which the Neotropical and Nearctic regions overlap. We test its existence and extension through a track analysis of beetle taxa, and discuss the implications of geographical homology.

Location The area analysed corresponds to the Caribbean subregion, which occupies Mexico, Central America, north-western South America, and the Western Indies.

Methods The panbiogeographic or track analysis was based in the comparison of 134 individual tracks belonging to different beetle taxa (species and supraspecific groups). A Parsimony Analysis of Endemicity (PAE) was applied in order to classify the areas by their shared taxa according to the most parsimonious cladogram, and the nested sets of areas were represented as generalized tracks.

Results Two generalized tracks resulted: (1) northern generalized track: comprising the Sierra Madre Occidental, Sierra Madre Oriental, Transmexican Volcanic Belt, Balsas Basin and Sierra Madre del Sur biogeographic provinces; and (2) southern generalized track: comprising the Chiapas, Mexican Gulf, Mexican Pacific Coast and western Panamanian Isthmus biogeographic provinces.

Main conclusions The generalized tracks obtained correspond broadly to Halffter's Nearctic and Mesoamerican patterns, respectively; however, in contrast to Halffter's Mesoamerican pattern, the southern generalized track extends further north through the lowlands of the Pacific and Mexican Gulf coasts.

Keywords

Biogeography, Coleoptera, homology, Mesoamerica, Neotropics, panbiogeography.

Resumen

Objetivo La Zona de Transición Mexicana propuesta por Halffter es un área compleja donde se sobreponen las regiones Neártica y Neotropical. Contrastamos su existencia y extensión a través de un análisis de trazos de taxones de coleópteros, y discutimos las implicaciones de la homología geográfica.

Ubicación El área analizada corresponde a la subregion Caribeña, que abarca México, América Central, el noroeste de América del Sur y las Antillas.

Métodos El análisis panbiogeográfico o de trazos se basó en la comparación de 134 trazos individuales pertenecientes a diferentes taxones de coleópteros (especies y grupos supraespecíficos). Se aplicó un Análisis de Parsimonia de Endemismos (PAE) para clasificar las áreas de acuerdo con el cladograma más parsimonioso con base en sus taxones compartidos, y se representaron los conjuntos anidados de áreas como trazos generalizados.