Influence of the Ecuadorian Andes on the genetic and morphometric diversity of *Micronycteris megalotis* (Chiroptera: Phyllostomidae)

Erick D. Acosta-Luzuriaga


The Andes mountain range represents the most important geographic feature in South America. The presence of this mountainous range has facilitated the radiation of several taxonomic groups, including bats. Furthermore, the Andes mountains constitute an important geographic barrier for the dispersion and distribution of species inhabiting this area, which makes them an ideal place to carry out phylogeographic studies. The Little Big-eared Bat *Micronycteris megalotis* is a widely distributed species in the Neotropics, with populations on both flanks of the Ecuadorian Andes. The main objective of this study was to determine the influence of the Equatorial Andes on the morphometric and genetic structure of eastern and western *M. megalotis* populations. A total of 57 skulls and skins deposited in the collections of Instituto Nacional de Biodiversidad (INABIO), Escuela Politécnica Nacional (MEPN), and Museo de Zoología de la Pontificia Universidad Católica del Ecuador (QCAZ) were measured for morphometric analyses. Additionally, 57 Cytochrome Oxidase I sequences deposited in Genbank covering the species geographic distribution were used for genetic analyses. Morphometric variation was analyzed using Principal Component and Discriminant Analyses. To evaluate genetic variation, genetic distances were calculated, and a Bayesian Inference method was used to estimate phylogenetic relationships among populations, and a clade probability tree was elaborated. Morphometric and genetic variation was correlated with geographic distances using Mantel tests to corroborate the isolation by distance hypothesis. Results suggest that morphometric variation was present among populations, with western populations being bigger than eastern specimens. Although, there was a genetic variation between western and eastern populations, this variation was small (< 5% divergence) to consider them as distinct groups. Phylogenetic analyses showed that sequences from western Ecuador are similar to those from Mexico and Nicaragua than to populations in eastern Ecuador, suggesting a cis-trans division of the populations. This variation can be explained by the isolation of distance hypothesis only for genetic data, while morphometric variation may be related to different environmental conditions related to the presence of the Andes, which is not spatially structured. Based on preliminary results, it can be presumed that the Andes mountains have promoted an initial process of differentiation in the populations of *M. megalotis* present on eastern and western flanks of the Andes. Nevertheless, a larger sample is required to corroborate this hypothesis. Finally, results highlight dynamic nature of these populations, showing change across time and space, partially due to the influence of the Andes, underscoring its importance in shaping patterns of diversity in the Neotropics.

**Keywords:** Andes, bats, Cytochrome Oxidase I, genetic variation, isolation by distance, morphometric variation.