



Conference Abstract

High altitude endemic carabid beetles as biogeographic indicators: a case study in equatorial Andes

Pierre Moret[‡], Alvaro Barragán[§], Jérôme Murienne[‡], Arnaud Faille[|], Mauro Gobbi[¶]

[‡] CNRS, Toulouse, France

[§] Pontificia Universidad Católica del Ecuador, Quito, Ecuador

[|] State Museum of Natural History Stuttgart, Stuttgart, Germany

[¶] Museo delle Scienze, Trento, Italy

Corresponding author: Pierre Moret (moret@univ-tlse2.fr)

Received: 31 Jul 2019 | Published: 31 Jul 2019

Citation: Moret P, Barragán A, Murienne J, Faille A, Gobbi M (2019) High altitude endemic carabid beetles as biogeographic indicators: a case study in equatorial Andes. ARPHA Conference Abstracts 2: e38693.

<https://doi.org/10.3897/aca.2.e38693>

Abstract

The tropical Andean páramo ecosystem emerged after the final uplift of the Cordilleras, leading to the rapid radiation of species-rich clades and to the diversification of narrow-range endemic taxa in isolated high-altitude island-like environments. This study focuses on the wingless carabid species that inhabit the so-called superpáramo, i.e. the upper belt of this ecosystem, above 4200/4300 m a.s.l. The low dispersal ability of these cold-adapted ground beetles gives the opportunity of an exceptionally fine-grained analysis of endemism patterns. Two hypotheses are tested: (i) that most of these endemic carabids have evolved by niche shift, from local ancestors in the montane forest, rather than by long range dispersal from cool regions north or south, and (ii) that the high level of microendemism observed in several genera is the result of recent speciation events, related to the volcanic and tectonic history of the Andes.

More than 14,000 carabid beetles were collected above 4200 m on 12 superpáramo “sky islands” in central and northern Ecuador, using standardized sampling methods. COI sequencing was performed to strengthen species delimitations, and a further molecular study was conducted for phylogeographic analyses in two highly diverse genera:

Oxytrechus (Trechini) and *Dyscolus* (Platynini). Of a total of 89 species, 65 species are microendemic, i.e. restricted to only one isolated superpáramo. The first results of this ongoing project are presented with a highlight on the extinction risk caused by the current climate change.

Keywords

Carabidae, Andes, Ecuador, biogeography, high altitude environment, endemism

Presenting author

Pierre Moret

Presented at

19thECM oral communication