

# Phylogeography of the Chilean red cricket *Cratomelus armatus* (Orthoptera: Anostostomatidae) reveals high cryptic diversity in central Chile

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## Abstract

We analysed the phylogeographical history of the red cricket *Cratomelus armatus* (Orthoptera: Anostostomatidae) from central and southern Chile using 248 mitochondrial DNA COI sequences. Phylogenetic analyses revealed multiple lineages that were highly structured geographically. The two main lineages (north and south) were parapatric, with a contact zone at the latitude of Concepción (36.6° degrees S), and have an estimated divergence time of 2 Mya. Deep divergence and a species delineation analysis suggest that these lineages should be considered as different species. The north lineage exhibited four well-supported subclades whose divergence times occurred during the Largest Patagonian Glaciation between 0.84 and 1.1 Mya. Signals of demographic expansion in southern areas indicate a more recent history for the south lineage (southern Chile). A positive correlation between latitude and genetic distances between populations suggests postglacial colonization of southern areas. Bayesian estimations of population size over time placed a bottleneck at 150 kya. Our results support a role for glaciations in shaping contrasting patterns of genetic diversification in *C. armatus*. More intensive past glaciations may have promoted diversification in central Chile, whereas subsequent glaciations, with stronger impacts in southern areas, could have constrained diversification in southern Chile. We discuss the taxonomic implications of our findings and hypothesize a contrasting role for glaciation on patterns of genetic diversification in central and southern Chile.

## Palabras clave

**Palabras clave de autor:** [cryptic diversity](#); [glaciations](#); [high genetic diversity](#); [mitochondrial DNA](#); [multiple refugia](#)

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