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Geographical distribution of *Discocyrtus prospicuus* (Arachnida: Opiliones: Gonyleptidae): Is there a pattern?

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Abstract

The environmental constraints determining the distribution of the harvestman *Discocyrtus prospicuus* in Argentina and Uruguay are addressed. Habitat observations across the entire range (Río de la Plata-Atlantic coast area; Córdoba sierras; northwestern Argentina) are provided. Previous published localities (verified for accuracy), new records and bioclimatic predictors were used to characterize the species bioclimatic profile and to build predictive distributional models with BIOCLIM and MAXENT algorithms. Relative importance of each bioclimatic variable in the final models is assessed. It was determined that *D. prospicuus* is primarily a gallery forest dweller, with preferred climate temperate to temperate-cold; variables related to thermic uniformity rank among the most influential. Results consistently support the alleged yungas-Mesopotamian disjunction; but the link between the Río de la Plata and Córdoba sierras areas shows disagreement between methods (predicted continuous with BIOCLIM, separate with MAXENT). It is suggested that the need for constant air humidity (favored in the core area by its proximity to large rivers and the seacoast) and competitive exclusion with congener *D. testudineus* may represent additional limiting factors. Some observations on the species tolerance to human activity are also given.

Key words: Neotropical Region, disjunction, habitat, ecological niche modeling, bioclimatic variables, MAXENT, BIOCLIM

Introduction

Much too often, knowledge on geographical distribution arises as a mere collection of point records (Peterson 2006), normally as systematic revisions and cataloging accumulate. In spite of being an important aspect of the study of biodiversity, distributional knowledge resulting from such an incidental approach cannot be regarded as other than provisory. Although this is the case for Neotropical harvestmen, most species having low number of records available (Kury 2003), this taxon has been since long appreciated for demonstrating zoogeographical patterns, frequently matching vegetation-based ecoregions (Ringuelet 1959; Acosta 2002; Pinto-da-Rocha *et al.* 2005). One remarkable feature of harvestmen distribution is the striking degree of endemicity shown by many species in some areas (Pinto-da-Rocha *et al.* 2005), which might reveal their close dependence on environmental conditions, as generally assumed, and the historical factors involved (Giribet & Kury 2007). However, as noted elsewhere, not all harvestmen are narrowly distributed endemics, as some species spread over thousands of square kilometers, provided the suitable environment is large enough (Acosta 2008).

Large distributions are typical for harvestmen assigned to the "Mesopotamian area" in Argentina (Acosta 2002). In this country, the Mesopotamia is strictly the geographical region between two large rivers, Paraná and Uruguay. As an opiliofaunistic concept, the region extends further westwards: some 150–200 kilometers into the Chaco ecoregion in the North, and up to the central Sierras in the South (Acosta 2002). Three species of *Discocyrtus* Holmberg, 1878 (Gonyleptidae) have been considered to be emblematic examples of this region (Acosta 1995, 2002): *D. dilatatus* Sørensen, 1884, *D. testudineus* (Holmberg, 1876) and *D. prospicuus* (Holmberg, 1876). While the two former species have quite similar ranges, fairly covering the Mesopotamian area (Ringuelet 1959; Acosta

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