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Discovery and description of nymphal stages of a heterozerconid mite (Acari: Mesostigmata: Heterozerconidae) from coastal forest litter in southeastern São Paulo State, Brazil*

GERALD W. KRANTZ[1] & GILBERTO J. DE MORAES[2]
[1]*Department of Zoology, Oregon State University, Corvallis, OR 97331 USA;*
E-mail: krantzg@science.oregonstate.edu
[2]*Departamento de Entomologia e Acarologia, ESALQ-USP, Piracicaba, São Paulo, Brazil;*
E-mail: gjmoraes@esalq.usp.br

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Abstract

Free-living mesostigmatic mites collected in coastal forest litter samples in southeastern Brazil were determined to be the nymphal stages of an unknown species of Heterozerconidae, a family whose adults are typically associated with millipedes (Diplopoda) and, less commonly, with squamate reptiles. This is only the second published record of immature heterozerconids and the first positive determination of field-collected heterozerconid nymphs for which the adults have yet to be identified. The protonymph and deutonymph are described, unique morphological characters are discussed, and inferences are made as to the possible identity of the adult stage and its host.

Key words: Heterozerconidae, Diplopoda, Squamata, Brazil

Introduction

Routine examination of litter from a coastal forest near Cananéia, São Paulo State, Brazil, in 2000 and 2001 resulted in the recovery of immatures of a mesostigmatic mite that initially defied our attempts to identify them. Live specimens examined under a stereoscopic microscope were easily distinguished from other mites in the samples by several very long, distally sinuous marginal and dorsal setae that were arched over the idiosoma as if in a protective mode, and by the relatively long first pair of legs provided with some long setae (Fig. 1). The presence of an interdigital membrane on the chelicerae and acrotarsi on legs I led us to conclude that the unknown nymphs represented a species of the early derivative Heterozerconidae, a family whose immatures were previously unknown. The appearance shortly afterwards of a landmark paper by Gerdeman & Klompen (2003) describing both immature and adult stages of a new genus and species of heterozerconid mite, *Narceoheterozercon ohioensis* Gerdeman & Klompen, from the nest of a spirobolid millipede in Ohio, USA, confirmed our conclusion.

Heterozerconid mites are remarkable in a number of ways. Their unusual morphology sets them apart from other Monogynaspida to the extent that they are typically grouped in a separate cohort, the Heterozerconina, a taxon which they share with the equally bizarre, centipede-associated family Discozerconidae (Lindquist *et al*., 2009). Like many antennophorine Trigynaspida, adult heterozerconids may be associated either with invertebrate or vertebrate hosts. In fact, some believe that the Heterozerconina may be the sister group of the Trigynaspida *s. lat*. (Norton *et al*., 1993), although DNA sequencing data suggests that the Heterozerconidae and Discozerconidae are two of five families comprising the suborder Sejida (Lekveishvili & Klompen, 2004).

Among their more exceptional morphological traits, adult Heterozerconidae possess paired posteroventral sucker-like adhesive discs that may be involved in host attachment (Gerdeman &

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