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Redescription of *Leptus kattikus* Haitlinger, 2009 (Actinotrichida, Parasitengona, Erythraeidae) and molecular identification of its host from DNA barcoding

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Abstract

A morphology-based redescription of *Leptus kattikus* Haitlinger, 2009, including re-examination of the holotype and supplemented with data of a series of specimens collected in Vietnam, is provided. Larvae at different levels of engorgement, all separated from one phasmid host, were examined. A polymerase chain reaction, conducted in order to amplify and sequence the DNA of parasitic larvae, resulted in molecular identification of the host species. This represents an alternative method of establishing the host identification for larvae which have already detached from the host prior to examination, and can therefore be employed in further studies of host spectrum.

Key words: *Leptus*, taxonomy, morphology, host identification, COI, Phasmida

Introduction

Parasitengona larvae are mostly known as protelean parasites associated with arthropods (mainly insects and arachnids) or vertebrates, whereas active postlarval forms have a predatory lifestyle. A relatively short parasitic phase, varying between 3 and 14 days, is known to occur in the majority of taxa (Wohltmann 2000); in some species parasitism can be followed by prolonged, non-parasitic contact with the host (Mąkol *et al*. 2009; Wohltmann 2000). The host remains unknown for more than 20% of terrestrial parasitengone species and for the vast majority of species the host spectrum should be re-appraised. Earlier data point to various degrees of host specificity. Both opportunists and specialists are likely to occur among closely related species (Gabryś *et al*. 2011; Łaydanowicz & Mąkol 2010; Mąkol & Felska 2011; Mąkol *et al*. 2012; Wohltmann 2000). The biased knowledge of the host spectrum results also from the deficiency of data on intraspecific variation of morphological characters of the parasite; descriptions are often based on single specimens. In this light, the application of procedures which would facilitate the identification of host spectrum seems to be crucial for studies of the biology of parasitengone taxa.

Thanks to the courtesy of Dr. D.V. Logunov, the Curator of Arthropods, The Manchester Museum, University of Manchester, we investigated a series of mites that were taken off a phasmid collected in Vietnam. We identified the mites as *Leptus kattikus* Haitlinger, 2009, a member of the genus comprising 275 nominal species (Mąkol *et al.* 2011). The species was described by Haitlinger (2009) based on single specimen collected from herbaceous plants in Nepal.

Here we provide extended characteristics of the mite species, containing the reappraised diagnosis and extending the knowledge of intraspecific variability of morphometric characters. Simultaneously, we present the results of the molecular examination of larvae, which aimed at DNA barcoding of the parasite but revealed the molecular ID of the host species.

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