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Madeira's ptyctimous mites (Acari, Oribatida)

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Abstract

In the material recently collected in Madeira, 16 species of ptyctimous mites have been found. A new species of *Austrophthiracarus rabacalensis* Niedbała sp. nov. has been described. The presence of *P. globosus* and *S.* (*R.*) *ortizi*, reported earlier from Madeira has not been confirmed, but *P. anonymus* and *P. montanus*, so far not reported from this island, have been found. All 16 species identified in the material from Madeira studied occur in the Palaearctic Region; four of them are endemites, seven occur in western Palaearctic, four are panpalaearctic, while one is a semicosmopolitan. Morphological analysis has revealed a high similarity of two endemic species of Madeira with two European species: *Steganacarus* (*Steganacarus*) *crassisetosus* is similar to *Steganacarus* (*Steganacarus*) *applicatus*, while *Steganacarus* (*Steganacarus*) *similis* to *Steganacarus* (*Steganacarus*) *spinosus*. DNA-barcode analysis using COI and D2 28S rDNA sequences confirmed the species status of these four species. The phylogenetic analyses of COI amino acid data and D2 28S rDNA sequences suggest a closer relationship between *S.* (*S.*) *crassisetosus* and *S.* (*S.*) *applicatus*, pointing to a great genetic distance between *S.* (*S.*) *spinosus* and the other species of *Steganacarus* (*Steganacarus*).

Key words: Steganacaridae, DNA barcoding, COI, D2 28S rDNA, molecular phylogeny, morphological analysis, new species

Introduction

The Madeira Archipelago and the other islands from Macaronesian Archipelago are of volcanic origin so their flora and fauna are a result of passive dispersion. The most probable colonisation route was from south-western Iberia and from Morocco (Bernini and Magari 1993).

The information on the oribatid mite fauna from Madeira are skimpy and have been presented in only a few papers. Willmann (1939) has proved the presence of 6 species and 1 subspecies of ptyctimous mites, and 2 of these species and 1 subspecies have been described as new to science. The types of these new species are not preserved (Bernini & Avanzati 1989). Bernini and Magari (1993) redescribed the species *Steganacarus similis* described by Willmann and reported the presence of one more species *Steganacarus* (*Rhacaplacarus*) *ortizi*. Pérez-Iñigo (1988) and Niedbała (2011, 2102) in joint works have reported the presence of all species known from Madeira.

The aim of this study is the identification of the ptyctimous mite species from recently obtained material from Madeira, present the current status of oribatid fauna there, and describe a new species. Moreover, on the basis of morphological and molecular data, the diagnoses of the other ptyctimous species described by Willmann (1939) are given together with a taxonomic comment.

Material and methods

Animal material. Material studied in this work comes from four soil samples collected in February 2012. In these samples the following species of ptyctimous mites were identified:

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