



Combined approach using morphology and ITS-sequences for description of three new species of *Macrocheles* (Acari: Macrochelidae)

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Abstract

Three new phoretic mites from France and Gabon are described. *Macrocheles lumareti* sp. nov. (from France) was collected on *Copris lunaris* (Coleoptera, Scarabaeidae). Both *M. bertrandi* sp. nov. and *M. ovoidalis* sp. nov. (from Gabon) were collected on *Stomoxys calcitrans* (Diptera). On the basis of morphological characteristics, *M. lumareti* and *M. bertrandi* were identified as belonging to the *M. glaber* and *M. muscaedomesticae* groups respectively. Genetic analyses using an ITS marker confirmed that *M. lumareti* belongs to the *M. glaber*-group *s. str.*, more closely related to *M. glaber* than all other species. The analysis did not support *M. bertrandi* as a member of the *M. muscaedomesticae* group. The third species, *M. ovoidalis*, using both morphological and genetical markers, appeared clearly isolated from all other known *Macrocheles* species.

Key words: *Macrocheles lumareti* sp. nov., *M. bertrandi* sp. nov., *M. ovoidalis* sp. nov., ITS sequence, morphology, description, phylogeny

Introduction

Coprophilous macrochelid mites play a regulatory role in the coprophilous community by feeding on small invertebrates that develop in cattle dung, such as flies, nematodes and other mites. Macrochelid females usually disperse from one substrate to another using phoretic associations with dung beetles (Evans & Browning, 1956; Evans & Hyatt, 1963; Krauss, 1970; Wallace *et al.*, 1979; Krantz, 1983; Koehler, 1997; Halliday, 2000; Takaku, 2001; Takaku & Hartini, 2001; Niogret *et al.*, 2006). A few species are found on Diptera, including specialized species like *M. subbadius* Berlese and *M. muscaedomesticae* Scopoli, and some generalist species in the *M. glaber* group are also found on flies that breed in dung pats. A survey of macrochelid mites associated with dung-breeding insects revealed three new species, which are described here. In recent studies, original genetic data has provided new criteria for species identification to complement morphological criteria (Vargas *et al.*, 2005; Tixier *et al.*, 2006a, b; Niogret *et al.*, 2007). In this paper, we describe the new species using both morphological and genetic data (based on ITS sequences) which allow phylogenetic comparisons and permit a more precise determination of the systematic position within the genus.