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Sexual dimorphism in *Autogneta*, with description of three new species from North America and new diagnosis of the genus (Acari, Oribatida, Autognetidae)

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Abstract

Species in the oribatid mite genus *Autogneta* are primarily Palaearctic, with a few, mainly unidentified records from North America. Strong sexual dimorphism is reported in the genus for the first time; it is expressed by a posterior porose region on the male notogaster that in some species is associated with modifications of notogastral setae h_1 and p_1. Herein, I describe 3 new dimorphic *Autogneta* species from North America, based on adult specimens: *A. aokii* sp. nov. and *A. schusteri* sp. nov., from California, USA, and *A. flaheyi* sp. nov., from British Columbia and Alberta, Canada. New diagnoses for 2 other dimorphic species, the type species *Autogneta longilamellata* (Michael) and *A. amnica* Jacot, are presented that accommodate their previously unreported dimorphic males. *Autogneta flumengalei* Jacot is recombined as *Conchogneta flumengalei* (Jacot) **comb. nov**. Finally, I give a key to adults of *Autogneta* species known from North America.

Key words: oribatid mites, *Autogneta*, new species, sexual dimorphism, *Conchogneta*, Canada, USA, identification key

Introduction

The oribatid mite genus *Autogneta* includes 13 extant species found primarily in the Palaearctic (Subías 2014). Jacot (1938, 1939) described 2 species that appear restricted to the eastern USA: *Autogneta amnica* Jacot, 1938 and *A. flumengalei* Jacot, 1939, both originally proposed as subspecies of *A. longilamellata* (Michael, 1885), the type species of the genus. The former was elevated to species status by Banks (1947), the latter by Higgins & Woolley (1963). A third North American species, *Autogneta longipilus* Higgins & Woolley, 1963, was recombined to *Dolicheremaeus longipilus* (Higgins & Woolley) (Otocepheidae) by Marshall *et al.* (1987).

The Nearctic *Autogneta* fauna has received little attention. Déchêne (2007) recorded *A. longilamellata* from forest litter in Québec, Canada, but all other records refer to unidentified species (Lindo & Winchester 2006, 2007a, b; Walter *et al.* 2014). Studies of multiple habitats, in different regions of North America, have not reported any member of the genus (e.g., Cianciolo & Norton 2006, Déchêne & Buddle 2010, Lindo & Visser 2004, St. John *et al.* 2002).

Autogneta, and the family Autognetidae, were clearly defined in a series of publications by Grandjean (1960a, b; 1963) and his description (1960a) of *A. penicillum* Grandjean, 1960 remains the model for studies of this genus. He discovered sexual dimorphism in two autognetid species: *Cosmogneta impedita* Grandjean, 1960 and *Cosmogneta kargi* Grandjean, 1963, in both the male has a modified seta *a'* on tarsus I (Grandjean 1960b, 1963, respectively). As he (1960b) noted, this dimorphism is analogous to that found in some species of *Hydrozetes* where tarsus I seta *it', ft'* or *pl'* of males can be modified (Behan-Pelletier & Eamer 2010, Behan-Pelletier in. prep.). The only report of sexual dimorphism in other genera of Autognetidae is that of Travé (1959) who noted an unidentified *Autogneta* species from Madeira where the humeral region of the male notogaster had an "epaississement chitineux" absent from the female.

This is the first of two studies on *Autogneta* of North America. Herein, I report sexual dimorphism in 5 species having males with a distinctly modified notogaster. Three are newly described (all on the basis of adults): *A. aokii* sp. nov. and *A. schusteri* sp. nov., from California, and *A. flaheyi* sp. nov. from British Columbia and Alberta,

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Alberta, British Columbia . . . . . *A. flaheyi* sp. nov.

- In both sexes, bothridial setae with capitate head. Notogastral setae short, thin, acuminate, except p_1 and h_1 of male. Males with posteromedial cavity, about 20 wide, positioned between lyrifissures *ips*, bearing strongly modified setae h_1 and p_1 internally in cavity. Known from California.. . . . . *A. schusteri* sp. nov.

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