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A revision of *Physotarsus* Townes (Hymenoptera: Ichneumonidae: Ctenopelmatinae), with description of 18 new species

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Table of contents

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Abstract

The species of *Physotarsus* Townes are revised. *Physotarsus* is expanded to include 18 new species: *P. albus* Zhaurova, **n. sp.** (Brazil), *P. claviger* Zhaurova, **n. sp.** (Argentina), *P. concavus* Zhaurova, **n. sp.** (USA & Mexico), *P. cordatus* Zhaurova, **n. sp.** (USA), *P. emarginatus* Zhaurova, **n. sp.** (USA), *P. flavipennis* Zhaurova, **n. sp.** (USA), *P. foveatus* Zhaurova, **n. sp.** (USA & Mexico), *P. gineus* Zhaurova, **n. sp.** (USA), *P. glabellus* Zhaurova, **n. sp.** (Brazil), *P. jamesi* Zhaurova, **n. sp.** (Dominica), *P. leucohypopygus* Zhaurova, **n. sp.** (Brazil), *P. luteus* Zhaurova, **n. sp.** (Mexico), *P. melipennis* Zhaurova, **n. sp.** (USA), *P. melotarsus* Zhaurova, **n. sp.** (USA), *P. niveus* Zhaurova, **n. sp.** (Brazil), *P. oculatus* Zhaurova, **n. sp.** (Brazil), *P. tonicus* Zhaurova, **n. sp.** (USA), and *P. truncatus* Zhaurova, n. sp (USA). *Physotarsus davidi* Gauld, 1997 is treated as a junior subjective synonym of *P. varicornis* (Cameron, 1886) and a lectotype is designated for the latter. *Physotarsus fabioi* Gauld, 1997 is removed from the Scolobatini and left incertae sedis in the Ctenopelmatinae. A key to all known species of *Physotarsus*, and redescriptions of all previously described species are also provided. With 25 valid species, *Physotarsus* is now the largest genus in the Scolobatini.

Key words: Scolobatini, Argidae, parasitoid

Introduction

The family Ichneumonidae (Hymenoptera: Ichneumonoidea) contains over 21,805 valid species (Yu & Horstmann 1997), arranged in approximately 40 subfamilies. The number of recognized subfamilies has increased steadily since the work of Townes (1969, 1970 a, b, 1971), who revised the ichneumonid genera and established current concepts for most of the major groupings within the family. Some disagreements remain regarding subfamily limits and the placement of several genera (Gauld 2002; Gauld & Wahl 2002; Quicke *et al.* 2005, 2009), but these are relatively minor. The subfamily Ctenopelmatinae (=Scolobatinae *sensu* Townes & Townes 1951) is a morphologically diverse subfamily of koinobiont endoparasitoids with over 100 currently valid genera and over 1100 described species listed by Yu & Horstmann (1997) with several more recent additions of species (e.g. Kasparyan 2000, 2003, 2004, 2006). Quicke *et al.* (2009) provide evidence that the subfamily is paraphyletic, echoing sentiments expressed by Gauld & Wahl (2006). The ctenopelmatine tribe Scolobatini is widespread in distribution, with four genera recorded from the New World, three of these endemic. The most detailed and recent works on Scolobatini are those of Ian Gauld (1984, 1997) and Zhaurova & Wharton (2009). Zhaurova & Wharton (2009) recently suggested separating Westwoodiini from Scolobatini based on their phylogenetic analysis of morphological data.

New World scolobatines range in body length from 3–10mm, and vary quite widely in color. Hosts are sawflies in the family Argidae, but very few host records are available overall (Yu & Horstmann 1997; Zhaurova 2006). The only known host record for *Physotarsus* Townes is that of *Physotarsus adriani* Gauld, 1997 parasitising the sawfly *Trochophora lobata* (Erichson) (Gauld 1997; Janzen 2006). Townes (1970b) suggested that argids were likely to be the hosts for the entire tribe Scolobatini s. s. (excluding the Australian westwoodiines).

Physotarsus is known primarily from the Neotropics. Six of the nine previously described species are known only from Costa Rica (Gauld 1997), two others only from Mexico (Townes & Townes 1966) and the ninth only from Guatemala (Townes & Townes 1966). Estimates as to the relative size of this genus have varied from “moderate” (Gauld 1997) to “rather large” (Townes 1970b), and Townes (1970b) gives the distribution as extending from southern United States to Argentina based largely on undescribed material. In order to provide a better understanding of morphological variation within the genus as well as baseline data for assessment of relationships among the Scolobatini, we describe several new species below. At the end of the descriptive section, we also provide comments on the placement of *Physotarsus fabioi* Gauld, 1997.