



Revision of the Neotropical species of *Trichacis* Foerster (Hymenoptera: Platygastroidea: Platygastriidae), with description of 24 new species

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Abstract

The hymenopteran genus *Trichacis* is presumed to be endoparasitoid of Cecidomyiidae. Only three species of this genus were hitherto recognized in the Neotropical region. Here, twenty four (24) new species are described based on 145 specimens: *T. acarinata* (Costa Rica), *T. acuminata* (Bolivia), *T. acuta* (Colombia), *T. clypeata* (Costa Rica), *T.*

colombiana (Colombia), *T. concavata* (Costa Rica), *T. corrugata* (El Salvador, Mexico), *T. costaricana* (Costa Rica), *T. delsinnei* (Costa Rica), *T. depressa* (Costa Rica), *T. diana* (Colombia, Ecuador, Venezuela), *T. fernandezii* (Ecuador), *T. hansonii* (Brazil, Costa Rica, Nicaragua, Panama), *T. kaulbarsi* (Mexico), *T. magnifica* (Mexico), *T. mexicana* (Mexico), *T. panamana* (Panama), *T. pecki* (Ecuador), *T. procera* (Mexico), *T. proximata* (Costa Rica), *T. punctata* (Brazil), *T. sculpturata* (Mexico), *T. transversata* (Costa Rica), and *T. triangulata* (Mexico). A key for males and females of the 27 Neotropical species is provided.

Key words: Central America, identification key, parasitoid, South America, taxonomy

Introduction

All members of the hymenopteran genus *Trichacis* Foerster (1856) are presumed to be koinobiont endoparasitoids of gall midge larvae (Diptera: Cecidomyiidae) (Masner 1983; Masner & Hanson 2006). Because most of the latter feed on living plants and can be important agricultural pests (Gagné & Jaschhof 2009), *Trichacis* species have the potential to be key agents in biological control (Masner 1983). However, the biology and diversity of *Trichacis* are poorly known, especially in Central and South America, where only three species were recognized before the present study: *Trichacis meridionalis* (Brues 1910), *T. laticornis* Buhl 2001, and *T. ariaspennae* Buhl 2011.

The last revision of *Trichacis* focused on the Nearctic species (Masner 1983). In his work, Masner (1983) followed the classification proposed by Kozlov (1970), and placed *Trichacis* in the tribe Platygastriini of the subfamily Platygastriinae, based on the palpal and tibial spur formulae (2–1, and 1–2–2, respectively). He recognized 15 species, described the characters delimiting the genus, and discussed those allowing to distinguish *Trichacis* from three morphologically close Platygastriinae genera, *Isocybus* Foerster, *Metanopedias* Brues and *Trichacoides* Dodd. These characters are the presence of a specialized area filled with a tuft of fine dense erect hairs on the top of the mesoscutellum, a smooth frons, receding temples behind the eyes, a 3–5 segmented antennal clava in females, and six visible tergites in female metasoma. In the most recently published phylogeny of the Platygastroidea (Murphy *et al.* 2007), *Trichacis* formed a clade with *Synopeas* Foerster (Platygastriidae: Platygastriinae), and *Trichacis* + *Synopeas* with *Piestopleura* Foerster (Platygastriidae: Platygastriinae). *Isocybus*, *Metanopedias* and *Trichacoides* were not included in the analysis.

In this paper, we described 24 new species. Specimens were collected from Mexico to Bolivia and Brazil, and from 200 to 2600 meters in elevation. The type material of *Trichacis meridionalis*, *T. laticornis* and *T. ariaspennae* was not examined but we included these species in our work based on the original descriptions and Dr. Buhl's personal communication.

Material and methods

Material. This work is based on the examination of 145 specimens (111 females and 34 males) from the Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Canada (CNCI). All specimens were dried and pinned.

Holotypes and paratypes were deposited at the CNCI, at the Natural History Museum of London, United Kingdom (BMNH), and at the Instituto de Ciencias Naturales–Museo de Historia Natural, Universidad Nacional de Colombia, Bogotá D.C., Colombia (ICN).

Observations and images. Observations, measurements (Appendix 1) were made at 160x on a Leica S8APO stereomicroscope. Bright field images were taken using a Leica DFC290 camera attached to a Leica Z6 APO stereomicroscope. Series of images were taken by focusing the sharpness on different levels of the structure, using the Leica Application Suite v38 (2003–2011), and combined with the “Align and balance used frame (quick)” and “Do stack” commands of CombineZP (Hadley 2010). Final processing of images was done in Adobe Photoshop CS. Original images are deposited in Morphbank (collection number: 791583; <http://www.morphbank.net/791583>).