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Heterospilus Haliday, 1836 (Hymenoptera: Braconidae, Doryctinae) from China with a key to species

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Abstract

The Chinese species of the genus *Heterospilus* Haliday, 1836 from the Parasitic Hymenoptera Collection of Zhejiang University were studied and thirty-four species are recognized, including 12 previously described species. Eighteen new species of this genus are described and illustrated: *Heterospilus (Heterospilus) alternicoloratus* sp. nov., *H.(H.) balicyba* sp. nov., *H.(H.) chui* sp. nov., *H.(H.) curvisulcus* sp. nov., *H.(H.) densistriatus* sp. nov., *H.(H.) fujianensis* sp. nov., *H.(H.) jianfengensis* sp. nov., *H.(H.) liui* sp. nov., *H.(H.) longiventrius* sp. nov., *H.(H.) nanlingensis* sp. nov., *H.(H.) parvus* sp. nov., *H.(H.) prodigiosus* sp. nov., *H.(H.) punctatus* sp. nov., *H.(H.) qingliangensis* sp. nov., *H.(H.) semidepressus* sp. nov., *H.(H.) setosiscutum* sp. nov., *H.(H.) setosus* sp. nov., and *H.(H.) tenuitergum* sp. nov. Seven species of *Heterospilus* are recorded for China for the first time: *H. (Eoheterospilus) rubrocinctus* (Ashmead, 1905), *H.(H.) alboapicalis* Belokobylskij, 1994, *H.(H.) ater* Fischer, 1960, *H.(H.) cephi* Rohwer, 1925, *H.(H.) kerzhneri* Belokobylskij et Maetô, 2009, *H.(H.) tauricus* Telenga, 1941, and *H.(H.) tulyensis* Belokobylskij, 1994. Two new synonyms are proposed: *H. asiaticola* Belokobylskij et Maetô, 2009 with *H. chinensis* Chen et Shi, 2004 and *H. gracilis* Shi et Chen with *H. separatus* Fischer, 1960. A key to the Chinese species of *Heterospilus* is provided.

Key words: Ectoparasitoid, Heterospilini, new species, new synonyms, new records

Introduction

Heterospilus Haliday, 1836 is one of the largest and widespread genera of the tribe Heterospilini in the subfamily Doryctinae. To date, 124 valid species of this genus have been described, mainly from the New World and Palaearctic zoogeographical regions (Yu *et al.* 2012). The real number of species in this genus is probably much larger, in particular, to the largely undescribed and diverse Neotropical *Heterospilus* fauna.

Twelve species of *Heterospilus* were recorded from China prior to this study (Belokobylskij 1996, Shi *et al.* 2002a, 2002b, Chen and Shi 2004). Belokobylskij (1996) reported three species of *Heterospilus* from Taiwan, i.e. *H. hemitestaceus* Belokobylskij, *H. austriacus* (Szepligeti 1906) [now incorrectly synonymised with *H. sicanus* (Marshall, 1888) by Papp, 2004] (as form *asiaticus* Belokobylskij because mesoscutum was mainly smooth), and *H. separatus* Fischer. Two species, *H. breviatus* Shi, Yang et Chen and *H. cancellatus* Shi, were described from the South China (Yunan and Fujian) (Shi *et al.* 2002a, 2002b). Later, Chen and Shi (2004) described an additional four new species, namely, *H. brevicornalus*, *H. chinensis*, *H. gracilis*, and *H. wuyiensis*, and recorded *H. extasus* Papp, *H. fuscevilis* Shaw, and *H. leptosoma* Fischer in China for the first time.

There are two species recorded from China which are doubtful. The descriptions and figures presented by Chen and Shi (2004) shows clearly that *H. fuscevilis* was erroneously recorded from China. In this species, the m-cu vein of the fore wing is postfurcal and the ovipositor sheath is almost as long as the metasoma, which are not characters of this species (see original descriptions by Shaw 1997). Also, material determined by Chen and Shi (2004) as *H. separatus* is probably *H. subseparatus* Belokobylskij et Maetô, 2009 (described from Japan), because the second metasomal tergite is very short.

In this paper, 34 species of the genus *Heterospilus* Haliday are described or recorded from China. A key to all Chinese species is provided except for the two doubtful species mentioned above, *H. fuscevilis* Shaw and *H. subseparatus* Belokobylskij et Maetô. This paper is one of the series works for providing the illustrated key for identification of Doryctinae taxa of the Chinese fauna (Belokobylskij *et al.*, 2012, Tang *et al.*, 2010, 2011, 2012a, 2012b, Wang *et al.*, 2009, 2010).

Material and methods

This study is based mainly on the specimens preserved in the Parasitic Hymenoptera Collection of the Institute of Insect Sciences, Zhejiang University (ZJUH).

The terminology and measurements used follow van Achterberg (1993). Additional sources for the description of sculpture and setation are Harris (1979) and Belokobylskij and Maetô (2009). All descriptions and measurements were made under a Leica MZ 12.5 microscope, and all figures were made by a digital camera (Q-Imaging, Micropublisher, 3.3 RTV) attached to a stereomicroscope (Leica MZ APO, Germany) and Auto-Montage Pro version 5.0 software. Type and other specimens are deposited in the Parasitic Hymenoptera Collection of the