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Revision of the genus *Apophua* Morley, 1913, from Japan (Hymenoptera, Ichneumonidae, Banchinae)

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Abstract

Japanese species of the genus *Apophua* Morley, 1913, are revised. Eleven species are found from Japan and two of them, *A. elegans* **sp. nov.** and *A. yamato* **sp. nov.**, are newly described. Distribution data and an updated key to Japanese species are provided.

Key words: Far East Asia, Glyptini, new species, parasitoid, taxonomy

Introduction

The genus *Apophua* Morley, 1913, is a medium-sized taxon of ichneumonid wasps of the tribe Glyptini, subfamily Banchinae, which contains 36 described species from the Afrotropical (13 spp.), Eastern Palaearctic (10), Oriental (10), Western Palaearctic (5), Nearctic (2), and Australasian (2) regions (Yu *et al.*, 2012). The species in this genus are known as koinobiont endoparasitoids of lepidopteran larvae, particularly of leaf rollers (e.g. Tortricidae), and include some important natural enemies of forest pests (Kamijo, 1973; Momoi *et al.*, 1975).

We have studied the Japanese species of *Apophua* as part of a review of the Japanese Glyptini and have recognized 11 species. Nine of these are species treated by Momoi (1963, 1978), whereas the remaining two are undescribed species. In addition, we have found considerable intraspecific variations in three species, *A. bipunctoria* (Thunberg, 1822), *A. honmai* Momoi, 1978, and *A. stena* (Momoi, 1963), and thus the conventional keys to species (Momoi, 1963; Kuslitzky, 2008) need to be revised.

The objectives of this paper are to revise the Japanese species of *Apophua*, present descriptions of the two new species of *Apophua*, and provide an updated key to the species.

Material and methods

Materials used were from the collections of Entomological Laboratory, Kagoshima University, Kagoshima, Japan (KU), Kanagawa Prefectural Museum of Natural History, Odawara, Japan (KPMNH), Museum of Nature and Human Activities, Hyogo, Sanda, Japan (MNHAH), Laboratory of Entomology, Meijyo University, Nagoya, Japan (MU), National Institute of Agro-Environmental Sciences, Tsukuba, Japan (NIAES), National Museum of Nature and Science, Tsukuba, Japan (NSMT), Osaka Museum of Natural History, Osaka, Japan (OMNH), Laboratory of Systematic Entomology, Hokkaido University, Sapporo, Japan (SEHU), Tochigi Prefectural Museum, Utsunomiya, Japan (TPM), Laboratory of Entomology, Tokyo University of Agriculture, Atsugi, Japan (TUA) and Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (ZIS). The Palaearctic, Oriental and Nearctic species of *Apophua* deposited in American Entomological Institute, Florida, USA (AEI), MNHAH, Natural History Museum, London, UK (BMNH) and ZIS were also examined.

undescribed, Chiu (1965) described the male genitalia of *A. formosana*. According Chiu, the male genitalia of *A. formosana* are similar to those of other Japanese species of *Apophua*, excluding *A. kikuchii*. *A. kikuchii* exhibits a number interesting character states, i.e. the considerably smaller number of flagellomeres than in other Japanese species (Table 1), the strong and complete propodeal carinae, the convex anterior margin of the male subgenital plate (Fig. 9 J), and the weak concavity of the inner margin of the paramere (Fig. 8 G). The other species (*A. bipunctoria*, *A. evanescens*, *A. honmai*, *A. stena*, *A. sugaharai*, *A. tobensis*, and *A. yamato*) lack these unusual character states.

On the basis of the results of this study, *A. kikuchii* appears to be peculiar in *Apophua*. It also resembles *A. karenkona* from Taiwan (see Remarks on *A. kikuchii*), and thus the generic position of both species should be revised.

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