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Description of a new and redescriptions of two known species of *Torymus* (Hymenoptera: Torymidae) in Taiwan with a key to Taiwanese species

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Abstract

Torymus flavigastris Matsuo **sp. nov.** (Hymenoptera: Torymidae) is described as a parasitoid of unidentified gall midges (Diptera: Cecidomyiidae) that induce galls on *Litsea acuminata* (Blume) Kurata (=*Actinodaphne acuminata* (Blume) Meisner) (Lauraceae), *Machilus pseudolongifolia* Hayata (Lauraceae), and *Eurya chinensis* Robert Brown (Theaceae) in Taiwan. This is the first record of Torymidae associated with gall midges on Lauraceae and Theaceae. Redescriptions of *T. aiolomorphi* and *T. orientalis* and a key to species of *Torymus* known in Taiwan are provided.

Key words: *Torymus flavigastris*, *Torymus aiolomorphi*, *Torymus orientalis*, Lauraceae, Theaceae, Cecidomyiidae

Introduction

Torymus Dalman (Hymenoptera: Torymidae) contains at least 400 species worldwide (Grissell 1995; Noyes 2011; Matsuo & Yukawa 2009a, 2009b; Matsuo 2010). Nevertheless, only two species of *Torymus* have been known from Taiwan up to the present. One is *T. aiolomorphi* Kamijo that is known as an inquiline inhabiting galls induced by *Aiolomorphus rhopaloides* Walker (Hymenoptera: Eurytomidae) on *Phyllostachys heterocycla* (Carrière) Matsumura and *P. bambusoides* Siebold et Zuccarini (Poaceae) (Takahashi & Mizuta 1971; Yukawa & Masuda 1996; Shibata 2001), and the other is *T. orientalis* (Masi) attacking larvae of *Hypsipyla robusta* Moore (Lepidoptera: Pyralidae) (Kazmi & Chauhan 2003).

Earlier studies have demonstrated that most *Torymus* species are ectoparasitoids of cecidomyiids (Diptera) or cynipids (Hymenoptera) that induce galls on various plant families in the West Palearctic and Nearctic Regions (Grissell 1995; Graham & Gijswijt 1998; LaSalle 2005). In contrast, the host association and species diversity of *Torymus* is largely unknown in the East Palaearctic Region.

The purposes of this study are 1) to describe a new species of *Torymus* reared from cecidomyiid galls on Lauraceae and Theaceae in Taiwan, 2) to redescribe the two known congeners, and 3) to provide a key to Taiwanese species of *Torymus*.

Material and methods

Collecting, morphological studies, and depository of specimens. Cecidomyiid galls on Lauraceae were collected from various localities in Taiwan from 2008 to 2011. Adult parasitoids emerged from the galls were preserved in 70–75% ethanol for morphological observation. For microscopic study, the ethanol-stored specimens were dried out as described in Matsuo & Yukawa (2009b). Dried specimens were observed under a binocular microscope

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