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## A review of clearwing moths in the tribe Synanthedonini, with descriptions of six new species from Taiwan (Lepidoptera: Sesiidae)

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### Abstract

The Synanthedonini fauna of Taiwan is reviewed, and a checklist of 9 species for this region is provided. Six new species are described: *Paranthrenella dortmundi* Liang & Hsu **sp. nov.**, *Paranthrenella weiyui* Liang & Hsu **sp. nov.**, *Ichneumenoptera gryphus* Liang & Hsu **sp. nov.**, *Kantipuria glansvorax* Liang & Hsu **sp. nov.**, *Synanthedon ceraunus* Liang & Hsu **sp. nov.**, and *Synanthedon phoenix* Liang & Hsu **sp. nov.** New records of relationships between host plants and the immatures of Synanthedonini in Taiwan are also provided, with three species feeding on callus tissue of stems of Fagaceae, two on Lauraceae, and one on Rosaceae. One species is an obligatory borer into acorns of Fagaceae, and such kind of feeding strategy is rare among clearwing moths.

**Key words:** host plants, *Ichneumenoptera*, *Kantipuria*, new species, *Paranthrenella*, Sesiidae, *Synanthedon*, Taiwan

### Introduction

Synanthedonini is the largest tribe of the clearwing moths (Sesiidae) with 38 named genera and 724 species (Pühringer & Kallies 2014). The tribe was established by Niculescu (1964) based on adult morphological characters, and was supported in a subsequent revision of Sesiidae using larval characters by MacKay (1968). Members of the tribe Synanthedonini can be separated from all other tribes in Sesiidae by using wing venation, transparent areas of forewing and male genitalia according to Špatenka *et al.* (1999), including the following diagnostic characters: vein R4 and R5 stalked in forewing; M3 and Cu1 stalked in hindwing; valva and uncus with specialized bifurcate hairs in male genitalia, crista sacculi usually present on inner surface of valva; tegumen, uncus, and gnathos united, often bearing a scopula at distal end of tegumen; phallus slender, elongate, with internal or external apical spines (cornuti). Although species from North America and Palearctic region were reviewed relatively recently (Engelhardt 1946; Špatenka *et al.* 1999), Synanthedonini in the Oriental region, with more than 70 described species, has not been revised since Hampson (1919). The type materials of some species have been verified in some recent studies, and some genera have been reviewed to better extent (e.g. Gorbunov & Arita 1995a; 1999; 2000a; 2000b; 2005). Relevant recent works on this tribe in this geographical region include the follows: Diakonoff (1968) reported 4 species in two genera from the Philippines. Gorbunov & Arita (1999) described 6 species in 6 genera from Nepal. Gorbunov & Arita (2000) recorded 9 species in 5 genera from Vietnam. Gorbunov & Arita (2005) established a new genus *Ichneumonella* and described two new species under the genus from Indochina (Malaysia, Thailand, and Vietnam). Jin *et al.* (2008) compiled a catalogue and listed 28 species from China.

Most species of Synanthedonini for which host plants have been recorded are xylophagous (Scoble 1992; Edwards *et al.* 1998). Representatives of the genus *Synanthedon* Hübner, [1819] tunnel in branches or stems of various trees and shrubs, including fruit trees as well as ornamental plants, including gymnosperms (Pinaceae, Cupressaceae) and angiosperms (Dipterocarpaceae, Leguminosae, Aceraceae, Convolvulaceae, Salicaceae, Rosaceae, Caprifoliaceae, Fagaceae, Polygonaceae, Betulaceae, Juglandaceae, Cornaceae, Aquifoliaceae,