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A systematic study of *Ichneumonosoma* de Meijere, *Pelmatops* Enderlein, *Pseudopelmatops* Shiraki and *Soita* Walker (Diptera: Tephritidae)

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Abstract

Four fruit fly genera, *Ichneumonosoma* de Meijere, *Pelmatops* Enderlein, *Pseudopelmatops* Shiraki and *Soita* Walker, were studied and 19 species are recognized. Three new species, *Soita infuscata* Chen & Norrbom, *Ichneumonosoma quadripunctata* Chen & Freidberg, and *I. triangularis* Chen & Norrbom are described and illustrated. *Ichneumonosoma* and *Soita* are revised, and keys to all the species are provided. *Ichneumonosoma imitans* (de Meijere) is newly recorded from Thailand. One new synonym is established: *Soita* Walker = *Xaniosternum* Enderlein, and *Xaniosternum ophioneum* Enderlein is moved from *Xaniosternum* to *Soita* (n. comb.). In addition, new morphological, geographic and biological information for two stalk-eyed fruit fly genera, *Pelmatops* and *Pseudopelmatops*, are provided. *Pelmatops fukienensis* Zia & Chen is newly recorded from Burma, *Pelmatops ichneumoneus* (Westwood) is newly recorded from Thailand and Burma, *Pseudopelmatops angustifasciatus* Zia & Chen is newly recorded from Vietnam, and the male of *P. angustifasciatus* is described and illustrated for the first time. The morphology of the compound eye and occipital protuberance of *Pelmatops* and *Pseudopelmatops* is described and illustrated for the first time. A cladistic analysis based on morphological characters of adults, a partial molecular analysis using the nuclear 28S rDNA (28S) and the mitochondrial cytochrome c oxidase I (COI) genes and a combined dataset were conducted to reconstruct the phylogeny of the four genera and their species. The results showed good support for monophyly of each of the four genera and the clade of the stalk-eyed fruit flies (*Pelmatops* + *Pseudopelmatops*). However, relationships of the stalk-eyed fruit flies with *Soita* and *Ichneumonosoma* are not clearly resolved, with the morphological analysis indicating that *Ichneumonosoma* is the sister group of the stalk-eyed fruit flies, but the 28S analysis and the combined analysis group *Soita* closer to the stalk-eyed fruit flies. Regarding relationships amongst congeners, *Pelmatops* was well resolved; *Ichneumonosoma* and *Soita* were partly resolved, and *Pseudopelmatops* was unresolved. In addition, a hypothesis about the biology of *Pseudopelmatops* and its relationship with Sesiidae (Lepidoptera) is discussed.

Key words: Tephritidae, *Ichneumonosoma*, *Pelmatops*, *Pseudopelmatops*, *Soita*, phylogeny, new species

Introduction

The fruit fly genera *Ichneumonosoma* de Meijere, *Pelmatops* Enderlein, *Pseudopelmatops* Shiraki and *Soita* Walker belong to the tribe Adramini of the subfamily Trypetinae. The species belonging to these genera are rather large (body length 8.8–16.0 mm), slender, wasp-like flies. They appear to be closely related to each other based on the following combination of characters, including ‘large size, male abdomen laterally compressed, metathoracic postcoxal bridge broadly sclerotised, femora without row of stout spinelike ventral setae’ (Hardy, 1983; Permkam and Hancock, 1995; Korneyev, 2000), which within Adramini is unique to the above four genera.