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New taxa and notes of some described species of Agraeciini (Orthoptera: Tettigoniidae: Conocephalinae) from Malay Peninsula

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Abstract

Four new species from three genera of Agraeciini from Malay Peninsula are described: *Paragraecia temasek* **sp. n.**, *Peracca mirzai* **sp. n.**, *Peracca macritchiensis* **sp. n.** from Singapore, and *Lichnofugia malaya* **sp. n.** from Peninsular Malaysia. The first records and descriptions of the female of *Liara alata* Ingrisch, 1998 and the male of *Paragraecia gracilis* Ingrisch, 1998 are given.

Key words: Conocephalinae, Agraeciini, new species, redescription, Singapore, Peninsular Malaysia

Introduction

A comprehensive treatment on the taxonomy of Agraeciini (Orthoptera: Tettigoniidae: Conocephalinae) from South East Asia was published by Ingrisch (1998). However, recent collection and further explorations in the region showed that the true richness of Agraeciini in the region is still exhaustive (Gorochov, 2011; Ingrisch & Tan, 2012). Moreover, some known species were also not fully described, as only one of the sexes had been discovered. The current study is based on two main sources: (1) recent orthopteran surveys conducted by MKT in Malay Peninsula (including Singapore and Peninsular Malaysia) between 2010 and 2013; and (2) specimens from various museum collections. Undescribed species were revealed in various genera: *Lichnofugia* Ingrisch, *Paragraecia* Karny and *Peracca* Griffini, three species from Singapore and one from Peninsular Malaysia. Species from Singapore were previously recorded and tentatively identified in Tan (2012). Re-examination of the specimens showed that they are new to science. Additionally, redescriptions of some known species were also done: female of *Liara alata* Ingrisch, 1998 and the male of *Paragraecia gracilis* Ingrisch, 1998 are given.

Material and methods

Opportunistic collections of specimens were carried out by MKT mainly at night in Singapore and Bukit Fraser of Pahang, Peninsular Malaysia. Specimens from museum collections were studied by SI. Photographic images were done with a digital SLR camera with compact-macro lens or using the Visionary Digital System. Scales given with the images are approximate as the images taken with different equipment had to be adapted in size. Specimens were preserved by drying and pinning. Measurements of dried-pinned specimens were made using a 0.05 mm vernier caliper. Measurements of details of the stridulatory apparatus were done under a microscope.

In the measurements, the following terms are used: BL = body length; BWL = body with wing length; PL = pronotum length; PW = pronotum width; TL = tegmen length; HWL = hind wing length; HFL = hind femur length; HTL = hind tibia length; OL = ovipositor length.

Depositories

BMNH The Natural History Museum (formerly British Museum of Natural History), London, UK

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Female. Tenth abdominal tergite with apex deeply and broadly triangularly incised. Cerci with apex pointing. Subgenital plate wider than long, furrowed in middle; apex bilobate and apical margin upcurved (Figs. 7G, 7H). Ovipositor dagger shaped; with substraight basal and gently curved apical area; apical area with dorsal margin straight, ventral margin gently curved; margins smooth (Fig. 7I).

Colouration. Generally brown to testaceous. Frons, mandibles, labrum, dorsal part of clypeus, genae black; ventral part of clypeus and palpi white; palpi pale yellow with some tint of green; labrum, scapus, pedicellus, vertex and occiput yellow brown; vertex and occiput with some red venation. Pronotum red brown, sometimes with some tint of black and white; in some specimens, disc white (on the outside) and black (on the inside) longitudinal stripe on each lateral side; white spot on anterior and posterior part of that strip; ventral margin of paranota white. Abdomen testaceous to brown with light dots; tergites with faint red brown longitudinal medial strip, with black spot at the posterior margin of each tergite; pleurite with dark red brown marmoration; sternites pale. Legs generally yellow brown, spines white with black apices. Protibia, and to a smaller extend mesotibia, with black spots dorsally, sometimes faint. Postfemur brown with black stripes on interior and exterior surfaces; with apical half black ventrally. Posttibia brown dorsally and black ventrally

Measurements (5 males, 7 females). See Table 4.

Etymology. This species is named after one of the localities where the species is found: MacRitchie forest in Central Catchment Nature Reserve, Singapore. It is also named to highlight the potential environmental damage befalling the forest reserve due to the proposed construction of the Cross Island Mass Rapid Transport (MRT) Line.

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