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New species and redescriptions of mole crickets (Orthoptera: Gryllotalpidae: Gryllotalpinae) from Singapore, with key to Singaporean species

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Abstract

Two new species of mole crickets of the genus *Gryllotalpa* from Singapore are described: *Gryllotalpa nymphicus* **sp. n** and *Gryllotalpa wallace* **sp. n**. *Gryllotalpa fulvipes* Saussure, 1877 is redescribed. Key to the species of *Gryllotalpa* from Singapore is also provided.

Key words: *Gryllotalpa*, new species, description, redescription, key, Singapore

Introduction

The Gryllotalpidae, or Mole Crickets, is a family of Grylloidea which are highly adapted for subterranean life (Chopard, 1968; Townsend, 1983). *Gryllotalpa* Latreille, 1802 is the largest genus in the subfamily Gryllotalpinae and is characterised by having the fore tibiae with four dactyls (Chopard, 1968; Townsend, 1983; Ma & Zhang, 2011). Mole crickets are difficult to locate and collect in the rainforest because the males call for a short period of time in the evening (Otte & Alexander, 1983). In Singapore, three species were previously recorded according to Chopard (1931; 1968) and D. H. Murphy (unpublished data): *Gryllotalpa africana* Beauvois, 1805, *Gryllotalpa fulvipes* Saussure, 1877 and *Gryllotalpa hirsuta* Burmeister, 1838. Nevertheless, during recent research leading to an inventory of the Orthoptera fauna in the Bukit Timah Nature Reserve (BTNR) and Central Catchment Nature Reserve (CCNR) of Singapore, two new species of *Gryllotalpa* were revealed: *Gryllotalpa nymphicus* **sp. n**. and *Gryllotalpa wallace* **sp. n**. In addition, recent discovery of Singapore's Red Data species, *Gryllotalpa fulvipes*, allows the redescription of tegminal venation, previously incomplete (Saussure 1877; Chopard, 1968; Davison et al., 2008).

Material and methods

Materials examined were based mainly from night collections in and around BTNR and CCNR from Oct.2010 to Sep. 2011. Genitalia preparation utilised the method described by Townsend (1983). Terminology for male genitalia is according to Ingrisch (2006). The male genitalia were preserved in glycerine. Terminology of male tegminal venation is according to Ingrisch (2006), Béthoux (2012) and O. Béthoux (in litt.). Measurements of dry-pinned specimens were done using a vernier caliper with 0.05 mm precision. Drawings were made using a stereo-zoom microscope with a camera lucida. Habitus photographs of freshly euthanized specimens were taken using a digital SLR camera with compact-macro lens. Smaller details were taken using digital camera attached to a stereo-zoom microscope. Scales given with the images are approximates as the images taken with different equipment had to be adapted in size. Acoustic recordings of calling songs were carried out using a digital sound recorder with an external microphone and analysed using the PC software SoundRuler. The songs were described and visualised as oscillograms, spectrogram and amplitude spectrum at different time scales.

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