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A new insular, endemic frog of the genus *Kalophrynus* Tschudi, 1838 (Anura: Microhylidae) from Tioman Island, Pahang, Peninsular Malaysia

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Abstract

A new insular, endemic species of microhylid frog of the genus *Kalophrynus* is described from Tioman Island, off the southeastern coast of Pahang, Peninsular Malaysia. *Kalophrynus tiomanensis* **sp nov.** can be differentiated from its congeners by the following combination of characters: SVL 21.4–26.3 mm; reduced webbing on toes; outer metatarsal tubercle absent; large, black inguinal spot and unique markings on dorsum. This discovery increases the number of endemic species of amphibians on Tioman Island to at least three.

Key words: Amphibia; Conservation, Herpetofauna, Microhyla, Morphology, reduced webbing, Species complex

Introduction

Microhylid frogs of the genus *Kalophrynus* collectively range from northeastern India (Ohler & Grosjean 2005) and southern China (Yang & Su 1980), through Indochina (Ohler & Grosjean 2005), Peninsular Malaysia (Berry 1975; Matsui 2009; Chan *et al.* 2010a), Borneo (Das & Haas 2003; Inger & Stuebing 2005), Java, and Sumatra (Iskandar 1998) to the Philippines (Frost 2011). Four species occur in Peninsular Malaysia *i.e. Kalophrynus pleurostigma* Tschudi, *K. palmatissimus* Kiew, *K. robinsoni* Smith and *K. yongi* Matsui (Chan *et al.* 2010a). *Kalophrynus yongi* is an upland species endemic to the mossy forest on Cameron Highlands, Pahang (Matsui 2009), whereas *K. robinsoni* is an upland species known only from the type series from Gunung Tahan, Pahang (Smith 1922). The most common and widely distributed species, *K. pleurostigma*, ranges throughout lowland dipterocarp forests of the Malay Peninsula (Grandison 1972; Berry 1975; Dring 1979; Norhayati *et al.* 2005; Wood *et al.* 2008; Chan *et al.* 2010b) including the offshore island of Tioman, Pahang off the southeastern coast of Peninsular Malaysia (Grismer 2011; Fig. 1). Formerly considered a single, widespread species, *K. pleurostigma* has been relatively recently split into several species including *K. interlineatus* (Blyth), *K. minusculus* Iskandar and *K. palmatissimus* (Kiew 1984; Matsui 1996; Iskandar 1998). In addition, recent molecular work (Matsui *et al.* 2011) has confirmed our studies in progress that *Kalophrynus pleurostigma* from Peninsular Malaysia is both morphologically and genetically distinct from *K. pleurostigma* from the type locality in Sumatra, Indonesia (*fide* Miracle *et al.* 2007) and deserves distinct species recognition (Chan *et al.* in prep). Therefore, subsequent reference to Peninsular Malaysian populations of *K. pleurostigma* in this paper will be referred to as *Kalophrynus* cf. *pleurostigma*. To further highlight the complexity of this group, we describe another new species that was previously considered as *K. pleurostigma* (Escobar *et al.* 2003; Grismer 2011) from Tioman Island, Pahang based on several distinct morphological differences which clearly separate it from all other species of *Kalophrynus*.

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