



## The distribution, taxonomy, and redescription of the geckos *Cnemaspis affinis* (Stoliczka 1887) and *C. flavolineata* (Nicholls 1949) with descriptions of a new montane species and two new lowland, karst-dwelling species from Peninsular Malaysia

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### Abstract

We provide data supporting the continued recognition of *Cnemaspis affinis* (Stoliczka) and *Cnemaspis flavolineata* (Nicholls) as separate species and restrict their distribution to Pulau Pinang, Penang for the former and the Titi Wangsa Range and Gunung Benom, Peninsular Malaysia for the latter. For the montane population of *Cnemaspis* from Bukit Larut, Perak, which has been referred to as both *C. affinis* and *C. kendallii*, we demonstrate that it is discretely diagnosable from all other Southeast Asian *Cnemaspis* on the basis of size and numerous color pattern and scale characteristics and for it we provide the new name *Cnemaspis mcguirei* **sp. nov.** Two new lowland, karst-dwelling species from isolated locations along the foothills of the Titi Wangsa and Timur ranges in northern Peninsular Malaysia are demonstrably differentiable from all other Southeast Asia *Cnemaspis* on the basis of color pattern and scale morphology and are described herein as *Cnemaspis karsticola* **sp. nov.** from Gunung Reng, Kelantan and *Cnemaspis bayuensis* **sp. nov.** from Kampung Bayu, Kelantan.

**Key words:** Malaysia, Titi Wangsa, Timur, Bukit Larut, karst, Gekkonidae, *Cnemaspis*, new species, taxonomy

### Introduction

The Southeast Asian radiation of the gekkonid genus *Cnemaspis* contains at least 23 nominal species ranging disjunctly from southern Vietnam (Grismer & Ngo 1997), southwestern Cambodia (Grismer *et al.* 2008a) and Thailand (Bauer & Das 1998), southward through the Malay Peninsula and its associated islands (Chan & Grismer 2008; Das & Leong 2004; Das & Grismer 2003; Grismer & Chan 2008; Grismer & Das 2006; Grismer *et al.* 2008b) to Singapore, Sumatra, Borneo and their associated islands (Das 2005; Das & Bauer 1998). Recent and ongoing field studies are just now beginning to reveal the surprising diversity hidden within this group. Within the last five years alone, 16 new species have been described (Chan & Grismer 2008; Das 2005; Das & Grismer 2003; Das & Leong 2004; Grismer & Das 2006; Grismer & Ngo 2007; Grismer & Chan 2008; Grismer *et al.* 2008b) and at least nine more are in preparation (Grismer *et al.* in prep).

*Cnemaspis* are relatively small, cryptically colored, microhabitat specialists inhabiting primary and old secondary rainforests. They are inherently difficult to find and collect in that they are agile, secretive, and generally restrict their movements to the shaded surfaces of rocks, trees and caves during the day and/or they are nocturnal. Additionally, their restrictive body plan of having broad, flattened heads; large, somewhat forward