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A new species of karst-adapted *Cnemaspis* Strauch, 1887 (Squamata: Gekkonidae) from a threatened karst region in Pahang, Peninsular Malaysia

L. LEE GRISMER[1], PERRY L. WOOD, JR.[2], MAKETAB MOHAMED[3], KIN ONN CHAN[4], HEATHER M. HEINZ[5], ALEX S-I. SUMARLI[1], JACOB A. CHAN[1] & ARIEL I. LOREDO[1]

[1]*Department of Biology, La Sierra University, 4500 Riverwalk Parkway, Riverside, California 92515 USA. E-mail: lgrismer@lasierra.edu*
[2]*Department of Biology, Brigham Young University, 150 East Bulldog Boulevard, Provo, Utah 84602 USA. E-mail: pwood@byu.edu*
[3]*Malaysian Nature Society, JKR 641, Jalan Kelantan, Bukit Persekutuan, 50480, Kuala Lumpur, Malaysia. E-mail: maketab_mohamed@yahoo.com*
[4]*Biodiversity Institute and Department of Ecology and Evolutionary Biology, University of Kansas, Lawrence, Kansas 66045, USA. E-mail; chan@ku.edu*
[5]*Department of Biology, San Diego State University, San Diego, California, 92182 USA*

Abstract

A new species of karst-adapted gekkonid lizard of the genus *Cnemaspis* Strauch is described from Gua Gunting and Gua Goyang in a karst region of Merapoh, Pahang, Peninsular Malaysia whose unique limestone formations are in immediate danger of being quarried. The new species differs from all other species of *Cnemaspis* based on its unique suite of morphological and color pattern characters. Its discovery underscores the unique biodiversity endemic to karst regions and adds to a growing list of karst-adapted reptiles from Peninsular Malaysia. We posit that new karst-adapted species endemic to limestone forests will continue to be discovered and these regions will harbor a significant percentage of Peninsular Malaysia's biodiversity and thusly should be conserved rather than quarried.

Key words: new species, *Cnemaspis*, karst, limestone, conservation, biodiversity, Merapoh, Peninsular Malaysia

Introduction

Karst formations compose some of Peninsular Malaysia's most dramatic landscapes. Their unique topography is formed through the dissolution of layers of carbonate bedrock creating caves, sinkholes, and karst towers. Exposed karst surfaces are particularly subject to weathering and as such, karst towers and cliff faces often bear a deep corrugated appearance resulting from years of erosion and fracturing. Such weathering creates a very unique microhabitat to which a number of organisms have become adapted (Komo 1998a,b; Tija 1998). In Peninsular Malaysia, plants are particularly successful at colonizing karst regions. Although limestone karsts account for only 0.3% of the total land surface area of Peninsular Malaysia, 14% of the country's flora is endemic to karst surfaces (Kiew 1998). The flora surrounding karst formations is also unique and generally referred to as limestone forest. It is an open canopy forest composed of a number of endemic, small, spindly trees and spiny plants adapted to nutrient poor conditions and periodic drought (Kiew 1998). Despite the astonishing degree of floral endemism, karst formations and their surrounding limestone forests are often overlooked by vertebrate systematists and thus, only a few specialized vertebrates are known to exploit these unique microhabitats (i.e. Alström *et al.* 2010; Jenkins *et al.* 2004; Woxvold *et al.* 2009). Reptiles, however, are a growing exception. We have been surveying karst regions in Peninsular Malaysia since 2008 and have discovered five new karst-adapted species of Rock Geckos (*Cnemaspis*: Grismer *et al.* 2008a,b, 2009; Wood *et al.* 2013) with an additional description of another species in progress; two new species of karst-adapted Bent-toed Geckos (*Cyrtodactylus*: Grismer *et al.* 2012) with two additional species descriptions in progress; and a new species of limestone forest adapted snake (Quah *et al.* in preparation). Remarkably, we have only explored approximately 2% of the known karst formations and associated

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Discussion

The description of *Cnemaspis selamatkanmerapoh* **sp. nov.** is yet another new species in a growing list of karst-adapted geckos from Peninsular Malaysia. More importantly however, this growing list of species underscores the conservation value of karst formations and their surrounding limestone forests and illuminates the fact that these regions harbor a significant portion of Malaysia's biodiversity. The conservation value of these habitats can no longer be ignored and as many as possible should be studied before they are systematically destroyed. Converting Gua Gunting and Gua Goyang into cement would not only drive *C. selamatkanmerapoh* **sp. nov.** and *Cyrtodactylus* sp. nov. to extinction, but would also eliminate a number of endemic plants and invertebrates (Kiew 1998). Karst regions should be protected and better studied by vertebrate systematists. If reptiles are an indication of the hidden diversity within these unique habitats, then karst regions may be some of the most biotically rich habitats in Peninsular Malaysia with a level of herpetological endemism approaching that of Malaysia's islands (see Chan *et al.* 2010; Grismer 2008, 2011a,b; Grismer *et al.* 2011). Terminating this biodiversity before it is discovered, described, and studied is not only illogical, it is tantamount to discarding a wrapped gift before it is opened and its value assessed.

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