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Cyrts in the city: A new Bent-toed Gecko (Genus *Cyrtodactylus*) is the only endemic species of vertebrate from Batu Caves, Selangor, Peninsular Malaysia

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Abstract

Cyrtodactylus metropolis **sp. nov.** from Batu Caves massif, Selangor, Peninsular Malaysia is differentiated from all congeners by having a unique suite of morphological and color pattern characteristics. Remarkably, this species has been overlooked despite a plethora of field studies at Batu Caves from 1898 to the present and no specimens had ever been examined until now. As with all other limestone forest-adapted *Cyrtodactylus* in Peninsular Malaysia, *C. metropolis* **sp. nov.** is not a cave-adapted species but is far more common on the exterior surfaces of the Batu Caves limestone massif and its surrounding limestone vegetation. We suggest that researchers devote time exploring the exterior surfaces of limestone massifs as well the interiors of their caves.

Key words: new species, *Cyrtodactylus*, karst, limestone, conservation, endemic biodiversity, Batu Caves, Peninsular Malaysia

Introduction

Batu Caves is a 329 meter high limestone massif only 11 km northeast of Kuala Lumpur, the capital and largest metropolitan center in Peninsular Malaysia. This massive limestone formation is perforated by a series of caves and serves as an important area for Hindu worship honoring Lord Murugan's victory over the demon Soorapadam. It is also the focus of the Hindu Community's Thaipusam festival which contributes to making it one of the most highly visited tourist areas in the country. Up until approximately 1970, much of the native limestone forest surrounding Batu Caves was intact, but since then, the adjacent habitat has been replaced by housing, industrial estates, and shops, essentially making Batu Caves an island in a sea of urbanization (Fig. 1). Despite the surrounding development and tourism, Batu Caves still maintains an impressively diverse fauna although no endemic species of vertebrates have been discovered in 116 years of biological surveys (Moseley *et al.* 2012). Included in the Batu Caves vertebrate fauna are 10 species of reptiles—six snakes and four lizards. One of the lizards, a gekkonid, was initially reported by Boulenger (1903, 1912) as *Gymnodactylus* (= *Cyrtodactylus*) *pulchellus* Gray. Later, Moseley *et al.* (2012) noted that photographs of a specimen of *Cyrtodactylus* from Dark Cave (one of the caves within the Batu Caves system) constituted an unidentified species. We have examined photographs of two additional specimens taken within Dark Cave and confirmed they are *Cyrtodactylus* but do not belong to the *C. pulchellus* complex (*sensu* Grismer *et al.* 2012a), and agree with Moseley *et al.* (2012) that it is an undescribed species.

During July of 2013, we conducted a daytime survey of some of the areas of disturbed forest east of Temple

Cyrtodactylus metropolis **sp. nov.** is the latest in a series of descriptions of new species of reptiles from limestone forests (*op. cit.*) and continues to underscore the high biotic diversity of these ecosystems and their obvious conservation value.

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