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Nyx pholeocola, a new genus and cavernicolous species of tribe Aedini (Diptera: Culicidae) from southern Thailand based on morphological and molecular data

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Abstract

Nyx Harbach & Linton, **gen. nov.**, is introduced as a new mosquito genus of tribe Aedini for a previously unknown cave-dwelling species, *Nyx pholeocola* Linton & Harbach, **sp. nov.**, from southern Thailand. A diagnosis of the genus is provided that features unique anatomical characters of the adult, pupal and larval stages of the type species. The affinities of *Nyx* are discussed in terms of its position in the phylogeny of Aedini. *Nyx* is more closely related to *Borichinda* and *Isoaedes* than to other genera of tribe Aedini. Salient differences that distinguish these three genera are contrasted. The male and female genitalia, pupa and fourth-instar larva of the new species are illustrated. DNA sequence for the second nuclear internal spacer region (ITS2) and the 658-bp barcode fragment of the mitochondrial cytochrome c oxidase I (COI) gene reveal very low similarity with published sequences, supporting the unique status of the new species.

Key words: *Nyx* **gen. n.**, *Nyx pholeocola* **sp. n.**, COI barcode, ITS2, mosquito, taxonomy, systematics

Introduction

Biting adults and immature stages of the new species described in this paper were discovered in the cave at Wat Tham Phanturat, Khlong Sok, near Khao Sok National Park in Surat Thani Province of southern Thailand. Adults reared from these larvae were initially found to be similar to species of genera *Borichinda* and *Isoaedes* using the keys of Rattananthikul *et al.* (2010) for the aedine fauna of Thailand. Upon closer examination of the adults and their associated larval and pupal exuviae, it became obvious that the species was very different from the species of those genera. Furthermore, comparisons of COI and ITS2 sequences with the extensive collection of COI barcodes in the Barcode of Life Database (BOLD; www.boldsystems.org) and GenBank, respectively, showed that the species does not fall within any currently recognized genus-level taxon of Aedini, and therefore a new genus-species combination is proposed and described herein.

Material and methods

This study is based primarily on individually reared adults with associated larval and pupal exuviae (collection SS74). The specimens were reared from larvae and pupae collected from a rimstone pool (20 x 50 cm) deep inside a cave in southern (peninsular) Thailand (see *Type Series*). In addition, a few females were collected landing on the collectors within the cave (SS75). Pinned link-reared adults of both sexes were examined under simulated natural light; dissected male and female genitalia and larval and pupal exuviae were studied with differential interference contrast optics. Anatomical terminology and abbreviations used in the descriptions and illustrations follow Harbach & Knight (1980, 1982).