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A new genus and species of false vampire (Chiroptera: Megadermatidae) from peninsular Thailand

PIPAT SOISOOK^{1,2,6}, AMORN PRAJAKJITR³, SUNATE KARAPAN³,
CHARLES M. FRANCIS⁴ & PAUL J. J. BATES⁵

¹Princess Maha Chakri Sirindhorn Natural History Museum, Prince of Songkla University, Hat Yai, Songkhla, Thailand 90110.
E-mail: pipat66@gmail.com

²Excellence Centre for Biodiversity of Peninsular Thailand (CBIPT), Faculty of Science, Prince of Songkla University, Hat Yai, Songkhla, Thailand 90110

³Halabala Wildlife Research Station, Wildlife Research Division, Wildlife Conservation Bureau, Department of National Parks, Wildlife and Plant Conservation, Wang, Narathiwat, Thailand 90160

⁴Canadian Wildlife Service, Environment Canada, Ottawa, Ontario, Canada, K1A 0H3

⁵Harrison Institute, Bowerwood House St. Botolphs Road, Sevenoaks, Kent TN13 3AQ, United Kingdom

⁶Corresponding author

Abstract

A new genus and associated species of false vampire, family Megadermatidae, are described based on three specimens from Bala Forest, Narathiwat Province, peninsular Thailand. The new taxon is characterised by a unique combination of distinctive dental, cranial, and external characters, some of which are shared with exclusively African genera and some with Asian genera. These characters are comparable to, or exceed in number, those differentiating currently recognised genera in the family Megadermatidae. They include the absence of a first upper premolar; greatly enlarged upper canine without an anterolingual cingular cusp but with a robust posterolingual cusp; unmodified upper first molar with the pre-paracrista subequal in length to the postmetacrista, the metastyle not reduced and situated labially; robust lower canine without an anterolingual cusp; the first lower premolar enlarged, equal to or larger than the second lower premolar. In the skull, there is a pronounced rostral depression but no well developed frontal shield with preorbital and/or postorbital processes; the coronoid process is greatly enlarged in each half mandible. Externally, the body size is relatively large and the posterior noseleaf is rounded. The baculum has a robust shaft and two short prongs—the bacula of all five other species of megadermatid are illustrated for the first time; extraordinarily, those of *Macroderma gigas* and *Megaderma lyra* comprise two separate bones. DNA barcoding indicate a genetic divergence of about 20 percent (sequence divergence in the mitochondrial gene CO1) between the new genus and species of *Megaderma* and *Cardioderma*. Currently, despite numerous bat surveys in peninsular Thailand, the new genus is only known from Bala Forest. The small area of this forest and the very low capture rate suggest that the new species may be extremely rare. Its natural history is little known, although its robust dental and cranial features when coupled with chance observations of its feeding behaviour, suggest it may specialise in eating large beetles. Its conservation status is considered to be at risk owing to the rapid loss of forest habitat in much of the Thai-Malay peninsula.

Key words: False vampire, Halabala Wildlife Research Station, Megadermatidae, new genus, new species, taxonomy, Thailand, tropical rainforest, Southeast Asia

Introduction

The false vampires, family Megadermatidae, are restricted to the Old World tropics and subtropics. Externally, they are characterised by a rounded anterior noseleaf; a distinct, well-developed, erect posterior noseleaf; very large ears, usually joined medially, each with a bifurcated tragus; a well-developed interfemoral membrane with no bony tail (Fig. 1). Diagnostic cranio-dental characters include a complete loss (or almost complete loss) of premaxillaries, loss of upper incisors, reduction of lower incisors, anteroposterior compression of the first lower molar (M_1) such that it is shorter than or equal in length to the second lower molar (M_2), marked reduction of the

M. spasma and *E. thongareeae*, with *M. lyra* and *C. cor* as outgroups (Fig. 9). Bacular morphology lends further support to Hand (1985) and Griffith *et al.* (1992) that *L. frons* and *C. cor* are not closely related.

The relationship of *M. spasma* and *M. lyra* remains unresolved. Genetic data included here (Fig. 11), the extraordinary differences in the baculum (Fig. 9), and differences in the dentition and skull support the view that *M. lyra* is generically discrete from *M. spasma*. However, in view of the contradictory interpretations presented by Hand (1985) and Griffiths *et al.* (1992), discussed above, and the weak bootstrap support for the deeper branches in our phylogeny (Fig. 11), we prefer to leave this particular issue for a further study. Additional genetic data, incorporating nuclear genes with slower evolutionary change, may help to resolve the phylogeny.

On the basis of data presented here, it is not possible to place the newly discovered megadermatid from peninsular Thailand into any one of the five previously recognised genera, including the sympatric *Megaderma*. As noted above, it has a unique combination of characters, incorporating features, some of which are found exclusively in African genera and others in Asian genera. These differences are supported by genetic data. Therefore, we have attributed the new species *thongareeae* to a new genus *Eudiscoderma*.

Hand (1995) suggested that where megadermatids live sympatrically over part of their range, they are either significantly different in size (*Megaderma spasma* v *M. lyra*) or represent two distinct lineages (*L. frons* v *C. cor*). She also suggested that the latter species in each of these pairs consumes significantly more vertebrate prey than the other. In the case of *Eudiscoderma*, it is both larger and phylogenetically distinct from *M. spasma* and may have a more specialised diet. *M. spasma* is known to eat large flying insects, such as grasshoppers, moths, bush-crickets, and beetles but not vertebrates (Bates & Harrison 1997). In contrast, *Eudiscoderma* has features, that appear highly developed for crushing hard prey. In the dentition, this includes the robust upper canines and, in the skull, the enlarged coronoid processes and well developed sagittal crest, both of which are indicative of strong musculature. These adaptations sit well with information on the diet. *E. thongareeae* was observed catching and eating beetles, the carapaces of which are made from chitin, one of the hardest of natural materials.

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