Zootaxa 3702 (2): 101–123
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3702.2.1
http://zoobank.org/urn:lsid:zoobank.org:pub:539F4210-B601-4CBB-9297-951DE26846EF

Re-evaluating the taxonomic status of *Chiromantis* in Thailand using multiple lines of evidence (Amphibia: Anura: Rhacophoridae)

ANCHALEE AOWPHOL[1,4], ATTAPOL RUJIRAWAN[1], WUT TAKSINTUM[1], SUTIPONG ARSIRAPOT[2] & DAVID S. MCLEOD[3]

[1]*Department of Zoology, Faculty of Science, Kasetsart University, Bangkok 10900 Thailand*
[2]*Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok 10330 Thailand*
[3]*University of Kansas Biodiversity Institute, 1345 Jayhawk Boulevard, Lawrence, KS 66045-7561, USA*
[4]*Corresponding author. Email: fsciacl@ku.ac.th*

Abstract

Because of general phenotypic similarities and distribution of species across two continents, the genus *Chiromantis* has proven somewhat enigmatic. Among Indochinese species, the validity of *C. hansenae* has been questioned by some who consider it a junior synonym of *C. vittatus*. We employ three lines of evidence to elucidate the taxonomic status and phylogenetic relationships of four congeneric species of *Chiromantis* frogs from Thailand. Results of molecular, morphological, and bioacoustic data analyses support at least four evolutionarily distinct and monophyletic clades: *C. doriae*, *C. nongkhorensis*, *C. vittatus* and *C. hansenae*. Genetic divergence between *C. vittatus* and *C. hansenae* is >10%, significantly greater than *C. doriae* and *C. nongkhorensis* (4.5%). Our results support the taxonomic validity of *C. hansenae* and suggest that there may be more diversity within *C. hansenae* and *C. vittatus* than is currently recognized.

Key words: Advertisement call; Morphometrics; mtDNA sequences; bioacoustics

Introduction

The genus *Chiromantis* Peters, 1854 comprises 15 recognized species (Frost 2013) and is disjunctly distributed, occurring in the African tropics, south of the Sahara, and northeastern India to Southeast Asia (Frost 2013). This widespread yet disjunctive distribution across diverse climatic zones, in combination with evidence from molecular phylogenetic studies has called into question the monophyly of this genus (Wilkinson *et al*. 2002; Frost *et al*. 2006; Li *et al*. 2009; Wiens *et al*. 2009). Four species of these small rhacophorid tree frogs have been recorded from Thailand (Taylor 1962; Chan-ard 2003): *Chiromantis doriae* (Boulenger 1853), *C. hansenae* (Cochran 1927), *C. nongkhorensis* (Cochran 1927) and *C. vittatus* (Boulenger 1887). These frogs occur in forested and non-forested habitats across a range of elevation from low elevation to >1000 m ASL. Breeding occurs in small ponds where females deposit eggs in gelatinous masses (*C. hansenae* and *C. vittatus*) or foam-nests (*C. doriae* and *C. nongkhorensis*) on natural structures (e.g., tree branches, shrubs, and herbaceous vegetation) above water level (Taylor 1962; Sheridan & Ocock 2008). Little is known of the natural history and ecology of these tree frogs, and only recently was *C. hansenae* reported to demonstrate parental care behavior (Sheridan & Ocock 2008). Considerable morphological similarity among some Asian members of this genus has caused several authors to question the taxonomic validity of *C. hansenae* or treat it as a junior synonym of *C. vittatus* (Wilkinson *et al*. 2003; Stuart & Emmett 2006; Chan *et al*. 2011). Different authors have employed traditional morphological characters (e.g., body size, digital webbing, and size of the tympanum) to distinguish *C. vittatus* from *C. hansenae* (Taylor 1962; Wilkinson *et al*. 2003), but these characters have been found to be inconsistently reliable when examining specimens from across the distributional ranges of these species. Resolution of the standing taxonomic confusion between *C. vittatus* and *C. hansenae* is particularly relevant in light of recent discoveries of new species of *Chiromantis* that are morphologically similar to these taxa (e.g., Chan *et al*. 2011).

Accepted by J. Rowley: 8 Aug. 2013; published: 26 Aug. 2013