



## **Systematics of narrow-mouthed frog *Microhyla* Tschudi, 1838 (Amphibia: Anura: Microhylidae) of Indonesia**

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### **ABSTRACT**

*Microhyla* is a genus of narrow-mouthed frogs or better known as ‘percil’, members of the family Microhylidae. The genus *Microhyla* was first described by Tschudi in 1838 with the main characters: small head, tapered muzzle, narrow mouth, no maxilla and vomer teeth, webbed fingers, long and slender, tympanum not clearly visible. The taxonomic status of frogs of the genus *Microhyla* is still being studied because it has the potential for species delimitation and has cryptic characters. This study aims to solve *Microhyla* taxonomic problems in Indonesia utilising multi-character analysis (morphological, molecular, acoustic and tadpole chondrocranium), validate and describe existing *Microhyla* species in Indonesia and their biogeography (preparation of distribution maps), and revision of *Microhyla* taxonomy those in Indonesia follow the latest classification system. Morphological observations are made for both adult individuals and larvae. Molecular analysis was performed using mitochondrial DNA, especially the *16S* gene. Additional characters are taken from the biological aspects of tadpoles, especially chondrocranium and the voice characters of adult individuals. The results obtained based on the multicharacter analysis provide significant changes in the taxonomic status of *Microhyla* in Indonesia. *Microhyla*, which originally only recorded 11 species, has now become 13 species with one new species (*M. sriwijaya*) and three species (*M. butleri*, *M. mantheyi*, and *M. mukhlesuri*) new records in Indonesia. This study also confirmed and changed *M. fissipes* in Indonesia to *M. mukhlesuri* and *M. heymonsi* in Indonesia to *M. nakkavaram*. Research on the taxonomic status of *Microhyla* in Indonesia still needs to be studied, especially the *M. palmipes* group which may have the potential to find new species. In addition, conservation of *Microhyla* habitat in Indonesia also needs to be carried out considering the very fast rate of global climate change and land conversion into residential areas and other activities for humans.

Keywords: *Microhyla*, cryptic species, phylogenetics, taxonomy, mitochondrial DNA