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A new arboreal frog of the genus *Guibemantis* from the southeast of Madagascar (Anura: Mantellidae)

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Abstract

We describe a new species of arboreal frog of the genus *Guibemantis*, subgenus *Guibemantis*, from low altitude rainforest in Manombo Special Reserve, south-eastern Madagascar. Previously published phylogenetic analyses of mitochondrial DNA sequences have placed *Guibemantis diphonus* **sp. nov.** sister to *G. timidus*. The new species is distinguished from *G. timidus* and all other species in the subgenus by a substantial genetic differentiation (≥ 4.4% uncorrected p-distance in the mitochondrial 16S rRNA gene), strongly divergent advertisement call, and some limited morphological differences. It is the smallest known species in the subgenus, with 34–36 mm snout-vent length in adult males. Its advertisement call is unique among other species in the subgenus in being composed of two distinctly different note types (only one note type in the other species).

Key words: Amphibia, *Guibemantis diphonus* **sp. nov.**, Manombo, lowland rainforest, integrative taxonomy, bioacoustics, molecular genetics, morphology

Introduction

The family Mantellidae, representing the largest radiation of frogs in Madagascar, currently includes 211 species (AmphibiaWeb 2015), many of which have arboreal habits. While the majority of these treefrogs are classified in the genus *Boophis* (subfamily Boophinae), several other arboreal species are included in the genus *Guibemantis* (subfamily Mantellinae) and are more closely related to other, more terrestrial genera than to *Boophis* (Glaw & Vences 2006). Early classification schemes had lumped species of *Guibemantis* in *Boophis* (e.g., Guibé 1947) until Blommers-Schlösser (1975, 1979) discovered the derived mating behavior of mantellines and recognized *Guibemantis* (at the time named *Mantidactylus depressiceps* group) as a separate clade.

According to the current classification (Glaw & Vences 2006, 2007), the genus *Guibemantis* is composed of two subgenera which have been recovered as reciprocally monophyletic sister groups in molecular phylogenetic analyses: (1) the subgenus *Pandanusicola*, with currently ten species of which most are small-sized phytotelmic species with tadpoles reproducing in waterfilled leaf axils of mostly *Pandanus* plants (Lehtinen *et al.* 2011, 2012; Vences *et al.* 2013); and (2) the nominal subgenus *Guibemantis*, with currently four species (*G. depressiceps, G. kathrinae, G. timidus, G. tornieri*) comprising larger-sized species of 32–59 mm snout-vent length reproducing in swamps, slow-moving streams and similar lentic water bodies in or near rainforest (Glaw & Vences 2007). Mating in *Guibemantis* takes place without amplexus. Males and females sit on a vertical leaf overhanging the water, the male touching the female's back with the underside of its thigh (Blommers-Schlösser 1979) where specific femoral glands probably release pheromones (Vences *et al.* 2007). Eggs are deposited on the leaf and the exotrophic tadpoles drop into the water where they complete metamorphosis. Eggs can be brownish or greenish with transparent jelly (*G. timidus, G. tornieri*) or white with whitish jelly (*G. depressiceps, G. kathrinae*) (Vences & Glaw 2005; Altig 2008).

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