



Not all little brown frogs are the same: a new species of secretive and cryptic *Gephyromantis* (Anura: Mantellidae) from Madagascar

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Abstract

We describe a new species of small diurnal frog of the genus *Gephyromantis* from Mahasoa, a fragment of mid-altitude rainforest in the northern central east of Madagascar, located to the north east of Lake Alaotra. Analysis of DNA sequences of the mitochondrial 16S rRNA and cytochrome b genes and of the nuclear Rag 1 gene indicate that *Gephyromantis mafy* **sp. nov.** is closely related to *G. eiselti* and *G. thelenae*, that it is genetically distinct and when compared with the genetic diversity of all species in the genus shows genetic differences similar to other pairs of species. These three species are morphologically almost indistinguishable but the new species differs by a relevant and consistent genetic divergence in all markers studied, and by its advertisement calls composed of note series. The call is intermediate between *G. eiselti* and *G. thelenae*, showing shorter note duration and higher repetition rate than in *G. thelenae* and slightly longer note duration but lower repetition rate than in *G. eiselti*. The new species is known only from Mahasoa forest but due to its secretive habits and cryptic morphology, we assume that it is more widespread in the mid-altitude rainforests east and north of Lake Alaotra that so far have been very poorly surveyed. We propose a Red List status of Data Deficient for the new species.

Key words: Madagascar, Mantellidae, Anura, new species, *Gephyromantis mafy* **sp. nov.**

Introduction

In the Malagasy-Comoroan anuran family Mantellidae, the genus *Gephyromantis* comprises 37 species of frogs that constitute a monophyletic radiation (Glaw & Vences 2006; Glaw *et al.* 2006). Species in this genus are mostly semi-arboreal frogs, most of which are restricted to rainforest habitat in eastern and northern Madagascar (Glaw & Vences 2006, 2007), except three species that are found in dry forests of western Madagascar. *Gephyromantis* is divided in five subgenera, *Duboimantis*, *Phylacomantis*, *Laurentomantis*, *Vatomantis*, and the nominal subgenus *Gephyromantis*, and although these have been taxonomically revised and numerous new species described (Andreone *et al.* 2003; Crottini *et al.* 2003; Glaw & Vences 2000, 2001, 2002a, 2002b, 2011; Mercurio & Andreone 2007; Vences & De la Riva 2007; Vences & Glaw 2001; Vences *et al.* 1997, 2003), the diversity of *Gephyromantis* is far from being fully understood (Vieites *et al.* 2009).

A recent phylogeny that included all described and undescribed species (Kaffenberger *et al.* 2011), supports this subgenus level classification, showing that most subgenera are monophyletic, with the exception of *Duboimantis* and with the position of *G. klemmeri*, previously considered to belong to *Gephyromantis*, being more closely related to *Vatomantis* and *Laurentomantis*. The subgenus *Gephyromantis* was highly supported as monophyletic. This nominal subgenus *Gephyromantis* (previously named the *Gephyromantis boulengeri* species group) comprises eight described species. However, an additional nine confirmed candidate species and three deep conspecific lineages have been identified within this clade (see Vieites *et al.* 2009 for terminology), suggesting that this group is