



Description of ten tadpoles in the genus *Boophis* from Madagascar

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Abstract

We provide morphological descriptions of the tadpoles of ten species of Malagasy treefrogs of the genus *Boophis* (family Mantellidae). Based on individuals determined by DNA barcoding, the larvae of eight species are described for the first time: *B. anjanaharibeensis*, *B. axelmeyeri*, *B. elenae*, *B. englaenderi*, *B. luciae*, *B. rhodoscelis*, *B. roseipalmatus*, and *B. vittatus*. For two additional species, *B. andreonei* and *B. microtypanum*, we provide descriptions from other localities than the previously known larvae. All tadpoles described herein are stream-adapted, exotrophic, and of a relatively generalized morphology. In general, we found a morphological similarity of larvae belonging to phenetic species groups of *Boophis*, but more detailed analyses showed several differences between taxa that are known to be sister species or closely related to each other: *B. luciae* has a much higher number of oral papillae than *B. sibilans*, *B. roseipalmatus* has a slightly lower number of papillae and possibly a stronger caudal musculature than *B. madagascariensis*, and *B. elenae* has a distinctly lower number of oral papillae and keratodonts in the first upper keratodont row than *B. sandrae*. This indicates that tadpole characters might, in some cases, provide good taxonomic characters in *Boophis*, a genus in which adults of closely related species are often morphologically extremely similar.

Key words: Amphibia, Anura, Mantellidae, Larval morphology, *Boophis andreonei*, *Boophis anjanaharibeensis*, *Boophis axelmeyeri*, *Boophis elenae*, *Boophis englaenderi*, *Boophis luciae*, *Boophis microtypanum*, *Boophis rhodoscelis*, *Boophis roseipalmatus*, *Boophis vittatus*

Introduction

The rainforests of Madagascar are known to harbour species-rich amphibian communities (Blommers-Schlösser 1979a, 1979b; Blommers-Schlösser & Blanc 1991; Glaw and Vences 2003; Strauß *et al.* 2010). These communities, composed of only frogs as salamanders and caecilians are absent from Madagascar, are heavily affected by the current biodiversity crisis (Andreone 2008; Mittermeier & Gascon 2008). Knowledge on the taxonomy, distribution, behavior, ecology and life history of most species is insufficient, and baseline research in these fields is thus needed (Andreone 2008). Knowledge on the morphology and habitat of tadpoles helps understanding the ecological requirements and the natural history of frog species (Thomas *et al.* 2005). Also, surveys of tadpoles can provide information on the presence of a species, especially outside the reproductive season when adults might be difficult to find (e.g., Vences *et al.* 2008).

Within Malagasy frogs, the monophyletic Mantellidae is the largest family (Glaw & Vences 2007) and it is endemic to Madagascar and Mayotte (Blommers-Schlösser & Blanc 1991; Vences *et al.* 2003). Mantellids are divided in 3 sub-families (Boophinae, Laliostominae, and Mantellinae) and 11 genera (Glaw & Vences 2006; Glaw *et al.* 2006). The Boophinae contain a single genus, *Boophis* Tschudi consisting of 58 species of tree frogs. These are divided in ten different phenetic species groups: *B. albilabris* group, *B. albipunctatus* group, *B. goudoti* group, *B. luteus* group, *B. majori* group, *B. mandraka* group, *B. microtypanum* group, *B.*