



## A molecular phylogeny of the “*Madascincus polleni* species complex”, with description of a new species of scincid lizard from the coastal dune area of northern Madagascar

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### Abstract

The present paper constitutes a study on a taxonomically confusing group of closely related species belonging to the Malagasy skink genus *Madascincus*, currently encompassing the nominal species *M. polleni*, *M. intermedius* and *M. stumpffi*. Based on combined analyses of mitochondrial and nuclear DNA sequences (ND1 and RAG2 genes, respectively), and morphological examination, we provide evidence for the existence of at least four distinct evolutionary lineages within this complex: *Madascincus stumpffi*; *Madascincus arenicola* **sp. nov.** from northern Madagascar; and two cryptic species morphologically similar to the name-bearing types of *M. polleni* and *M. intermedius*. The two latter species, although genetically distinct, appear to be morphologically indistinguishable and their taxonomic status cannot be resolved until a better sampling will be available.

**Key words:** Scincinae, *Madascincus*, *M. arenicola* **sp. nov.**, *M. intermedius*, *M. polleni*, *M. stumpffi*, Madagascar, phylogeny, morphology, species complex

### Introduction

With a number of 1455 known species (Uetz & Hallermann 2010), the family Scincidae (skinks) forms the most diverse radiation of lizards. Given the remarkable richness of this group and its relatively conserved morphology, the taxonomy of many speciose (and frequently non-monophyletic) genera is still controversial (e.g. Mausfeld *et al.* 2002; Reeder 2003; Carranza *et al.* 2008; Donnellan *et al.* 2009; Grismer *et al.* 2009). Following Australia, Madagascar constitutes the second most important area of diversification for this family with almost 80 recognized species, nearly all of them endemic to the island (Glaw & Vences 2007). Three independent radiations of skinks have reached and diversified in Madagascar: two distinct lineages of the subfamily Lygosominae (genera *Trachylepis* and *Cryptoblepharus*), and a third monophyletic group including all Malagasy genera in the Scincinae, namely “*Amphiglossus*” (paraphyletic), *Androngo* (most probably a synonym of *Pygomeles*), *Madascincus*, *Paracontias* (including *Cryptoposcincus* as synonym), *Pseudoacontias*, *Pygomeles*, *Sirenoscincus* and *Voeltzkowia* (Whiting *et al.* 2004; Schmitz *et al.* 2005; Crottini *et al.* 2009). The Scincinae lineage is by far the most speciose and morphologically diverse radiation of Malagasy skinks, with 58 described species currently recognized (Glaw & Vences 2007; Köhler *et al.* 2009, 2010; Miralles *et al.*, 2011). Notably, during the last ten years (2001–2010) twice more species have been described in this group than during any other decade (Fig. 1), strongly suggesting that the actual specific diversity in Malagasy scincines is far from being satisfactorily depicted (see also Andreone & Greer 2002). Several molecular studies have recently been published on the Malagasy Scincinae (Whiting *et al.* 2004; Schmitz *et al.* 2005; Crottini *et al.* 2009), but none of these has focused on alpha-taxonomic questions, i.e., molecular species delimitations and monophyly of species-level lineages. Another difficulty involved in the taxonomic study of this