Zootaxa 4040 (1): 031–047
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.4040.1.3
http://zoobank.org/urn:lsid:zoobank.org:pub:0E373E9A-9E9C-42A3-8E73-75A365762D47

Molecular systematics and undescribed diversity of Madagascan scolecophidian snakes (Squamata: Serpentes)

ZOLTÁN T. NAGY[1,7], ANGELA B. MARION[2], FRANK GLAW[3], AURÉLIEN MIRALLES[4], JOACHIM NOPPER[5], MIGUEL VENCES[6] & S. BLAIR HEDGES[2]

[1]*Royal Belgian Institute of Natural Sciences, OD Taxonomy and Phylogeny, 29 rue Vautier, 1000 Brussels, Belgium*
[2]*Center for Biodiversity, Temple University, 1925 N 12th Street, Philadelphia, PA 19122-1801, USA*
[3]*Zoologische Staatssammlung München (ZSM-SNSB), Münchhausenstr. 21, 81247 München, Germany*
[4]*CNRS-UMR 5175 CEFE, Centre d'Ecologie Fonctionnelle et Evolutive, 1919 route de Mende, 34293 Montpellier cedex 5, France*
[5]*Animal Ecology & Conservation, Zoological Institute, University of Hamburg, Martin-Luther-King Platz 3, 20146 Hamburg, Germany*
[6]*Division of Evolutionary Biology, Zoological Institute, Technical University of Braunschweig, Mendelssohnstr. 4, 38106 Braunschweig, Germany*
[7]*Corresponding author. E-mail: lustimaci@yahoo.com*

Abstract

We provide an updated molecular phylogenetic analysis of global diversity of typhlopid and xenotyphlopid blindsnakes, adding a set of Madagascan samples and sequences of an additional mitochondrial gene to an existing supermatrix of nuclear and mitochondrial gene segments. Our data suggest monophyly of Madagascan typhlopids, exclusive of introduced *Indotyphlops braminus*. The Madagascar-endemic typhlopid clade includes two species previously assigned to the genus *Lemuriatyphlops* (in the subfamily Asiatyphlopinae), which were not each others closest relatives. This contradicts a previous study that described *Lemuriatyphlops* based on a sequence of the cytochrome oxidase subunit 1 gene from a single species and found this species not forming a clade with the other Malagasy species included. Based on our novel phylogenetic assessment we include all species in this endemic typhlopid clade in the genus *Madatyphlops* and in the subfamily Madatyphlopinae and consider *Lemuriatyphlops* as junior synonym. Within *Madatyphlops*, we identify several candidate species. For some of these (those in the *M. arenarius* complex), our preliminary data suggest sympatric occurrence and morphological differentiation, thus the existence of undescribed species. We also comment on the genus-level classification of several non-Madagascan typhlopids. We suggest that African species included in *Madatyphlops* (*Afrotyphlops calabresii, A. cuneirostris, A. platyrhynchus,* and *Rhinotyphlops leucocephalus*) should not be included in this genus. We furthermore argue that recent claims of *Sundatyphlops, Antillotyphlops,* and *Cubatyphlops* being "undiagnosable" or "not monophyletic" were based on errors in tree reconstruction and failure to notice diagnostic characters, and thus regard these three genera as valid.

Key words: Madagascar, mitochondrial DNA, taxonomy, Typhlopidae, *Indotyphlops, Madatyphlops, Lemuriatyphlops* **syn. nov.**, Xenotyphlopidae, *Xenotyphlops*

Introduction

Scolecophidians are small to medium sized, fossorial ophidians devoid of external eyes and with simplified scalation. Due to their secretive life and small number of external characters, they are among the least known snakes despite their almost cosmopolitan distribution with 417 species worldwide, distributed among the families Anomalepididae (18 species), Gerrhopilidae (18 species), Typhlopidae (261 species), Leptotyphlopidae (119 species), and Xenotyphlopidae (1 species) (Uetz & Hošek 2015). Recent molecular work has led to a renewed interest in scolecophidian systematics and revised the alpha taxonomy and higher classification of these snakes in numerous geographical regions (Vidal *et al.* 2010; Marin *et al.* 2013a,b; Kornilios *et al.* 2013; Hedges *et al.* 2014; Pyron & Wallach 2014).

Accepted by S. Carranza: 15 Oct. 2015; published: 9 Nov. 2015