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Sorting out *Lalos*: description of new species and additional taxonomic data on megophryid frogs from northern Indochina (genus *Leptolalax*, Megophryidae, Anura)

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Table of contents

Abstract

Frogs in the subgenus *Lalos* of the genus *Leptolalax* (Megophryidae) are highly diversified in continental Asia and consist of about 17 nominal species. These frogs are small, inconspicuous, and of high superficial morphological similarity.

We here formulate a hypothesis of phylogenetic relationships and assess the amount of genetic variation among genealogical lineages on the basis of 536bp of mitochondrial 16S rDNA sequences. Combining molecular data with a study of morphology, morphometric divergence and geographical proximity, we tested hypotheses of species identity. We (1) used character-based and morphometric analyses to assign the onymophoronts (type specimens) of species in *Lalos* available to us to respectively one of the main clades, in order to propose the best potential correct taxonomic and nomenclatural allocation for the individuals included in the molecular study, and (2) tried to also assign the historical museum specimens to these molecular taxonomic units and to reclassify them whenever necessary.

We also used the molecular data to match tadpoles with adults and provide tadpole descriptions for species the larvae of which were previously unknown. Specimens, that could neither be allocated to a molecularly characterised species (on the basis of their DNA "barcode") nor to a morphologically defined species named on the basis of a type specimen, are described here as new species. Based on this integrative set of data and analyses we describe two new species, *Leptolalax eos* n. sp. and *Leptolalax nyx* n. sp., we resurrect *Leptolalax minimus*, and reassess the distribution of the species studied. We propose changes in the Red List status of *L. pelodytoides* and *L. ventripunctatus* and suggest a conservation status for the new species described herein.

Key words: biodiversity—molecular phylogenetics—morphology—taxonomy—type specimens —tadpoles