



## A critical review and systematic discussion of recent classification proposals for liolaemid lizards

FERNANDO LOBO<sup>1,3</sup>, ROBERT E. ESPINOZA<sup>2</sup> & SEBASTIAN QUINTEROS<sup>1</sup>

<sup>1</sup>IBIGEO (Instituto de Bio y Geociencias del NOA), Facultad de Ciencias Naturales, Universidad Nacional de Salta, Avenida Bolivia 5150, 4400 Salta, Argentina

<sup>2</sup>Department of Biology, California State University, Northridge, Northridge, California 91330-8303, USA

<sup>3</sup>Corresponding author. E-mail: floblo@unsa.edu.ar

### Abstract

We provide a critical review of a recent taxonomic revision of Chilean *Liolaemus* lizards (Iguania: Liolaemidae) by Pincheira-Donoso and Núñez (2005) and a recent paper (Pincheira-Donoso *et al.* 2008), which proposed several new taxonomic and phylogenetic arrangements. We document fundamental problems with many of the proposed taxonomic revisions in both publications, which if followed, could lead to serious taxonomic confusion. In Pincheira-Donoso and Núñez (2005) a subgeneric classification is erected, which was produced by outdated methods (phenetic analyses), cannot be replicated (no matrix is presented), and is taxonomically untenable (some of the subgenera are nested within other subgenera). Most of the taxonomic groups that are proposed have been previously proposed, albeit differently constituted, yet often previous research is not given attribution; when findings are different, the research of others is either overlooked or dismissed without comment. The diagnoses of species and subspecies (including several newly proposed taxa) are often written in an authoritative manner (without supporting data or information), making them insufficient for distinguishing the focal taxon from others belonging to the same group, finally leading to uncertainty regarding the validity of several of the newly proposed taxa, combinations, or synonymies. We also describe less egregious errors of omission and commission. In Pincheira-Donoso *et al.* (2008), most of the proposals follow the Pincheira-Donoso and Núñez (2005) revisions, some species are allocated to groups without consistent cladistic support and other proposed relationships are based on incomplete evidence from other studies dismissing the limitations of the arrangement. Critical species are not identified in a list of material examined. Finally, Pincheira-Donoso *et al.* (2008) present a somewhat outdated and biased discussion of the relative value of using molecules or morphology in systematics.

In light of these limitations, and in an effort to stabilize and prevent further taxonomic confusion, we provide an updated phylogenetic classification of the currently recognized lizards of the family Liolaemidae (*Ctenoblepharys*, *Liolaemus*, and *Phymaturus*), which is based on a consensus of studies published since the first phylogenetic major revision of the clade in 1995.

**Key words:** Liolaemidae, *Ctenoblepharys*, *Liolaemus*, *Phymaturus*, taxonomy, systematics, phylogeny, description, identification, nomenclature, classification

### Resumen

Realizamos un análisis crítico de una reciente revisión taxonómica de las especies chilenas de género *Liolaemus* (Iguania: Liolaemidae) por Pincheira-Donoso y Núñez (2005) y de una reciente publicación (Pincheira-Donoso *et al.* 2008), la cual incluye varias conclusiones taxonómicas y filogenéticas nuevas. Ponemos en evidencia problemas fundamentales con muchas de las revisiones taxonómicas propuestas por estos autores; las cuales, en caso de ser seguidas, podrían llevar a serias confusiones taxonómicas. En Pincheira-Donoso y Núñez (2005) se propone una clasificación subgenérica obtenida por métodos desactualizados (análisis fenéticos), que no pueden ser replicados (no está presente la matriz utilizada), y es taxonómicamente insostenible (algunos de los subgéneros están anidados dentro de otros subgéneros).