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**Phylogenetic systematics of Glassfrogs (Amphibia: Centrolenidae)
and their sister taxon *Allophryne ruthveni***

JUAN M. GUAYASAMIN, SANTIAGO CASTROVIEJO-FISHER, LINDA TRUEB,
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Abstract

Based on a molecular phylogeny, a new phylogenetic taxonomy that is compatible with both the International Code of Zoological Nomenclature (ICZN) and the PhyloCode is proposed for Glassfrogs and their sister taxon, *Allophryne ruthveni*. The arrangement presented herein emphasizes the recognition of clades having (i) significant statistical support and congruence among phylogenetic estimation methods (i.e., parsimony, maximum likelihood, and Bayesian inference criteria), (ii) congruence among genetic markers, and (iii) morphological and/or behavioral distinctiveness. Also, when previously recognized groups are recovered as monophyletic or nearly monophyletic, we propose taxa that minimize the number of name changes required to make these groups monophyletic, preserving the names and contents of previous classifications (i.e., nomenclatural stability). The evolutionary proximity of Centrolenidae and Allophryinae is recognized by combining these families into an unraked taxon, Allocentroleniinae—a proposal that maintains the traditional names and species contents of Centrolenidae and Allophryinae. We arrange centrolenid diversity in two subfamilies: Centroleninae and Hyalinobatrachinae. Within Centroleninae, the diagnosis and species content of the genera *Centrolene*, *Cochranella*, and *Nymphargus* are modified; *Teratohyla* is resurrected and modified, and *Chimerella*, *Espadarana*, *Rulyrana*, *Sachatamia*, and *Vitreorana* are proposed as new genera. The other subfamily, Hyalinobatrachinae, contains the new genus *Celsiella* and a modified *Hyalinobatrachium* that fully corresponds to the former *fleischmanni* Group. Additionally, the genus *Ikakogi* is described. *Ikakogi* could not be assigned with confidence to either subfamily and it is placed as *incertae sedis* in Centrolenidae. The data at hand suggest that *Ikakogi tayrona* is a lineage as old as the subfamilies Hyalinobatrachinae and Centroleninae. The revised taxonomy differs markedly from previous arrangements, which were based on phenetics and few morphological characters. Most of the genera defined herein are confined to distinct biogeographic regions, highlighting the importance of geography in the speciation of Glassfrogs. The principal limitation of this proposal is that it is based on an incomplete sampling of taxa (54% of the recognized Glassfrogs). Although diagnoses are based on phenotypic traits, there are several cases (16% of all species) in which the allocation of species is ambiguous because of morphological homoplasy and the lack of molecular data. Finally, in an attempt to facilitate species identification, comparison, and generic placement, we provide photographs for most (~ 96%) of the recognized centrolenid species.

Key words: Allophryinae, Amazon, Andes, Anura, Centrolenid frogs, Classification, Cordillera de la Costa, Central America, Diversity, Guiana Shield, Hyloidea, Neobatrachia, Neotropics, Phylogeny, South America, Systematics

Resumen

[Sistemática filogenética de las ranas de cristal (Amphibia: Centrolenidae) y su taxón hermano *Allophryne ruthveni*]

Basándonos en una filogenia molecular, proponemos una nueva taxonomía para las ranas de cristal y su taxón hermano, *Allophryne ruthveni*, que es compatible con el Código Internacional de Nomenclatura Zoológica (ICZN) y el PhyloCode. La clasificación que presentamos aquí enfatiza el reconocimiento formal de clados que (i) tienen soporte estadístico significativo mediante diferentes métodos de inferencia filogenética (parsimonia, máxima verosimilitud y Bayesiano), (ii) son congruentes usando diferentes genes y (iii) son diagnosticables a través de su morfología y/o comportamiento.