



## A new species of toad (Bufonidae: *Incilius*) from central Panama

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### Abstract

We describe *Incilius karenlipsae* **sp. nov.**, a new species of toad known from a single locality in the Cordillera de Talamanca of central Panama. We describe this species based on a single individual of perhaps what is now an extinct species. We present mitochondrial sequence data from *cyt b* (675 base-pairs, bp) and 16S (566 bp) to infer its phylogenetic placement among other bufonids. The new species is closely related to the more widespread species *I. coniferus*, but is clearly distinguishable from it by its larger size, vestigial parotoid glands and extensively developed fleshy pads on the hands and feet.

**Key words:** Anura, Bufonidae, Panama, Coclé Province, new species, *Incilius karenlipsae*, *Incilius coniferus*

### Resumen

Describimos *Incilius karenlipsae* **sp. nov.**, una especie de rana nueva encontrada en un lugar en la Cordillera de Talamanca de Panamá central. Describimos esta especie basado en un individuo, que potencialmente representa una especie extinta. Presentamos datos de la secuencia de ADN mitocondrial de *cyt b* (675 parejas de bases, pb) y 16S (566 pb) para inferir su posición filogenética con respecto a otros bufonidos. La especie nueva está relacionada a la especie distribuida más ampliamente *I. coniferus*, pero es claramente distinguida por su tamaño más grande, glándulas parotidas rudimentarias, y almohadillas carnosas desarrolladas extensamente en las manos y los pies.

**Palabras clave:** Anura, Bufonidae, Panama, Provincia Coclé, especie nueva, *Incilius karenlipsae*, *Incilius coniferus*

### Introduction

In 2005, as the devastating pathogenic amphibian chytrid fungus *Batrachochytrium dendrobatidis* was expanding in a wave-like manner across central Panama (Lips *et al.*, 2006), we collected amphibians in the Cordillera de Talamanca to create captive survival assurance colonies (Gagliardo *et al.*, 2008). Our field work resulted in the discovery of a remarkable new species of hylid frog (*Ecnomiophyla rabborum*; Mendelson *et al.*, 2008) and also a new species of bufonid frog described herein. The discovery of new species just as their populations were being decimated—or even eradicated—underscores the significant lacunae in our understanding of true amphibian diversity (Gascon *et al.*, 2007) and the horrific scope of the global crisis of amphibian extinctions (Stuart *et al.*, 2004; Collins and Crump, 2009). Indeed, it is often the case that narrowly endemic species such as the two frogs discovered in 2005 are eliminated by amphibian chytridiomycosis, resulting in regional homogenization of amphibian faunas (Smith *et al.*, 2009). Herein we describe yet another potentially ill-fated species—a practice we have come to call “forensic taxonomy” that is becoming all too familiar (e.g., Coloma *et al.*, 2007) in the wake of ongoing amphibian extinctions.