Zootaxa 3220: 44–60 (2012)
www.mapress.com/zootaxa/

Article

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

A new cryptic species of the genus *Eleutherodactylus* (Amphibia: Anura: Eleutherodactylidae) from Cuba

LUIS M. DÍAZ[1], S. BLAIR HEDGES[2] & MICHAEL SCHMID[3]

[1]*Museo Nacional de Historia Natural de Cuba, Obispo #61, Esquina Oficios, Plaza de Armas, Habana Vieja, CP 10100. E-mail: lmdiaz@mnhnc.inf.cu*

[2]*Department of Biology, 208 Mueller Laboratory, Pennsylvania State University, University Park, Pennsylvania 16802-5301. E-mail: sbh1@psu.edu*

[3]*Department of Human Genetics, Biocenter, University of Würzburg, Würzburg, Germany. E-mail: m.schmid@biozentrum.uni-wuerzburg.de*

Abstract

The widely distributed grass frog of Cuba, *Eleutherodactylus varleyi*, is shown here to comprise two species. One, *E. varleyi*, occurs in western and central Cuba while the other, *E. feichtingeri* **n. sp.**, occurs in central and eastern Cuba. The two species are sympatric in central Cuba, and syntopic in the vicinity of Sierra de Cubitas, Camagüey Province. A molecular phylogeny of mitochondrial DNA sequences from 18 localities confirms the existence of two well-supported major clades corresponding to each of these species, and the sympatry of the species. Tympanum size and advertisement call are the most useful diagnostic characters, although the two species are shown to have karyotypic differences as well. Possible character displacement in morphology and vocalization, in the area of sympatry, is discussed.

Key words: Caribbean, West Indies, Terrarana, *Euhyas*, morphology, phylogeny, bioacoustics, chromosomes

Introduction

Cuban frogs are represented by 65 species, following the general consensus of different authors (Henderson and Powell, 2009; Schmid *et al*., 2010; Frost, 2010). The genus *Eleutherodactylus* comprises 85% of the Cuban anuran fauna. Within the genus, Hedges *et al*. (2008) defined species series and species groups in their revision of the very large Neotropical frog clade Terrarana. Group placement and phylogenetic relationships among species were supported by DNA sequence data, data in some cases were inferred from shared morphological characters when molecular information was not available. In the Cuban *Eleutherodactylus gundlachi* species group, of the *Eleutherodactylus* (*Euhyas*) *planirostris* species series, these authors included the Cuban species *E. adelus* Díaz, Cádiz, and Hedges, 2003; *E. gundlachi* Schmidt, 1920; *E. intermedius* Barbour and Shreve, 1937; *E. tetajulia* Estrada and Hedges, 1996; and *E. varleyi* Dunn, 1925.

Eleutherodactylus varleyi is one of the widely distributed frogs in Cuba, inhabiting both open lowlands and mountain forests, from sea level to approximately 900 m altitude (Schwartz and Henderson, 1991; Díaz and Cádiz, 2008). Díaz *et al*. (2003), and Díaz and Cádiz (2007, 2008) recognized two different advertisement call patterns in *E. varleyi*. Pattern I was considered as typical for the species and basically consists of sequences of two-note calls. Pattern II was characterized by single-note calls with a higher intensity than those present in Pattern I. These authors suggested that call patterns might be related to the presence of at least two cryptic species. Additionally, Schmid *et al*. (2010) found karyotypic differences between western (accoustic Pattern I) and eastern (Pattern II) populations of *E. varleyi*, which support this hypothesis. During September–October of 2002 and 2010, both call patterns were found at the surroundings of Sierra de Cubitas. Sympatric specimens with either kind of advertisement call also had morphological differences. A review of several populations of *E. varleyi* throughout Cuba, combining morphology, bioacustics, DNA sequences, and cytogenetic analyses, provides enough evidence for the recognition of a new species, which is herein described and named.

 Accepted by M. Vences: 21 Dec. 2011; published: 2 Mar. 2012