



A review of the biology and literature of the Gulf Coast Toad (*Incilius nebulifer*), native to Mexico and the United States

JOSEPH R. MENDELSON III^{1,2,5}, CHASE. T. KINSEY³ & JAMES. B. MURPHY⁴

¹Zoo Atlanta, Atlanta, GA, 30312, USA

²School of Biology, Georgia Institute of Technology, Atlanta, GA, 30332, USA

³School of Forestry and Wildlife, Auburn University, Auburn, AL, 36849, USA

⁴Division of Amphibians and Reptiles, Smithsonian Institution, Washington, DC, 20013 USA

⁵Corresponding author. E-mail: jmendelson@zoatlanta.org

Abstract

The Gulf Coast Toad (*Incilius nebulifer*) is an abundant and widespread species within its range in the United States and Mexico, so it appears on many faunal checklists and is considered in diverse kinds of research. We review the basic biology, distribution, and published history of this species, identifying only those records and publications referable to *I. nebulifer*, to help researchers identify published works pertaining to *I. nebulifer* rather than *I. valliceps*, with which it formerly was considered to be conspecific.

Key words: Amphibia, Anura, Bufonidae, *Incilius nebulifer*, Gulf Coast Toad, Mexico, United States

Introduction

Incilius nebulifer (Girard, 1854; Fig. 1), the Gulf Coast Toad, is an abundant species within its range in the United States and Mexico, appearing in many faunal checklists. It is considered in many ecological studies and is the basis for a large number of other research studies in fields such as physiology. Of especial importance is the large number of dissertations and publications involving *I. nebulifer* and/or *I. valliceps* emanating from the productive laboratory of W. F. Blair at the University of Texas during the 1950s–1960s, all of which are presented under the single taxon *Bufo valliceps*. Mulcahy & Mendelson (2000) removed *I. nebulifer* from the synonymy of the abundant Mesoamerican species *I. valliceps* (Wiegmann 1833), but for the majority their taxonomic histories *I. nebulifer* and *I. valliceps* have been considered conspecific. Further, the two species were variously referenced under the taxon *Bufo valliceps*; Frost *et al.* (2006) removed the taxon *nebulifer* from the genus *Bufo*, and it was eventually placed in the genus *Incilius* by Frost *et al.* (2009). Earlier reviews (e.g., Smith & Taylor 1948; Porter 1970), under the name *Bufo valliceps*, are difficult to interpret because they do not distinguish locality records or references referable specifically to either *I. nebulifer* or *I. valliceps*. All recent reviews (e.g., Dodd 2013; Lemos-Espinal & Smith 2007) are based on political boundaries and thus exclude records and references relevant to much of the wide geographic distribution of *I. nebulifer*. In this contribution we summarize the basic biology of *I. nebulifer*, present every geographic record of which we are aware and in which we have confidence, and summarize the publications referable specifically to *I. nebulifer*, regardless of how the taxonomy appears in the publication, across its entire range in both USA and Mexico.

Incilius nebulifer (Girard, 1854)

Gulf Coast Toad

Bufo granulosus Baird & Girard, 1852:173. [Not of Spix, 1824]. Type-locality “between Indianola and San Antonio, Texas” [restricted to “Indianola, Calhoun County, Texas” by Schmidt, 1953:66.]. Holotype (fide Kellogg, 1932), United States