



The phylogenetic position of the Critically Endangered Saint Croix ground lizard *Ameiva polops*: revisiting molecular systematics of West Indian *Ameiva*

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Abstract

The phylogenetic position of the critically endangered Saint Croix ground lizard *Ameiva polops* is presently unknown and several hypotheses have been proposed. We investigated the phylogenetic position of this species using molecular phylogenetic methods. We obtained sequences of DNA fragments of the mitochondrial ribosomal genes 12S rDNA and 16S rDNA for this species. We aligned these sequences with published sequences of other *Ameiva* species, which include most of the *Ameiva* species from the West Indies, three *Ameiva* species from Central America and South America, and one from the teiid lizard *Tupinambis teguixin*, which was used as outgroup. We conducted Maximum Likelihood and Bayesian phylogenetic analyses. The phylogenetic reconstructions among the different methods were very similar, supporting the monophyly of West Indian *Ameiva* and showing within this lineage, a basal polytomy of four clades that are separated geographically. *Ameiva polops* grouped in a cluster that included the other two *Ameiva* species found in the Puerto Rican Bank: *A. wetmorei* and *A. exsul*. A sister relationship between *A. polops* and *A. wetmorei* is suggested by our analyses. We compare our results with a previous study on molecular systematics of West Indian *Ameiva*.

Key words: molecular phylogenetics, Caribbean, West Indies, Greater Antilles, Lesser Antilles, biogeography, phylogeography, Teiidae, dispersal, vicariance

Introduction

The phylogenetic position of the endangered Saint Croix ground lizard, *Ameiva polops* Cope, is unknown. This species, endemic to the island of Saint Croix and its offshore keys in the U.S. Virgin Islands, has been listed as Endangered by the U.S. Fish and Wildlife Service since 1977; whereas the International Union for Conservation of Nature (IUCN) listed this species as Endangered between 1986 and 1996, and as Critically Endangered since 1996 (Dodd 1980; Nellis 1996). *Ameiva polops* was once abundant along the coast of Saint Croix Island; however, it went completely extinct from St. Croix proper by the end of the 1960's (Baskin & Williams 1966; Dodd 1980; Philibosian & Ruibal 1971). Two natural populations of this lizard survive on Protestant Cay and Green Cay, Saint Croix (McNair & Coles 2003; McNair & Lombard 2004). Recent genetic work indicates that they are genetically differentiated and correspond to two distinct population segments (Hurtado *et al.* 2012). To help in the preservation of this lizard, two other populations have been established with translocated individuals from the two natural extant populations, one on Ruth Island, Saint Croix, with individuals from Protestant Cay, and one on Buck Island, Saint Croix, with individuals from Green Cay (Hurtado *et al.* 2012; Treglia 2010). While the population recently established on Buck Island is thriving and relatively secure (Treglia & Fitzgerald 2011), the populations on Protestant Cay, Green Cay, and Ruth Island, are extremely small in size, and vulnerable to hurricanes, sea level rise, introduction of exotic species and landscape transformation (McNair & Coles 2003; McNair & Lombard 2004; McNair & Mackay 2005).

Ameiva is a genus of macroteiids in the family Teiidae, subfamily Teiinae, which includes also *Aspidoscelis*,

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