



Geographic variation, phylogeny and systematic status of *Gracilinanus microtarsus* (Mammalia: Didelphimorphia: Didelphidae)

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Abstract

The gracile mouse opossum *Gracilinanus microtarsus* occurs mainly along the Atlantic forest of eastern and southern Brazil. Earlier studies revealed high levels of genetic divergence among samples across its range. Here, we analyzed the congruence of geographic variation between molecular and morphological characters to evaluate whether the populations that have been segregated by molecular divergence represent more than one species, as previously suggested. We examined 195 specimens of *G. microtarsus*, 94 of *G. agilis*, and 12 of *Cryptonanus* sp., and inferred a phylogeny based on 25 discrete morphological characters. We compared this result with a phylogeny based on partial cytochrome *b* sequences of 27 specimens. The monophyly of the genus, and of both *G. microtarsus* and *G. agilis* were corroborated by morphological and molecular analyses. The molecular phylogeny recovered three clades, and the morphological data indicated three distinct lineages, which also segregated in morphometric space, indicating the possibility of occurrence of three cryptic species within what is currently identified as *G. microtarsus*. However, morphological and molecular phylogenies were not completely congruent, and the morphological classification of the specimens included in the molecular analysis resulted in a paraphyletic group in the molecular phylogeny. Hence, our results suggest that *G. microtarsus* represents one species, diagnosable by morphological and molecular characters, showing strong morphological and molecular variation throughout its distributional range.

Key words: Atlantic forest, Brazil, cytochrome b, intraspecific variation, mammal, marsupials, neotropics

Introduction

The genus *Gracilinanus* Gardner and Creighton, 1989 belongs to the order Didelphimorphia, family Didelphidae, and comprises part of the small-bodied marsupials with prehensile and long tails, blackish eye-rings, and no marsupium. They are arboreal or semi-arboreal, insectivorous and frugivorous, solitary and nocturnal animals (Martins and Bonato 2004). Species of *Gracilinanus* occur from Venezuela, Colombia, Guyana, Suriname, French Guiana,