
Taxonomy Genetics

Computational species delimitation provides evidence for distinct evolutionary lineages of *Trinomys iheringi* (Rodentia: Echomyidae)

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The endemic Brazilian spiny rat genus *Trinomys* comprises 13 taxa occurring in Atlantic forest, Cerrado and Caatinga biomes. This genus has a controversial systematics, and until recently six subspecies were recognized for *Trinomys iheringi* (*Trinomys iheringi iheringi*, *Trinomys iheringi graciosus*, *Trinomys iheringi bonafidei*, *Trinomys iheringi eliasi*, *Trinomys iheringi paratus*, *Trinomys iheringi panema* and *Trinomys iheringi denigratus*), all present in southeastern Brazil. Ilha Grande island populations, in Rio de Janeiro state, were considered as *Trinomys dimidiatus*, the species with geographical distribution spanning the mainland adjacent to this island. However, studies based on cytochrome b suggested that individuals from the Ilha Grande island actually belong to *Trinomys iheringi*. As a consequence, *Trinomys iheringi* now consists of a monotypic species with a disjunct distribution: in the Ilha Grande island, and in the São Paulo state, both in the São Sebastião island and in the mainland. Given this disjunct geographic distribution, we were prompted to investigate the phylogenetic relationships between populations from different localities. We sequenced the mitochondrial gene cytochrome b for 170 individuals of *Trinomys*, comprising all currently recognized species and added sequences available in GenBank to estimate within-genus divergence times. Moreover, we applied computational species delimitation methods to investigate whether *Trinomys iheringi* populations from the Ilha Grande island and São Paulo state were independent evolutionary units. Our results indicate that the Ilha Grande island and São Paulo populations separated around 0.798 Mya (0.35-1.33 Mya). Geological data poses that Ilha Grande island was completely separated from the mainland around 0.0051 Mya, which is far more recent than the estimated age of split between these two lineages. Therefore, we are suggesting that this divergence did not result from a vicariant event. Computational species delimitation methods always recovered both populations from the São Sebastião island and mainland São Paulo as unique entities. Our analysis indicates that *Trinomys iheringi* is not monotypic and possibly consists of several subspecies.

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