



Molecular phylogeny of Asiatic Short-Tailed Shrews, genus *Blarinella* Thomas, 1911 (Mammalia: Soricomorpha: Soricidae) and its taxonomic implications

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Abstract

The classification and phylogenetic relationships of the genus *Blarinella* have been traditionally based on morphological characteristics, and there have been no studies published about the molecular phylogenetic relationships and biogeography for this genus. Here, we reconstructed the phylogenetic relationships of the genus *Blarinella* based on one nuclear (ApoB) and two mitochondrial (cyt-*b*, 16S rRNA) genes. Our results supported the monophyly of the genus *Blarinella* and the valid species status of *Blarinella wardi*. Nevertheless, two morphologically defined *Blarinella* species, *B. quadraticauda* and *B. griselda*, were poorly differentiated by molecular data; *B. quadraticauda* was found embedded within *B. griselda* making the latter a paraphyletic group. These results indicate that *B. quadraticauda* might be under a budding speciation scenario or is a restricted geographical subspecies of *B. griselda*. Phylogeographic analyses suggest that diversification and speciation of *Blarinella* might have been promoted by vicariance events associated to the complex topography of Southwest China. Further morphological, genetic and ecological studies are necessary to examine these hypotheses.

Key words: *Blarinella*, budding speciation, molecular phylogeny, mitochondrial DNA, nuclear DNA, paraphyly

Introduction

The Asiatic short-tailed shrews, genus *Blarinella* Thomas, are semifossorial insectivores with a stout body and short, slender tail, and intensely colored red-tipped teeth (Hoffmann 1987). *Blarinella* is the only living genus of the tribe Blarinellini, with 3 species: *B. quadraticauda* (Milne-Edwards 1872), *B. griselda* (Tomas 1912) and *B. wardi* (Thomas 1915). These species are distributed in Southwest China (Yunnan, Guizhou, Gansu, Hubei, Shaanxi, Chongqing and Sichuan Provinces) and adjacent regions including northern Myanmar and Vietnam (Corbet & Hill 1992; Hutterer 1993; Zhang *et al* 1999; Wang 2003; Hutterer *et al* 2005; Abramov *et al* 2007; Smith *et al* 2008).

Milne-Edwards (1872) first described *Sorex quadraticauda* (= *Blarinella quadraticauda*) based on a specimen from Mouping (=Baoping), Sichuan Province, China. Subsequently, Thomas (1911) established the genus *Blarinella* with *B. griselda* (Thomas 1912) and then *B. wardi* (Thomas 1915). However, Allen (1938) and subsequent authors (Ellerman & Morrison-Scott 1951, 1966; Corbet 1978; Honacki *et al.* 1982; Corbet & Hill 1992) did not agree with Thomas's classification, and treated the two species (*B. griselda* and *B. wardi*) as subspecies of *B. quadraticauda*. More recently, a taxonomic revision by Jiang *et al.* (2003) suggested that *B. griselda* and *B. wardi* should be ranked as valid species based on multivariate and univariate morphometric analyses of skulls (Wang