



## A new vole from Xizang, China and the molecular phylogeny of the genus *Neodon* (Cricetidae: Arvicolinae)

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### Abstract

During a faunal survey in southern Xizang, we collected 27 specimens of voles that could not be identified as any known species in the Arvicolinae. These specimens shared the following morphological characteristics, not corresponding with any other arvicoline species: the first lower molar possessed five closed triangles, the third upper molar exhibited either four or three inner angles, and the tails of all specimens measured 30% of the body length. Their proximal baculum of the glans was very sturdy and trumpet-shaped, the distal baculum was tongue-like and sturdy, and the lateral bacula were very short. Molecular phylogenetic analyses based on nucleotide sequences of the mitochondrial cytochrome *b* (*cyt b*) gene clustered these specimens as a distinct lineage within the genus *Neodon*. According to the morphological and molecular data, we described them as a new species, *Neodon linzhiensis*. Our phylogenetic analysis strongly supported that *Lasiopodomys fuscus*, *Phaiomys leucurus*, *Neodon sikimensis*, *N. irene* and the new species formed a monophyletic group, not including *N. juldaschi*. We suggested that *L. fuscus* and *P. leucurus* should be transferred to *Neodon* and that *N. juldaschi* should be removed from this genus. Following our new delineation of *Neodon*, we proposed a redefinition of the morphological diagnostic characters of the genus.

**Key words:** new species, Arvicolinae, *Neodon*, *Lasiopodomys fuscus*, Tibet

### Introduction

The genus *Neodon* Horsfield 1841 is classified within the subfamily Arvicolinae (Musser & Carleton 2005). The taxon is variously treated as a genus (Hinton 1923, 1926; Ellerman 1941; Musser & Carleton 2005), subgenus of *Pitymys* (Ellerman & Morison-Scott 1951; Corbet 1978; Luo 2000), and a subgenus of *Microtus* (Allen 1940; Grovov & Polyakov 1977; Musser & Carleton 1993). Hinton (1923) includes the following species within the genus *Neodon*: *sikimensis*, *forresti*, *irene*, *oniscus* and *carruthersi*. Musser and Carleton (2005) only recognized four species: *sikimensis*, *forresti*, *irene* and *juldaschi*; they treat *oniscus* as a subspecies of *N. irene* and *carruthersi* as subspecies of *N. juldaschi*. The diagnostic characteristics of this genus, such as described by Hinton (1926), are as follows: first lower molar with three closed triangles in advance of the posterior transverse prism; fourth and fifth spaces of first molar widely confluent and separated from the anterior trefoil; moderate size ears with a distinct antitragus; fore and hind claws equally developed; palate typical of *Microtus* where posterior edge of the bony palate consists of a thick medium projection bordered on either side by deep, open pits; and slight development of spongy bone within the auditory bulla.

During autumn 2007 and 2008, more than 400 small mammal specimens were collected as part of two biodiversity programs: the Rapid Biodiversity Assessment program of Peking University at Linzhi, Xizang, and the Baseline Survey of Gongbu Nature Reserve by the Sichuan Academy of Forestry. During the field work, 27 speci-