



First record of *Myotis flavus* (Chiroptera: Vespertilionidae) from mainland China and a reassessment of its taxonomic status

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Abstract

Myotis flavus, a synonym of *M. formosus* found in Taiwan, is reported for the first time for mainland China. We captured one bat in Jiangxi province in Southeast China and identified the taxon as *M. flavus* based upon its external, cranial and baculum morphology. The uncorrected cytb sequence divergence between *M. flavus* from Jiangxi and specimen from Taiwan was only 0.61%, indicating intraspecific divergence. Both, morphological and genetic evidence indicated that the specimen from mainland China was a new locality record of *M. flavus*. In contrast, *M. flavus* from Jiangxi and from Taiwan exhibited 15.53–16.67% sequence divergence from samples of *M. formosus* obtained from locations outside Taiwan, and they were not sister lineages. Therefore *M. flavus* should be recognized as a species from *M. formosus*. In addition, the sequence similarity between *M. watasei* from Taiwan and *M. formosus* from mainland China and their phylogenetic grouping strongly suggests that *M. watasei* is a synonym of *M. formosus*.

Key words: Cytochrome *b*, Bats, Mainland China, Systematics

Introduction

The *Myotis*-subgenus “*Chysopteron*” is a less investigated group and includes only two species of Asian *Myotis*, *Myotis hermani* and *M. formosus* (Corbet & Hill, 1992). *M. formosus* is widely distributed extending from Afghanistan eastward to India, Nepal, China, Taiwan, Korea, Japan, Malaysia, Indonesia, and the Philippines (Simmons, 2005). Findley (1972) included *flavus*, *rufoniger*, *rufopictus* and *hermani* as synonyms of *M. formosus*, but did not recognize *watasei* and *tsuensis*. Heaney (1998) suggested that *M. rufopictus* may represent a distinct species, and several authors suggested that *M. hermani* and *M. formosus* were two distinct species based on external and cranial morphological characteristics (Corbet & Hill, 1992; Sara, *et al.*, 2006). In addition, *watasei* was considered to be a synonym of *M. formosus* (Chou, 2004), and Simmons (2005) included *tsuensis* as a synonym of *M. formosus*. However, the taxonomic status of *M. flavus* is contentious. It was considered to be synonym of *M. formosus* (Findley, 1972). However, based on dental and cranial characteristics, *M. flavus* was seen as different from *M. watasei* by (Chou, 2004), a view subsequently followed by Lin *et al.* (2005), who updated the taxonomic status of *M. watasei* and suggested that *M. watasei* was a subspecies not a synonym of *M. formosus*, but also that the taxonomic status of *M. flavus* should be reexamined.

In the present study, we captured one bat specimen from Jinggangshan Natural Reserve in Jiangxi Province of mainland China. It was identified as *M. flavus* based on its external, skull and baculum morphology and also by comparing mtDNA cytb sequences of *M. formosus* collected in Jiangxi and Jilin provinces (both mainland China) and in Taiwan.