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Description of two new species of the genus *Megophrys* (Amphibia: Anura: Megophryidae) from Heishiding Nature Reserve, Fengkai, Guangdong, China, based on molecular and morphological data

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Abstract

Two new species, *Megophrys acuta* **sp. nov.** and *Megophrys obesa* **sp. nov.**, are described based on a series of specimens collected from Heishiding Nature Reserve, Fengkai County, Guangdong Province, China. They can be distinguished from other known congeners occurred in southern and eastern China by morphological characters and molecular divergence in the mitochondrial 16S rRNA gene. *M. acuta* is characterized by small and slender body with adult females measuring 28.1–33.6 mm and adult males measuring 27.1–33.0 mm in snout-vent length; snout pointed, strongly protruding well beyond margin of lower jaw; canthus rostralis well developed and sharp; hindlimbs short, the heels not meeting, tibio-tarsal articulation reaching forward the pupil of eye. *M. obesa* is characterized by stout and slightly small body with adult females measuring 37.5–41.2 mm, adult male measuring 35.6 mm in snout-vent length; snout round in dorsal view; canthus rostralis developed; hindlimbs short, the heels not meeting, tibio-tarsal articulation reaching forward the posterior margin of eye. The discovery of these two new species further confirms that the diversity of this genus has been significantly underestimated. At present the genus *Megophrys* contains 56 species of which 35 species are distributed in China.

Key words: Guangdong Province, China, Megophryidae, *Megophrys acuta* **sp. nov**., *Megophrys obesa* **sp. nov**., mitochondrial DNA, morphology, taxonomy

Introduction

Currently, the genus *Megophrys* sensu lato contains 54 species, widespread throughout places south to the Qinling Mountains and Huangshan Mountains of China, southern and eastern Himalayas, across southeastern Asia to islands of the Sunda Shelf and the Philippines (Fei *et al*. 2009, Frost 2014, Wang *et al.* 2014). There are 33 species of *Megophrys* recognized from China, among which only eight *Megophrys* species were recorded from eastern and southern China, including *M. mangshanensis* Fei & Ye widely distributed in Nanling Mountains and Jiulianshan Mountains; *M. brachykolos* Inger & Romer recognized from Hong Kong, Guangdong and Guangxi, which is the only one distributed in the south of the Tropic of Cancer in eastern and southern China; *M. boettgeri* (Boulenger) recognized from Wuyi Mountains and eastern China; *M. kuatunensis* Pope recognized from Wuyi Mountains; *M. huangshanensis* Fei & Ye recognized from Huangshan Mountains; and the recently described *M. jinggangensis* (Wang), *M. lini* (Wang & Yang) and *M. cheni* (Wang & Liu) from Mount Jinggang, Nanfengmian Nature Reserve and neighboring Taoyuandong Nature Reserve, situated in the border between the Jiangxi and Hunan provinces, southern China. (Fei *et al.* 2012, Wang *et al.* 2012, Yang *et al.* 2013, Wang *et al.* 2014) . (Figure 1)

The Heishiding Nature Reserve (23°25'–23°30' N, 111°48'–111°55' E), where the Tropic of Cancer crossing the center core area, located in the northern region of the Yunkai Mountains in southern China. The reported distribution of the species of genus *Megohrys* from Yunkai Mountains was restricted to the Heishiding Nature Reserve only. The first was reported by Chang *et al.* 1997 as *Megophrys minor*, and the second was reported by Chan *et al.* 2004 as *Megophrys kuatunensis*. However, during our repeated herpetological surveys from 2008 to 2013 in this region, the above two *Megophrys* species were not found, but we discovered two different, unnamed,

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