



A new species of *Gracixalus* (Anura: Rhacophoridae) with a hyperextended vocal repertoire from Vietnam

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Abstract

We describe a new species of small rhacophorid frog from north central Vietnam. *Gracixalus quangii* **sp. nov.** is morphologically and genetically most similar to *G. gracilipes* and *G. supercornutus*, but is distinguished from these species and all other rhacophorids in Vietnam and adjoining countries by a combination of their small size (males <25 mm); greenish, translucent skin; opaque yellow anterior surface of thighs, groin, and behind the insertion of the arm; black spots on the flanks and ventral surface of the thighs; triangularly pointed snout; and the presence of a tibiotarsal projection. *Gracixalus quangii* **sp. nov.** has a non-stereotypical, hyperextended vocal repertoire, with calls highly variable in structure, duration, amplitude and frequency (dominant frequency 4.1–4.7 kHz). Like *G. gracilipes* and *G. supercornutus*, *G. quangii* **sp. nov.** deposits egg clutches in clumps on leaves overhanging shallow forest pools or puddles. The new species is known from montane evergreen forest in Pu Hoat Proposed Nature Reserve in western Nghe An Province, between ~600–1,300 m elevation. Preliminary molecular (mtDNA) data recovered two strongly supported clades within frogs currently considered to belong to genus *Gracixalus*, with the new species nested within a monophyletic clade consisting of *G. gracilipes*, *G. supercornutus*, and *G. quyeti*.

Key words: Anura, Nghe An Province, Rhacophoridae, Southeast Asia, Vietnam

Introduction

The family Rhacophoridae contains approximately 320 species of frog, distributed throughout subsaharan Africa, China, Southeast Asia, Japan, Taiwan, the Philippines, and the Greater Sunda Islands (Frost 2011). Due to the high diversity and often morphological similarity of species within the family, phylogenetic placement within the group remains unresolved and in a constant state of flux (Delorme et al. 2005; Li et al. 2008, 2009; Yu et al. 2008, 2009, 2010), and the generic placement of new species described is often uncertain (eg. Grismer et al. 2007; Nguyen et al. 2008).

The rhacophorid genus *Gracixalus* was proposed first as a subgenus (Delorme et al. 2005) and later elevated to genus (Li et al. 2008). The specific composition of this group is undetermined. The type species of the genus, *Gracixalus gracilipes* (Bourret 1937), and the morphologically similar species *G. supercornutus* (Orlov et al. 2004), were originally proposed as the only members of the genus (Delorme et al. 2005; Li et al. 2008). Since then, several other species have been tentatively transferred into the genus (*G. jinxiuensis* Hu 1978; *G. medogensis* Ye & Hu 1984; *G. quyeti* Nguyen et al. 2008) (Frost 2011; Yu et al. 2009), but their placement, and the placement of morphologically similar species, remains uncertain.

During recent field work in north central Vietnam, we discovered a small species of frog that most closely resembles *Gracixalus gracilipes* and *G. supercornutus*, but that differs from these and all other rhacophorids from Vietnam and adjoining countries. We describe this species as new, and use the opportunity to examine the genus *Gracixalus* more closely.