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Article

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A new newt of the genus *Cynops* (Caudata: Salamandridae) from Fujian Province, southeastern China

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Abstract

A new species of fire-bellied newt, *Cynops fudingensis*, is described from northeastern Fujian Province, southeastern China. This species forms a well-supported clade with *C. orientalis* and *C. orphicus* based on molecular phylogenetic analysis of nucleotide sequences from mitochondrial DNA subunit two of NADH dehydrogenase and its two flanking tRNAs. Further, its genetic distance to each of the two previously described species is large. Principal-components analysis of external linear measurements differentiates the new species from *C. orientalis* and *C. orphicus* in morphological space. Geographically, *C. fudingensis* occupies the distribution gap between *C. orientalis* and *C. orphicus*.

Key words: Molecular phylogeny; taxonomy; Amphibia; salamanders; new species

Introduction

The genus *Cynops*, commonly known as the fire-bellied newts, is a member of the "modern Asian newts" clade, which also includes *Pachytriton* and *Paramesotriton* (Zhang *et al.* 2008). These three genera do not have a close relationship with other Asian salamandrids but instead are sister taxa to European newts, such as *Triturus, Mesotriton* and *Lissotriton* (Weisrock *et al.* 2006; Steinfartz *et al.* 2007; Zhang *et al.* 2008). Seven species of *Cynops* are recognized at this time, which constitute three species groups based on external morphology and osteology: the first group includes *C. ensicauda* Hallowell and *C. pyrrhogaster* Boie, which are restricted to a few Japanese islands; the second group comprises *C. chenggongensis* Kou and Xing, *C. cyanurus* Liu, Hu and Yang, and *C. wolterstorffi* Boulenger, three highland species that inhabit pools and lakes on the Yunnan-Guizhou Plateau of China; the third group consists of *C. orientalis* David and *C. orphicus* Risch, both from the foothills and mountainous regions of southeastern China (Zhao & Hu 1984; Dubois & Raffaëlli 2009; Frost 2009). The taxonomic status of *C. wolterstorffi*, a neotenic species that may represent a separate genus, is an ongoing controversy (e.g., Freytag 1962; Zhao & Hu 1984; Fei *et al.* 2006; Dubois & Raffaëlli 2009). The IUCN Red List of Threatened Species (2009) lists two species, *C. ensicauda* and *C. orphicus*, as endangered and a third, *C. chenggongensis*, as data deficient; *C. wolterstorffi* may already be extinct (Zhao 1998).

Cynops orientalis remains abundant and has a broad geographic distribution that is centered at the lower reaches of the Yangtze River in China (Fig. 1). Based on molecular phylogenetic analysis of mitochondrial DNA (mtDNA) sequence data, *C. orientalis* is closely related to *C. orphicus* (Weisrock *et al.* 2006; Zhang *et al.* 2008), which differs morphologically by the presence of a conspicuous vertebral ridge and a bright ventral longitudinal stripe (Fei *et al.* 2006).

For a long time *C. orphicus* was known only from its type locality in the Shantou region in eastern Guangdong Province. Recently, however, a population of *C. orientalis* from Mt. Daiyun, Dehua, in central

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