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A new species of the genus *Rhabdophis* Fitzinger, 1843 (Squamata: Colubridae) from Guangdong Province, southern China

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Abstract

A new species, *Rhabdophis guangdongensis* **sp. nov.**, is described from the Guangdong Province, China. It can be easily distinguished from other known congeners by cyt *b* and *c-mos* sequences, and by the following combination of morphological characters: body size small; head distinct from the neck; 20 maxillary teeth, the three most posterior teeth strongly enlarged, and not separated by diastemata from other teeth; six supralabials, the third and fourth touching the eye; seven infralabials, the first four in contact with anterior chin shields; dorsal scales in 15 rows throughout the body, weakly keeled, the outer row smooth; 126 ventrals; 39 paired subcaudals; anal scale divided; 44 pairs of narrow dorsolateral black cross-bars on body and 15 pairs on tail; body and tail with two dorsolateral longitudinal brownish-red lines, respectively with a series of white spots in cross-bars. The description of this new species brings the total number of described species of this genus to 21 and represents the tenth known *Rhabdophis* species in China.

Key words: Colubridae, morphology, mitochondrial and nuclear DNA, taxonomy

Introduction

The genus *Rhabdophis* Fitzinger (1843) was previously referred to the genus *Natrix* sensu lato. In the middle of the 20th century, the genus *Rhabdophis* was revised and diagnosed primarily based on the combination of the following characters: hemipenes and sulcus spermaticus divided; last two maxillary teeth strongly enlarged, recurved and usually preceded by a diastema; terrestrial; internasals broad anteriorly, nostrils lateral; apical pits present or absent; vertebral glands present in several species (Malnate 1960).

Currently, the genus *Rhabdophis*, containing 20 species, is distributed across Eastern and South Asia (Günther 1858, 1864; Boulenger 1893, 1900; Wall 1923; Bourret 1935; Smith 1943; Malnate 1960; Taylor 1966; Jiang & Zhao 1983; Malnate & Underwood 1988; Zhao & Adler 1993; Zhao 1997; Stuebing & Tan 2002; de Lang & Vogel 2006; Takeuchi 2013). Nine of these species occur in China, i.e., *R. tigrinus* (Boie, 1826); *R. subminiatus (*Schlegel, 1837); *R. nigrocinctus* (Blyth, 1855); *R. himalayanus* (Günther, 1864); *R. swinhonis* (Günther, 1868); *R. nuchalis* (Boulenger, 1891); *R. leonardi* (Wall, 1923); *R. pentasupralabialis* (Jiang & Zhao, 1983) and *R. adleri* (Zhao, 1997).

During our field surveys in Southern China from 2008 to 2012, we collected an unidentified species of the genus *Rhabdophis* that can be externally distinguished from all known congeners based on morphological characters. In addition, phylogenetic relationship based on the mitochondrial cytochrome *b* (cyt *b*) and nuclear oocyte maturation factor (c-*mos*) gene sequences revealed that this taxon is differentiated from other congeners in China. Therefore, we refer this specimen to be a new species which is described in this study.

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Remark. The species is considered to be locally rare. Since May 2008 to date, only the holotype of *R. guangdongensis* **sp. nov.** was found during our extensive field surveys in southern China, including the areas from the type locality to Shenzhen City. Only three individuals of this species were found by others. The lowland and submontane forests are threatened by deforestation, changing land use, alien invasive plants, and ecological degradation. Therefore, the species should be classified as a rare and endangered species in the relevant legal provisions.

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APPENDIX 1. Specimens examined.

Rhabdophis adleri (6): **CIB10494–10495** and **CIB95495**, Mount Diaoluoshan, Lingshui County, Hainan Province, China; **CIB10496–10497** and **CIB78032**, Mount Wuzhishan, Qiongzhong County, Hainan Province, China.
Rhabdophis callichroma (2): **BM1946.1.8.98(99.11.30.4)**, Mount Wuzhishan, Qiongzhong County, Hainan Province, China; **MNHN 1938-122** (Holotype), Mount Bavi, Tonkin.
Rhabdophis chrysargoides (3): **USNM200488**, Cibodas, Java, Indonesia, January 1971; **USNM200489**, Jakarta, Java, Indonesia, January 1971; **USNM229498**, Iwahig, Palawan, Palawan Island, Philippines, February 1981.
Rhabdophis guangdongensis **sp. nov.** (1): **SYS r000018**, Aizhai Village, Renhua County, Guangdong Province, China.
Rhabdophis himalayanus (2): **CIB10498**, Maniweng, Medog County, Xizang Autonomous Region, China; **CIB10499**, Xigong lake, Medog County, Xizang Autonomous Region, China.
Rhabdophis leonardi (6): **CIB10500-04,** Luding County, Sichuan Province, China, 1980; **CIB14343**, Pianma Town, Lushui County, Yunnan, China.
Rhabdophis lineatus (2): **USNM229280**, Abachanan Barrio, Bohol Island, Philippines, April 1981; **USNM318410**, Leyte, Biliran Island, Philippines, April 1987.