



First description of the tadpole of *Kurixalus baliogaster* (Inger, Orlov, and Darevsky, 1999) (Anura: Rhacophoridae) from Vietnam, with comments on reproductive biology

IVAN I. KROPACHEV^{1,8}, ANNA B. VASSILIEVA^{2,3}, NIKOLAI L. ORLOV⁴, EVGENY M. RYBALTOVSKY⁵ & TAO THIEN NGUYEN^{6,7}

¹Tula Exotarium, Tula, Russia.

²A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, 33, Leninsky prospect, Moscow 117071, Russia.

³Joint Russian-Vietnamese Tropical Research and Technological Centre, Nguyen Van Huyen, Nghia Do, Cau Giay, Hanoi, Vietnam.

✉ vassil.anna@gmail.com; <https://orcid.org/0000-0002-2457-3968>

⁴Zoological Institute of Russian Academy of Sciences (ZIN), St. Petersburg, Russia.

✉ Nikolai.Orlov@zin.ru; <https://orcid.org/0000-0003-4401-348X>

⁵Zoocom, St. Petersburg, Russia.

✉ zoocom@mail.ru; <https://orcid.org/0000-0002-8730-1820>

⁶Vietnam National Museum of Nature, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet Road, Cau Giay, Hanoi, Vietnam.

⁷Graduate University of Science and Technology, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet, Cau Giay, Hanoi, Vietnam.

✉ nguyenthientao@gmail.com; <https://orcid.org/0000-0002-5640-4536>

⁸Corresponding author. ✉ ovophis@yandex.ru; <https://orcid.org/0000-0002-2342-5701>

To date, 20 species of *Kurixalus* Ye, Fei, and Dubois have been described, and all of these species are distributed throughout South and Southeast Asia, from eastern India, throughout Myanmar and the mountainous regions of southern China, to Indochina, western and northern peninsular Thailand, Malaysia, Sumatra, Borneo, and the Philippines (Frost 2021). Descriptions of the tadpoles of only 6 species have been published: *K. berylliniris* and *K. wangi* Wu, Huang, Tsai, Li, Jhang, & Wu (Wu *et al.* 2016); *K. eiffingeri* (Boettger) (Kuramoto & Wang 1987); *K. idiootocus* (Kuramoto & Wang 1987); *K. cf. verrucosus* (Boulenger) (Ziegler & Vences 2002), and *Kurixalus yangi* Yu, Hui, Rao, & Yang (Hunntsoe *et al.* 2020). A description of the tadpoles of *K. baliogaster* (Inger, Orlov, & Darevsky) is also given in the species description (Inger *et al.* 1999), but described larvae are “assigned tentatively to this species” in the published text. Additional studies on the identification of the conspecificity of the described tadpoles with *K. baliogaster* have not been conducted. Based on the much larger size of the tadpole body (TL up to 40.3 mm), as well as the labial tooth row formula 6(2–6)/5(1) given by Inger *et al.* (1999), we concluded that these described tadpoles cannot be larval *K. baliogaster* and most likely belong to some other species of rhacophorid frogs.

The Belly-Spotted Frog *Kurixalus baliogaster* is a large *Kurixalus* species (its snout-vent length reaches 33.4 mm in males and 42.8 mm in females) (Orlov & Ananjeva 2010). It is known to be present in the Central Highlands of Vietnam (Kon Tum, Gia Lai, and Lam Dong provinces) and the Annamite Mountains of adjacent Laos at elevations of approximately 600–1500 m a.s.l. (Inger *et al.* 1999; Stuart 1999; Orlov *et al.* 2002, 2008; Nguyen *et al.* 2009; Orlov & Ananjeva 2010; our data). Few data are available on the ecology and reproductive biology of the species (Orlov & Ananjeva 2010). Recently, in the Zoological Institute of Russian Academy of Sciences, we bred a few specimens *ex situ*, expanding our knowledge about the reproductive biology of this species. The breeding group consisted of three males and four females, originated from Mang Canh village, Kon Plong District, Kon Tum Province, Vietnam (coordinates: 14.69028° N, 108.32528° E, elevation 1210 m a.s.l.). An additional tadpole sample was collected by A. Vassilieva in May of 2017 in Kon Ka Kinh National Park, K’Bang District, Gia Lai Province, Vietnam (14.30091° N, 108.44937° E, elevation 590 m a.s.l.); part of the sample was reared in aquarium until tadpoles completed metamorphosis. The tadpoles developed in water temperatures of 23–24 °C during the daytime and 20–22 °C during the nighttime. Advanced tadpoles were photographed alive, euthanized by immersion in a 10% ethanol solution and preserved in 10% formalin. We provide a description of the larval morphology of *K. baliogaster* based on tadpoles sampled in nature and the offspring of the specimens