



Notes on an enigmatic Bornean megophryid, *Leptolalax dringi* Dubois, 1987 (Amphibia: Anura)

MASAFUMI MATSUI^{1,3} & J. MAXIMILIAN DEHLING²

¹Graduate School of Human and Environmental Studies, Kyoto University, Kyoto 606-8501, Japan

²Institute for Integrated Sciences, Department of Biology, University of Koblenz-Landau, Universitätsstrasse 1, 56070 Koblenz, Germany

³Corresponding author: E-mail: fumi@zoo.zool.kyoto-u.ac.jp

Abstract

The original description of the Bornean megophryid *Leptolalax dringi* was not sufficient to differentiate the species from its Bornean congeners. The species was later re-described but the redescription included characters from both type specimens and *Leptolalax* from other sites, including undescribed species. Analyses of the advertisement call of specimens assigned to *L. dringi* have been published but call descriptions differ markedly from each other. Moreover, published pictures of *L. dringi* are dubious in identification. Thus, the identity of *L. dringi* is enigmatic, hindering taxonomic work on Bornean *Leptolalax*. We herein provide detailed descriptions of the type series as well as recently obtained topotypic specimens. We also present the results of an analysis of the advertisement call of a male paratype. These data will facilitate future taxonomic work on Bornean *Leptolalax*.

Key words: advertisement call, Borneo, *Leptolalax dringi*, morphological analysis, re-description

Introduction

Leptolalax dringi Dubois was described based on four specimens collected by Julian Dring at Camp 4 on Gunung [= Gunung] Mulu, ca. 1800 m a.s.l. in Gunung Mulu National Park, northeastern Sarawak, Malaysia (Borneo) (Dubois 1987). However, Dubois' original description is not sufficient to specifically differentiate samples of Bornean *Leptolalax*. In describing *L. dringi*, Dubois (1987) made comparisons only with *L. heteropus* (Boulenger) from Peninsular Malaysia, which is actually very divergent both morphologically and molecularly from Bornean species (Matsui, unpublished data). Strangely, he did not make any comparisons of his new species with the type species of *Leptolalax*, *L. gracilis* (Günther), even though it was the only other species known from Borneo at that time and the type specimens of *L. dringi* had initially even been assigned to this species.

Inger *et al.* (1995), criticizing Dubois' (1987) description as a mere diagnosis, analyzed many samples of *Leptolalax* from a wider region of Borneo, including Sabah, and split Bornean *Leptolalax* into four forms, *L. gracilis*, *L. dringi*, a morphotype from Sarawak with a non-spotted venter, and a morphotype from Sabah with a non-spotted venter. Inger *et al.* (1995) provided a short re-description of *L. dringi* based on the type specimens, but in describing the variation within a supposedly wider sample, they erroneously included several populations of *Leptolalax* from Sabah, which surely contained more than one species.

Matsui (1997) identified a specimen of *Leptolalax* from Camp 5 of Gunung Mulu National Park as *L. dringi* following the key of Inger *et al.* (1995: venter marked but elbow not light-coloured), and reported its call characteristics. In the same paper, Matsui (1997) described *L. hamidi*, which was considered to be equivalent of morphotype from Sarawak with a non-spotted venter (Inger *et al.* 1995). Morphotype from Sabah with a non-spotted venter (Inger *et al.* 1995) seems to correspond to *L. pictus*, which was described by Malkmus (1992). These lines of information were summarized in Inger and Stuebing (1997) but the photograph shown as *L. dringi* apparently differs from *Leptolalax* and most probably represents *Hylarana laterimaculata* (Barbour & Noble). Later, Malkmus *et al.* (2002) reported *L. dringi* from Mt. Kinabalu, Sabah and reproduced the same figure that had been presented by