



An updated checklist of the amphibian diversity of Maliau Basin Conservation Area, Sabah, Malaysia

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Abstract

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The current account presents the results of a 14-day amphibian survey at Maliau Basin Conservation Area (MBCA). With a total of approximately 170 man-hrs, 44 species were detected at four study sites during the field period; four more species were later discovered outside the two-week campaign. The results are compared to the results of previous surveys. Apart from adults, we present the first photographic documentation of the larval stages of *Chiromantis inexpectatus* and Bornean *Phrynoidis juxtaspera*, along with a brief tadpole description; the better-known tadpoles of four more species were recorded. The results of our expedition suggest that nine more species are present at MBCA than reported by previous studies. We present an updated list of known species in the MBCA, comprising 61 species. The species accumulation curve over the 14 days period of the core survey did not show signs of asymptotic saturation. We conclude that the definitive species number for MBCA amphibians has the potential to increase with more thorough surveys in the future.

Introduction

To the general public, the amphibian species of East Malaysia (Sabah and Sarawak, Borneo) may seem to be relatively well-known. Particularly, the books by Inger (1966), Inger and Tan (1996), Malkmus et al. (2002), Imbun (2014), and Inger et al. (2017) give excellent summaries on the frogs of East Malaysia. Additionally, a widely-used internet resource provides an illustrated introduction to Bornean frogs and tadpoles (Haas et al. 2018). In the late 20th and early 21st centuries, several workers have contributed to our knowledge of the frogs of Sabah (for example, Inger 1966, Matsui 1979, Inger and Tan 1996, Malkmus et al. 2002, Kueh 2004,

Kueh et al. 2004, Kueh and Maryati 2005, 2008, Shimada et al. 2007, 2008, 2011a,b, Matsui et al. 2007a,b, 2013a,b, Imbun 2014, Dehling et al. 2016). In recent years, research on East Malaysian amphibians, however, has not only redefined species and discovered new species (Waser et al. 2016, Dehling and Dehling 2017), or described their larval forms (Oberhammer et al. 2014, Shimada et al. 2015), but furthermore, revealed a substantial underestimation of alpha-diversity by uncovering cryptic species (e.g., McLeod 2010, Matsui et al. 2016). The emerging pattern of high diversity on a relatively small geographic scale includes high levels of micro-endemism, i.e., species with small distributional range, these are often montane species (Dehling 2008, Hertwig et al.