



Article

urn:lsid:zoobank.org:pub:1D2C3790-E2E0-4D80-8D7B-144884AFDD50

A detailed account of the reproductive strategy and developmental stages of *Nasikabatrachus sahyadrensis* (Anura: Nasikabatrachidae), the only extant member of an archaic frog lineage

ANIL ZACHARIAH¹, ROBIN KURIAN ABRAHAM^{2,3}, SANDEEP DAS⁴, K. C. JAYAN⁵ & RONALD ALTIG⁶

¹Beagle, Chandakunnu, Wayanad 673 121, Kerala, India

²Parolikal, YMR Jn., Nanthencode, Thiruvananthapuram 695 003, Kerala, India

⁴Santhi Nivas, Chembukkavu, Thrissur 680 020, Kerala, India

⁵Souparnika, Periyappuram, Muvattupuzha, Ernakulam 686 667, Kerala, India

⁶Department of Biological Sciences, Mississippi State University, Mississippi State, MS 39762 USA.

E-mail: raltig@biology.msstate.edu

³Corresponding author. E-mail: robinabrahamf50@gmail.com

Abstract

Novel and significant data on the breeding biology and tadpole morphology of *Nasikabatrachus sahyadrensis* expands our understanding of this unusual frog and clarifies some data in other reports. Nonpigmented eggs are laid in arrays or clumps in small shaded rocky pools in the bedrock of torrential streams, as they are charged by early monsoon rains. The suctorial tadpole adapted to rheophilic habitats, has a strongly depressed body, dorsal eyes, complete marginal papillae, a labial tooth row formula of 2/3 or 2/3(1), and a medial vent with unusual flaps subtending the vent and limb buds. Tadpoles metamorphose in about 100 days. Additional site records and issues relating to the conservation of this frog and its habitat in the southern Western Ghats of India are discussed.

Key words: *Nasikabatrachus*, tadpole, breeding, development, morphology, India

Introduction

Nasikabatrachus sahyadrensis, the sole member of the Nasikabatrachidae, is a rotund, fossorial frog endemic to the mountains and foothills of southwest India. The presence of a fossorial adult that breeds explosively in streams after episodic monsoon rains, adds to the oddity of this frog. After the description of this taxon (Biju & Bossuyt 2003), and the identification of the tadpole (Dutta *et al.* 2004), I. Das (2007) realized that the unusual tadpole had been described almost 100 years earlier (e.g., Annandale 1918; Annandale & Rao “1916” 1917; Fig. 5A–B) with various interpretations of its relationships (Annandale & Hora 1922; Ramaswami 1944; Rao 1938). The longer access to the tadpoles in streams and the short-term access to the secretive breeding adults surely accounts for this discrepancy. Observation of the large metatarsal tubercle on the tadpole’s hind limb indicated that the species had a fossorial adult, and Rao (1938) suggested that the frog might belong to a novel subfamily.

Studying the biology of an explosive breeder demands that one accommodate for sporadic weather patterns. After intensive surveys, we present new information that is vital for understanding the conservation issues of this endemic amphibian. We discuss and illustrate data on the call, amplexus, eggs, embryos, and tadpole of *N. sahyadrensis* that enhances our understanding of this cryptic species and of its strange tadpole beyond the old description by Annandale (1918) and the character list by Dutta *et al.* (2004).