

Short Communication

**The Embryonic Development of the Giant Freshwater Mountain Crab,
Isolapotamon bauense (Ng, 1987)**

LIRONG YU ABIT¹, ANNIE CHRISTIANUS², MOHD SALLEH KAMARUDIN², JONGKAR GRINANG³ AND KAMIL LATIF^{1*},

¹*Department of Animal Science and Fishery, Faculty of Agriculture Science and Technology, Universiti Putra Malaysia Bintulu Campus, 97008, Bintulu, Sarawak, Malaysia*

²*Department of Aquaculture, Faculty of Agriculture, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia*

³*Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia*

*Corresponding author: kamill@upm.edu.my

Abstract: The embryonic development of the giant freshwater mountain crab, *Isolapotamon bauense* (Ng, 1987) endemic to Sarawak, Malaysia which is an endemic species listed as Vulnerable under the IUCN redlist, is described for the first time in this paper. Mature female *I. bauense* were observed to spawn small clutches of large macrolecithal eggs typical of other Potamid primary freshwater crabs. Embryonic development occurred within the eggs corresponding to other primary freshwater crabs. The developing embryo goes through 3 major development stages within the egg before hatching into a fully formed crab hatchling at the end of the gestation period. Eggs had a gestation period of between 36-45 days from spawning until hatching. The findings of the present study provide useful insight into the life cycle and breeding biology of *I. bauense* which will be applicable for both conservation and aquaculture studies in the future.

Keywords: Giant freshwater crab, Borneo and embryonic development.

Abstrak: Perkembangan embrionik ketam gunung air tawar gergasi, *Isolapotamon bauense* (Ng, 1987) yang merupakan spesies yang endemik di Sarawak, Malaysia, yang tersenarai dalam senarai merah IUCN diterangkan buat julung kalinya di dalam kertas ini. *I. bauense* betina yang matang akan mengeluarkan sejumlah kecil telur “macrolecithal” seperti ketam-ketam Potamid air tawar yang lain. Perkembangan embrionik berlaku di dalam telur sebagaimana ketam-ketam air tawar primer yang lain. Embrio yang sedang berkembang melalui 3 peringkat fasa perkembangan utama dalam telur sebelum menetas menjadi anak ketam kecil yang terbentuk sepenuhnya pada akhir tempoh pengeraman. Telur mempunyai tempoh pengeraman antara 36-45 hari dari pengeluaran sehingga penetasan.

Introduction

Primary or true freshwater crabs are an important ecological component of ecosystems of which they are found in (Dobson et al., 2007). The main feature distinguishing primary freshwater crabs from terrestrial and marine crabs is the direct development of offspring, whereby larval development happens within the eggs which hatch directly into young crabs (Sternberg and Cumberlidge, 2001; Ng, 2017). There are currently three families, 14 genera and 48 species of primary freshwater crabs recognized in Sarawak (Ng et al., 2008; Grinang et al., 2016). Under the IUCN Red List of Threatened Species there are four species of Sarawakian primary freshwater crabs listed as endangered and two as vulnerable (IUCN, 2021). The largest of the primary freshwater crab's endemic to Sarawak is *Isolapotamon bauense* (Grinang et al., 2016, Lirong et al., 2020). Taxonomically, the genus *Isolapotamon*, Bott (1968) is relatively well understood with seven species native to Sarawak. (Ng and Yang, 1986; Ng, 1987; Ng and Tan, 1998). *I. bauense* is currently classified as “Vulnerable” under the IUCN Red list (IUCN, 2021). *I. bauense* is an aquatic potamid crab narrowly endemic to