

Short Communication: Fecundity of freshwater prawn (*Macrobrachium rosenbergii*) in selected rivers of Sarawak, Malaysia

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Manuscript received: 18 November 2015. Revision accepted: 13 June 2016.

Abstract. Khairul Adha AR, Nicholas FF, Long SM, Naquiuddin AS, Esa Y. 2016. Fecundity of freshwater prawn (*Macrobrachium rosenbergii*) in selected rivers of Sarawak, Malaysia. *Biodiversitas* 17: 498-502. Giant freshwater prawn (*Macrobrachium rosenbergii*) is one of the important species of freshwater aquaculture in Malaysia. However, the sustainability of freshwater prawn farming is currently threatened by low production efficiency. In addition, the degradation of natural habitats and the use of illegal catching methods have caused great threats to freshwater giant prawn populations. Thus, the main objective of this study was to examine the wild population, ecology, and fecundity of giant freshwater prawn in natural water bodies in Sarawak's rivers namely Samarahan, Sadong and Kayan rivers. The mean values of the physicochemical water parameters, such as dissolved oxygen, pH values, conductivity, turbidity and temperature from three rivers surveyed were differenced significantly ($P < 0.05$). However, the characteristics of water quality measured were found to be within the ideal range for freshwater prawn to survive and grow. There were significant differences ($P < 0.05$) of total length, total body weight and eggs weight of prawn population among three rivers. There was no significant difference ($P > 0.05$) of prawn fecundity among the three rivers. The present study showed that berried female particularly from Kayan and Kerang river are suitable as potential brood stock from the wild population for breeding program.

Keywords: Giant freshwater prawn, *Macrobrachium rosenbergii*, fecundity, length and weight

INTRODUCTION

Giant freshwater prawn (*Macrobrachium rosenbergii*), which is indigenous to South and Southeast Asia, parts of Oceania and some Pacific islands has been farmed commercially both within and outside its natural range (Short 2004). In Malaysia, the giant freshwater prawn can be found in most inland freshwater areas including lakes, rivers, swamps, irrigation ditches, canals and ponds, as well as in estuarine areas (New 2002). This prawn requires brackish water in the initial stages of their life cycle, although some complete their cycle in inland saline and freshwater lakes (Ling and Merican 1961; New et al. 2000).

Due to the importance of *M. rosenbergii* for commercial fisheries and aquaculture, much is known about their ecology, biology physiology and behavior (Rao 1991; Cavalli 2001; Sithee et al. 2006). In addition, there are many publications and manual on the culture and growth development of freshwater prawn farming (Rao 1965; Ling 1969b; Costa 1980; Ang and Law 1991; Kurup et al. 1996; New and Valenti 2000; Krasindh et al. 2008; Pillai et al. 2011). With the widespread use of hatchery-reared seeds, the production and demand of farmed prawn has gradually increased (Department of Fisheries 2010). Despite the potential for increase production, the sustainability of freshwater prawn farming is currently

threatened by low production efficiency and low quality of brood stock from grow-out ponds which resulting high levels of inbreeding (Mather and Bruyn 2003).

However, there is still a lack of studies about the fecundity, brood stock quality and ecology of freshwater giant prawn from natural habitat such as in the rivers of Sarawak. The fecundity study is not only important in estimating the reproductive potential of prawn brood stock development in the hatcheries but also as an assessment on the stock size of their natural population (Patra 1976; Lobão et al. 1985; Valenti et al. 1989; Ang and Law 1991).

Furthermore, the degradation of natural habitats, reclamation of mangroves, water pollution and the use of illegal methods for catching prawn have caused great threats to freshwater prawn and fish populations in Malaysia (Zakaria-Ismail 1994; Khairul Adha 2012). Thus, examining the environmental parameters may contribute to understanding the current status and population structure of this giant prawn in natural habitat throughout Sarawak.

MATERIALS AND METHODS

Description of study area

The studies were carried out in estuaries and the main river basin in Sarawak namely; Samarahan River (N 01° 27.286'E 110° 03.206'), Kayan River (N 1° 39.50 E 109°