

## SIZE AT SEXUAL MATURITY OF NIPA-OBLIGATE CRAB *Labuanium politum* (CRUSTACEA: SESARMIDAE); HARVESTING PLAN PRECEDING COMMERCIALISATION

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**Abstract:** *Labuanium politum* (De Man, 1887) is in demand for consumption in certain parts of Sarawak, Malaysia. It is still in the initial stage of commercialisation as one of the local food sources and for subsistence income. In the interim, questions have been raised on how to reconcile the needs between resource utilisation and conservation. Herein, this study aimed to estimate the size at sexual maturity of *L. politum* and suggesting possible sustainable harvesting guideline to conserve the natural stocks. A total of 288 individuals comprised 149 males and 139 females, of which 12 were berried, that were examined for the stages of gonad. Size at sexual maturity,  $SM_{50}$  is at 14 mm of carapace width for males and 19 mm for females. The size at sexual maturity estimations fitted with the morphological observations of gonad stage in the current study. Highest frequency of individuals with fully developed gonad were observed in July and August and this suggests the harvesting seasons should be ideal in the preceding months to allow higher success rate in mating. The present study aimed to develop strategies that will ensure a sustainable harvest for this species in Sarawak, Malaysia.

Keywords: Sesarmid, gonadal maturation, resource management.

### Introduction

Determining the size of the sexual maturity of fish and crabs has been the focused research topic, principally important for the management of fishery resources (Leme, 2005). Size at sexual maturity is the most important parameters in studying the life history of an organism (Abrams & Rowe, 1996). The gonads of crabs are in the cephalothorax above hepatopancreas (Silva *et al.*, 2012). The male reproductive system consists of a pair of testes, a pair of vas deferens and two pairs of gonopods (Erkan *et al.*, 2009) and the female reproductive system consists of a pair of ovaries, ovarian ducts and a pair of spermathecae (Silva *et al.*, 2012). Histological methods are commonly used to determine the development of gonads and maturation (Silva *et al.*, 2012). Besides that, the gonadal development stages can also be recognised from the outer morphological appearances as had been done on *Sesarma rectum* (Leme, 2005), *Anamathia rissoana* (Mura *et al.*, 2005), and

*Armases rubripes* (Lima *et al.*, 2006). Size at sexual maturity studies usually steered on several commercially exploited crab species such as *Eriphia verrucosa* (Erkan *et al.*, 2009), *Portunus pelagicus* (Ikhwanuddin *et al.*, 2009), *Scylla paramamosain* (Islam & Kurokura, 2013), *Goniopsis cruentata* (Hirose *et al.*, 2015) and *Callinectes danae* (Marochi *et al.*, 2013).

*Labuanium politum* is an obligate arboreal crab that inhabits the nipa palm tree. The present study found that the local market for *L. politum* can fetch between RM40.00 and RM50.00 (USD 9.54–11.93) per kg. The species could potentially support the indigenous food and eco-tourism industry in Sarawak. In line with that, commercialisation is expected to take place very soon. Besides that, *L. politum* has also been reported in Labuan (Malaysian Borneo), Ubin Island (Singapore) and Loboc River (Philippines) by Ng *et al.*, (2015) which only covered taxonomic and ecological aspects. We have observed the impacts of human activities