

Community Study of Brachyuran Crab at Setiu Lagoon, Terengganu, Malaysia

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ABSTRACT

Brachyuran crab of Setiu Lagoon was systematically sampled between July 2011 and May 2012 to determine the community structure of animals and their relationship with environmental parameters. The semiterrestrial crabs were collected from a 100 m² quadrat at eight stations. In addition, fishing devices were used to collect true aquatic crabs employed at the subtidal habitat. Forty-four species and 13 families were identified representing semiterrestrial and true aquatic crabs (i.e., Sesamidae, Varunidae, Grapsidae, Ocypodidae, Macrophthalmidae, Dotillidae, Camptandriidae, Pilumnidae, Portunidae, Eriphiidae, Oziidae, Dorippidae and Leucosiidae). *Parasesarma plicatum*, *Perisesarma eumolpe*, *Clistocoeloma merguense*, *Haberma* sp., *Uca (Austruca) annulipes*, *Uca (Gelasimus) vocans*, and *Moguai aloutos* were widely distributed in this lagoon. ST5 (at mix mangrove forest) recorded the highest number of species with density (12 ind.m⁻²), species richness ($D = 2.68 \pm 0.72$), species evenness ($J' = 0.90 \pm 0.06$) and species diversity ($H' = 2.17 \pm 0.32$) as compared to other stations. The results indicated that water salinity, pH and sediment grain size influence the community pattern of brachyuran in this lagoon.

Keywords: Brachyuran, community, Setiu Lagoon, species diversity

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INTRODUCTION

Globally, there are 6793 valid species and subspecies of brachyuran crabs had been described (Ng *et al.*, 2008) whilst the number of species is still ascending with new genera and species were discovered every year. Brachyuran crabs belong to infraorder Brachyura and sometimes are confused with hermit and porcelain crabs from infraorder Anomura (Pechenik, 2010). Brachyuran crab habitats range from deep seas to high altitude streams and moist lands. Various species are characterised by their respective habitats and their survival is dependent on specific environmental variables and used as bioindicator for environment perturbation (MacFarlane *et al.*, 2000; Nudi *et al.*, 2007; Amaral *et al.*, 2009; Yeh *et al.*, 2009; Arya *et al.*, 2014; Saadati *et al.*, 2020).

In Malaysia, the study of brachyuran crabs has focused on mangrove forests (Tan & Ng, 1994; Sasekumar & Chong, 1998; Ashton *et al.*,

2003a, 2003b), rivers (Ng, 1995; Ng & Ahmad, 2016; Grinang *et al.*, 2018; Grinang *et al.*, 2019) and marine ecosystem (Yeo & Ng, 1999). The crab fauna contributes a significant role in ecological functions through their feeding and burrowing activities (Smith *et al.*, 1991; Nourdhaus *et al.*, 2006; Kristensen, 2008; Alongi, 2009) and forms an important link in food web between detritus at the base of trophic level and higher consumers. Brachyuran crab distributions are influenced by several environmental factors such as water salinity, water temperature, tidal inundation, soil pH, organic content and sediment characteristics and how they tolerate with these environmental factors (Smith *et al.*, 1991).

Setiu Lagoon comprises a unique interconnected habitat of *Melaluceae* forest, mangrove, estuaries and intertidal mud-sandy flats. These habitats support variety of flora and fauna communities which in turn create socio-economic opportunities to local communities.