

**UNIVERSITI TEKNOLOGI MARA**

**EFFECT OF REPLANTED  
MANGROVE SIZE ON  
GASTROPODS COMMUNITY  
STRUCTURE, ABUNDANCE AND  
MORPHOMETRICS**

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## ABSTRACT

This study was conducted to determine the gastropod community, distribution and shell morphometrics of different replanted mangroves size. Increased replanting mangrove activities helps to understand functions of these type of forest especially related to gastropods communities. Gastropods can be indicators for environmental factors, food availability, predation and also possible pollutions. Small mangroves represented by at Sg. Hj. Dorani (SHD), intermediate mangrove represented by Kg. Sg. Tiram (KST) and large mangrove at Kg. Dato Hormat (KDH) at the west coast of Peninsular Malaysia. The line transect with quadrat method was employed to sample the gastropods. 4321 individuals representing 30 taxa from 8 families were recorded from the study sites. 13 taxa were recorded at small, 25 taxa at intermediate and 20 taxa at large mangrove site. Small mangrove recorded highest density (total=5.47 no/m<sup>2</sup>) followed by intermediate (total=4.3840 no/m<sup>2</sup>) and large mangrove (total=1.28 no/m<sup>2</sup>). Among taxa, *Littoria scabra* (total=4.29 no/m<sup>2</sup>) and *Pirenella cingulata* (total = 4.08 no/m<sup>2</sup>) recorded high density from the study sites. Intermediate mangrove recorded the highest biomass (35.73 g/m<sup>2</sup>) followed by small (3.26 g/m<sup>2</sup>) and large mangrove (3.01 g/m<sup>2</sup>). Among taxa, higher biomass was recorded for *Telescopium telescopium* (24.29 g/m<sup>2</sup>) followed by *Telescopium mauritsi* (4.76 g/m<sup>2</sup>) and *P. cingulata* (4.22 g/m<sup>2</sup>). With respect to diversity, Intermediate site recorded the highest (D) (1.5) followed by small (0.77) and large site (0.75); intermediate recorded the highest (H') (1.24) followed by small (0.69) and large site (0.68); Large site recorded the highest (E) (0.74) followed by intermediate (0.59) and small site (0.56). Each of the mangrove size contributes difference in distribution and density of gastropods but further studies are needed with similar parameters been considered.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Research Background

Mangroves are commonly found along sheltered coastlines in the tropics and subtropics growing mainly on soft substrates (FAO, 2007). The mangrove is an important and unique ecosystem that harbours high biodiversity, biotechnological potential and ecological benefits to coastal and marine organisms as well as to humans. The mangrove as an ecosystem, provides breeding, shelter and nursery grounds for marine species, food, medicinal substances and fuel for coastal communities (Beys-da-Silva et al, 2014). Besides vertebrates (fish, reptiles, birds and mammals) mangroves are inhabited by a large array of invertebrates (brachyura, gastropods, bivalves, hermit crabs, barnacles, sponges, tunicates, polychaetes and sipunculids) (Nagelkerken et al, 2008).

Gastropods are one of the dominant and conspicuous macrofauna within the mangroves and occupy a wide range of ecological niches (Cantera et al 1983; Plaziat 1984, Ellison, 2008). The gastropod superfamily groups that inhabit mangroves include Cerithioidea Férussac, 1819; Ellobioidea Pfeiffer, 1854; and Littorinoidea Children, 1834. Among these groups, the Cerithioidea are often dominant in terms of abundance and biomass (Strong et al. 2011) and thus considered to be key components of the ecological communities in which they occur. Members of the family Potamididae H. Adams & A. Adams, 1854 or also known as the mud whelks or mud creepers are common gastropods predominantly found within mangrove forest of which they are dependent upon (Reid et al. 2008).

Gastropod communities can be categorized by structural features such as abundance, biomass, diversity, and species multivariate spatio-temporal patterns of populations (Dimitriadis and Koutsoubas, 2008). Environmental factors, food availability, predation and competition can bring change to species richness and differences to gastropod communities (Manullang et al 2018). Understanding the ecological roles of gastropods within mangroves can provide insights of their importance for the ecosystem functioning at local and regional scales. Being