CONFERENCE PROCEEDING

Diversity of Sea Shore Invertebrates at West Coast Peninsular Malaysia

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Abstract

Marine invertebrates especially bivalve and gastropod are major organisms inhabit coastal areas. These marine organisms are also known as detritivores which filter sea bed component for food. The location of Peninsular Malaysia that surrounded by the sea such as Malacca Straits at the west coast and South China Sea at the east coast provide a good distribution for bivalve and gastropod. A study on distribution of bivalve and gastropod had been conducted at different coastal area which represent east and west coast. The studies areas are Pengkalan Balak, Melaka, Port Dickson, Negeri Sembilan, Tanjung Tuan, Negeri Sembilan, Telok Gong, Melaka and Penyabong, Johor. This study aims to identify bivalve and molluscs species at the study area. Beside to determine the diverse site of the species. West coast coastal line (Pengkalan Balak and Port Dickson) recorded the highest number of species compare than east coast coastal line (Mersing). Low species number of Bivalve and Molluscs are caused by the sandy coastline at the area which are not suitable for habitation. Furthermore, strong wave prevents the formation of muddy shoreline which unsuits for habitation. Thus, it is suggested that this study need to be extensively conducted in order to documents the species of bivalve and gastropod.
Keywords: *Bivalve, Diversity, Gastropod, Invertebrates, Muddy*

INTRODUCTION

Coastline provides Coastline provides living space for numerous species and connect network between sea waters and terrain coastal hill frameworks, up and down the coastline. Sandy and muddy coastline are the most common type of beaches at West Coast Peninsular Malaysia and most of the invertebrate species can be found at muddy coastline (Owei *et al*., 2011). Sandy and muddy sediments rule estuarine and coastal habitats, and the bivalves, snails, worm (Thrush *et al*., 2004). However, different habitat of the coastal area would provide different types of invertebrate species to inhabit. According to a study done by Hermi during 2020, muddy and sedimented coast especially at mangrove areas would provide better habitation for various types of invertebrates.

Therefore, the main questions of this area is which part of the coastal area would provide better habitation for invertebrates to inhabit. According to (Anita *et al*.,

2013) the muddy area would provide a better habitation as this area rich in substrate. This substrate serves as nutrient to the invertebrates and a main component of sediments. Thus, this study aims to identify the gastropod and bivalve species of the study area beside to identify the diverse habitat of gastropod and bivalve species.

MATERIALS AND METHODS

Sampling Site

Four sampling sites were identified namely Pengkalan Balak and Teluk Gong at Malacca, Tanjung Tuan, Port Dickson at Negeri Sembilan and Mersing at Johor (Figure 1). This area was selected as this area are the most accessible area for sampling.

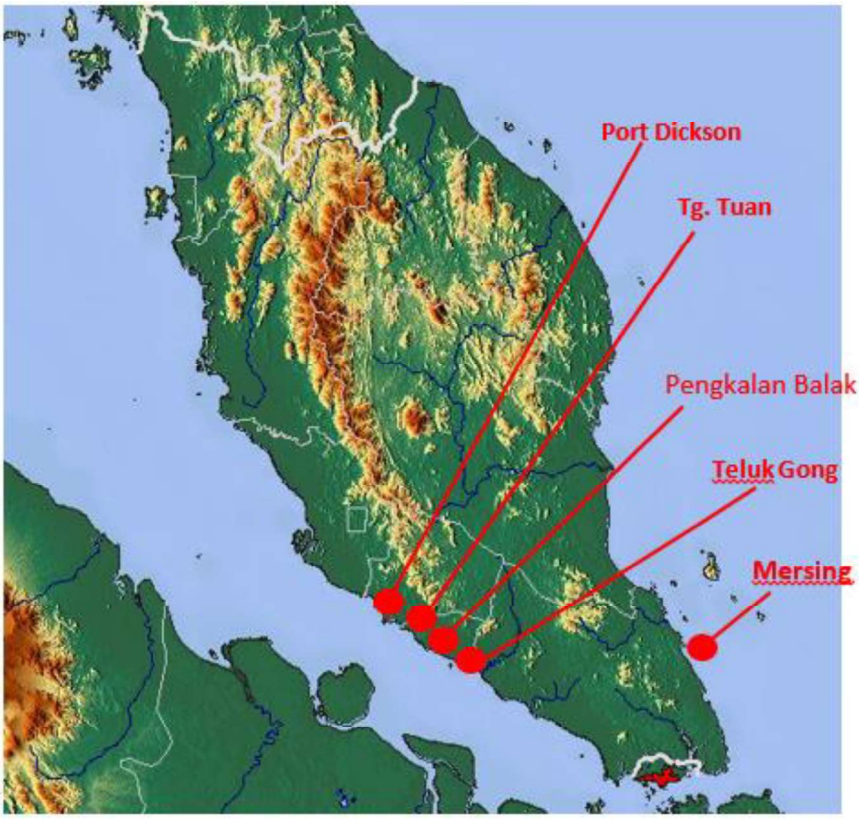

Figure 5. Sampling location of this study.

Collection and Data Analysis

The samples were collected at the seashore and were brought back to Biological Laboratory, Kolej GENIUS Insan, USIM for identification and documentation process. The data was analysed by using PAST version 3.2 software. Cluster Analysis with Jaccard Coefficient was performed in order to predict relationship among the sampling site based on the species presence.

RESULTS AND DISCUSSION

In total, 51 species of bivalve and gastropod have been recorded. Among those number, 18 species are bivalve and 33 species of gastropod (Appendix 1). Telok Gong recorded the highest number of species recorded which is 24 species comprises from 14 families followed by Mersing which is 20 species comprises from 13 families. Meanwhile, Pengkalan Balak recorded the lowest number of species which are six species comprised from five families followed by Tanjung Tuan which recorded 8 species comprised from eight families (Table 1).

Table 1. number of species and family of bivalve and gastropod at five different locations.

Location	Tlk. Gong	Pgkln. Balak	Mersing	Tg. Tuan	Port Dickson
No. of species	24	6	20	8	14
No. of families	14	5	13	8	9

The cluster analysing which using Jaccard Coefficient has cluster several sites as group with low similarity value. Mersing and Telok Gong habitat form a similarity group (clade 1) based on the species presence at the both site with low similarity value which is 0.24 (<0.5). The second group formed from clade 1 and Tanjung Tuan with low similarity value which is 0.12 (<0.5). The third clade (clade 3) was formed from formation of low similarity value between clade 2 and Pengkalan Balak sample. While Clade 3 is similar to Port Dickson at the lowest similarity value which is 0.06.

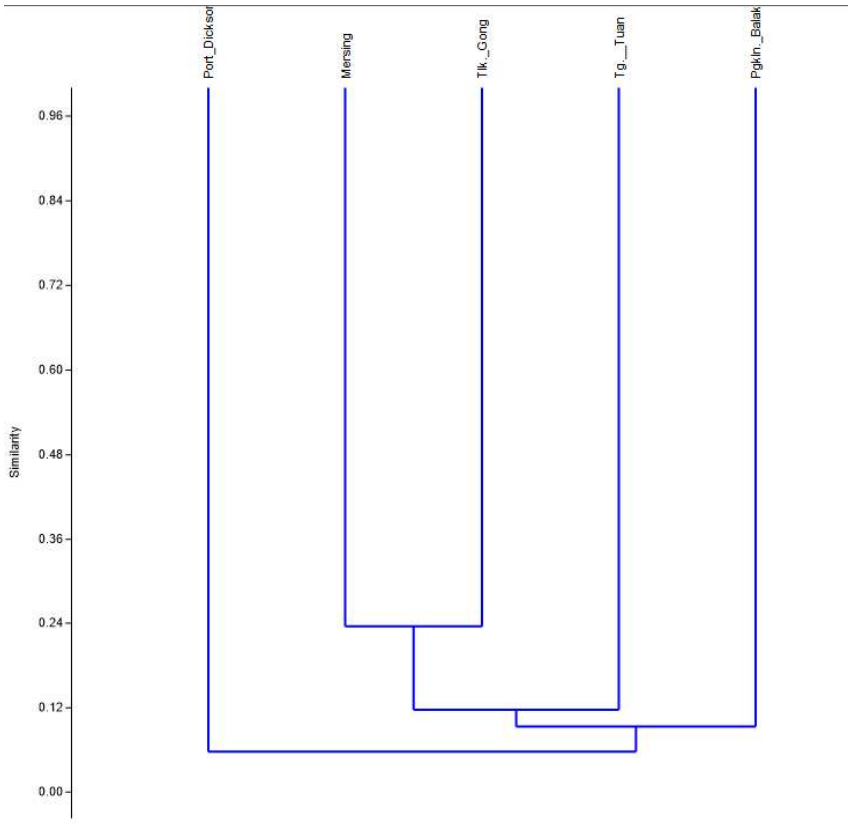

Figure 6. Cluster analysis of five different locations by using Jaccard Coefficient

CONCLUSION

Mersing and Teluk Gong recorded the highest number of species among the other coastal areas with low similarity value which is 0.24 (<0.5). These muddy beaches have higher invertebrate species because the intertidal section are very broad and wider than rocky beaches or sandy beaches and often inhabited by various species of crabs, bivalves, gastropods, nematodes and oligochaetes.

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APPENDIX 1

Appendix 1. Species composition of bivalve and gastropod at five different locations.

No.	Family	Species	Sampling Site				
			Tlk. Gong	Pgkln. Balak	Mersing	Tg. Tuan	Port Dickson
1	Donacidae	*Donax trunculus*	3	0	1	1	0
2	Cardiidae	*Cerastoderma edule*	1	1	3	1	0
3		*Dinocardium robustum*	0	0	1	0	2
4	Mactridae	*Mactra glauca*	3	1	3	0	0
5		*Spisula solida*	1	0	0	0	0
6		*Spisula solidissima*	0	1	0	0	0
7	Pectinidae	*Mimachlamys nobilis*	1	0	0	0	0
8	Veneridae	*Paratapes textilis*	1	0	0	0	0
9		*Merceneria merceneria*	0	0	0	1	1
10		*Ruditapes decussatus*	0	0	0	0	1
11		*Trachycardium muricatum*	0	0	0	0	3
12		*Macrocallista nimbosa*	0	0	0	0	1

No.	Family	Species	Sampling Site				
			Tlk. Gong	Pgkln. Balak	Mersing	Tg. Tuan	Port Dickson
13	Semelidae	*Dallocardia muricata*	0	0	0	0	3
14		*Abra alba*	0	1	0	0	0
15		*Semele purpurascens*	0	0	0	0	1
16	Noetiidae	*Noetia ponderosa*	0	1	0	0	0
17	Arcidae	*Anadara notabilis*	1	0	1	0	0
18	Plicatulidae	unknown	0	0	1	0	0
19	Turritellidae	*Turritella* sp1.	2	0	1	0	0
20	Cancellariidae	*Cancelliridae bivetiella*	0	0	3	0	0
21	Cassidae	*Cypraecassis testiculus*	1	0	0	0	0
22	Olividae	*Americoliva sayana*	3	1	0	0	0
23		*Oliva sayana*	0	0	0	1	0
24	Triviidae	*Cypraea europaea*	1	0	2	0	0
25		*Trivia monacha*	1	0	0	0	0
26	Muricidae	*Urosalpinx cinerea*	2	0	1	0	1
27		unknown sp2.	1	0	0	0	0
28		*Phyllonotus margaritensis*	2	0	0	0	0
29		*Murex tapa*	3	0	0	0	0
30		*Murex ternispina*	2	0	0	0	0
31		*Murex aduncospinosus*	2	0	0	2	0
32	Strombidae	*Strombus marginatus*	1	0	0	0	0
33		*Margistrombus* sp.	0	0	3	0	0
34		unknown sp3.	0	0	0	0	1
35	Fasciolariidae	*Lambis fragilis*	1	0	0	0	0
36		*Laevistrombus canarium*	3	0	0	0	0
37		*Fasciolaria* sp.	1	0	0	0	0
38	Littorinidae	*Pleuroploca trapezium*	1	0	1	0	0
39		*Littorina littorea*	3	0	0	0	0

No.	Family	Species	Sampling Site				
			Tlk. Gong	Pgkln. Balak	Mersing	Tg. Tuan	Port Dickson
40		unknown sp4.	0	0	1	0	0
41	Turbinidae	*Lithopoma tectum*	0	0	2	0	0
42		unknown sp.	0	0	0	0	2
43		*Lithopoma phoebium*	0	0	3	0	0
44	Batillariidae	unknown sp5.	0	0	2	0	0
45		unknown sp6.	0	0	1	1	1
46	Calliostomatidae	*Calliostoma ligatum*	0	0	3	0	0
47		*Calliostoma pulchrum*	0	0	0	0	1
48	Cancellariidae	*Cancellaria reticulata*	0	0	0	1	0
49		unknown sp7.	0	0	0	0	2
50	Paguroidea	unknown sp8.	0	0	0	0	1
51	Potamididae	unknown sp9.	0	0	0	1	0