STRUCTURE COMMUNITY OF MACROFAUNA FROM THE EASTERN COAST OF RIAU PROVINCE

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ABSTRACT

A sampling of macrofauna benthic has been done during Aaliikai Cruise in October, 2009 using Van Veen grab from 7,3 m – 36,6 m depth. The objective of this study is to describe macrofauna communities from the eastern coast of Riau Province. The result showed that the average abundance of macrofauna was 435,37 ind/m² and nematode was observed as the most dominant taxa. The study also revealed that the composition of macrofauna found from this area was similar with other regions as reported by several authors. Within Crustacea, Amphipoda observed as the most abundance taxa.

Key word: macrofauna, eastern coast of Riau Province, structure community

INTRODUCTION

The eastern coastal water of Riau province is an area of high anthropogenic activities. Analysis on community structure is important for evaluating the environmental changing caused by anthropogenic activities, management and conservation environment in the future. Study on macrofauna in the eastern coastal water of Riau Province is rare compared to its vast area. Most of the studies in macrofauna were conducted in temperate region.

In this paper we presented and discussed structure community of benthic macrofauna in the level of major taxa to provide data on macrofauna from the eastern coastal water of Riau Province.

METHODS

Samples were collected during Aaliikai cruise in October 3 to 10, 2009 within the framework of SPICE project. Collections were undertaken from 7,3 m to 36,6 m depth using a 28 cm x 36 cm Van Veen grab. Soon after the collection, the sediment samples were fixed with 4% Formaldehyd-seawater at final concentration.

In laboratorium, the sediment samples were washed and sieve through a 0,3 mm mesh screen. The retain sediment were kept in a 70% ethanol and stain with Bengal rose. The faunal samples were counted and sorted into a major taxa using a stereozoom binocular dissecting microscope. The faunal number then, were converted to ind./m^2.

RESULT AND DISCUSSION

Total number of macrofauna found in this study were 1.292 which consist of 12 taxa: Nematoda, Polychaeta, Oligochaeta, Amphipoda, Cumacea, Copepoda, Cladocera, Ostracoda, Tanaidacea, Isopoda, Bivalvia and Ophiuroidea (Table 1).

Nematoda (34%), Oligochaeta (23%) and Polychaeta (16%) were the dominant taxa in terms of number of individuals, contributing to 73% of total macrofauna. Cladocera, Ostracoda, Ophiuridae, Copepoda and Isopoda were the lowest in abundance. Together they contribute only 4% of total macrofauna found in this study (Figure 1A).

The average abundance of macrofauna found in this study was 435 ind/m^2. This number is lower compare to the average abundance of macrofauna from various regions with similar depth. Arifin *et al*. (2006) reported the average abundance of macrofauna 1.288 ind./m^2 from pantai Losari, Makassar, Agnitasari (2006) reported the average abundance of macrofauna communities 1.369 ind./m^2 from Teluk Jakarta. Bigot *et al*. (2006) and Nasaaj *et al*. (2010) also reported the average abundance of macrofauna higher found in this study. They found the average abundance of macrofauna 5.169 ind./m² from Reunion Island (Southwest Indian Ocean) and 2.937 ind./m² from Salakh Region, Iran, respectively.

In general the composition of macrofauna found in this study were similar to the fauna reported by other author from different regions, for examples : Kastoro *et al*. (1999) from Teluk Bayur and Teluk Bungus West Sumatera, Riadi (2010) from Bengkalis, Wijayanti (2007) from

Bandar Lampung. However, in this study we found that Nematoda as the most dominant taxa, the difference is merely due to the size of sieve which is used. We used a 0,3 mm sieve while other authors used 1 mm sieve.

Nematode was observed as the most dominat taxa at every stations, this result also confirmed the report from several authors. It supposed because nematods could live and tolerate a disturbed habitat (Wilhm 1975). Beside, nematode body form help them to adapt with the habitat of low oxygen and they could use all kind of microorganisms as their prey (Higgins and Thiel, 1988; Giere 2008).

Table 1. Macrofaunal taxa found in the eastern coast of Riau Province

No	Taksa	Total Number (∑)	Average (Ind./m^2)
1	Nematoda	434	146
2	Polychaeta	201	70
3	Oligochaeta	291	98
4	Amphipoda	113	38
5	Cumacea	54	18
6	Copepoda	3	1
7	Cladocera	21	7
8	Ostracoda	19	6
9	Tanaidacea	57	19
10	Isopoda	2	1
11	Bivalvia	82	28
12	Ophiuroidea	9	3

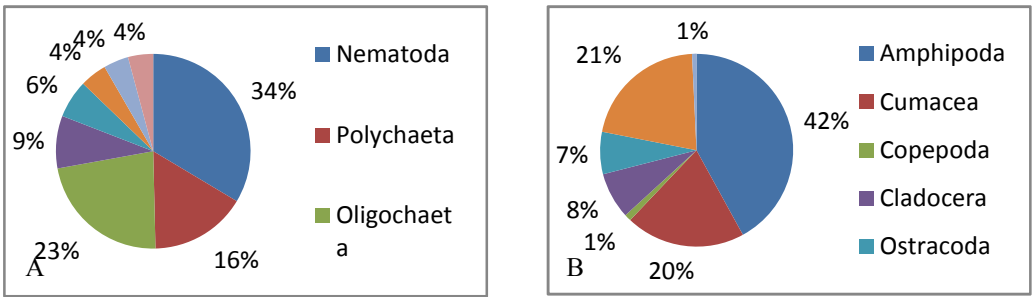

Figure 1. Macrofauna composition from the eastern coast of Riau Province, (A) Total macrofauna, (B) Crustacean composition.

Within Crustacea, we observed that the Amphipoda was the dominant taxa, it followed by Tanaidaceae and Cumacea. Together they contributing to 83% of total crustacean. Furthermore, the lowest dominant taxa were Copepoda and Isopoda (Figure 1B). Our result also confirmed the result reported by Aswandy (2007) and Bambang and Aswandy (2001) from Digul estuary, Irian Jaya and Teluk Gilimanuk, Bali Barat, respectively.

CONCLUSIONS

1. The average abundance of macrofauna from the eastern coast of Riau Province found in this study was 435,37 ind/m². This number is lower than the average abundance of macrofauna reported by other authors from different regions.
2. The most dominant taxa found in this study was Nematoda.
3. Amphipoda was the most dominant taxa within Crustacea.

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