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Abundance and diversity macrozoobenthos in Karang Ranjang Beach, Ujung Kulon National Park, Banten, West Java

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Introduction

Benthos is an organism that inhabits the bottom of waters and lives in or on the bottom sediments of waters that plays an important role in the process of decomposition and mineralization of organic materials in the waters [1]. The diversity and abundance of macrobenthos is influenced by several factors, and the biological factors such as grazing, predation and competition are known to be important factors [2].

We investigated the diversity, uniformity and dominance of marcozoobenthos in Karang Ranjang beach, Ujung Kulon National Park, which is a representative of the remaining and largest tropical rain forest ecosystem in west Java. We hypothesized that the total macrozoobenthos in Karang Ranjang well vary depending on type and size, and the diversity of macrbenthos will be influenced by condition of Karang Ranjang beach.

Materials and methods

This research was conducted during 28-29 July 2015 in intertidal zone of Karang Ranjang Beach, Ujung Kulon National Park, Pandeglang, Banten (Fig. 1), which is one of the conservation areas in Indonesia, and the area is 120.551 ha, consist of 76.214 ha of land and 44.337 ha of oceanic areas [3]. We conducted a systematic random sampling, by the 8 quadrat transects with 50 m intervals. In each station, the quadrat was sub-divided with 5 m intervals as sub-station and sub-stations at 1×1 m transect was set. We collected biota and counted the macrobenthos in each transect.

Shannnon Wienner diversity index was applied to compare the macrozoobenthos diversity. We also applied the uniformity index and dominace index from Simpsons [4].

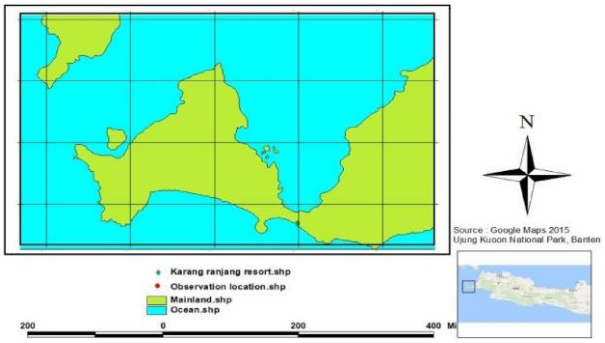

Fig. 1. Maps of Ujung Kulon National Park, Pandeglang Banten, Indonesia. Observation location mark is a red circle, and Karang Ranjang Resort mark is a green diamond.

Results

We found 16 types of macrozoobenthos (Table 1). The dominant macrobenthos was sea anemone with the number of 97 with colony at the substrate rock reef, followed by 12 *Diadema setosum* (Fig. 2).

Table 1. Totals of macrozoobenthos in Karang Ranjang Beach

Benthos	Totals
Sea Anemone	97
Benthos A (unidentified)	2
Benthos B (unidentified)	1
Benthos C (unidentified)	3
Benthos D (unidentified)	4
Benthos E (unidentified)	4
Ophiomastix annulosa	1
Bufonaria sp.	4
Diadema setosum	12
Conus sp.	1
Holothuria athra	1
Turbo argyrostomus	1
Patelloida striata	8
Rhinoclavis sp.	8
Tectus nilocticus	5
Turbo setosus	4

The number of observation station is 8 with different amount of sub-station depends on the length intertidal zones.

Fig. 2. *Diadema setosum*.

Table 2 shows the diversity index (H', 1.58) and uniformity index (E, 0.3), and the dominance index (C, 0.9).

Table 2. Analysis result of diversity, uniformity and dominance

Diversity (H')	Uniformity (E)	Dominance index (C)
1.577	0.312	0.904

Discussion

The diversity of macrobenthos is influenced by the spread of totals individuals in each species. If the numbers are low, then the diversity can be regarded as low too. Brower et al [5] reported that the community have a high diversity index if there are many species and the number of individuals is distributed evenly. The uniformity index in this research is low, because if the index near 0 that means there is a type of benthos domination. If the value close to 1, then uniformity is high and describe that no benthos dominate. On Karang Ranjang beach, the dominance index value is 0.4 which means enough dominant species, which is the sea anemone.

Sea anemone domination in Karang Ranjang Beach because there is a living anemone colony at every single station and this beach have a substrate rocks reef that supported by Dunn [6] statement, in the wild can be found anemone live with colony. Sea anemone live at the bottom of the sea and stick with hard thing, a reef, and sand. There are also buried part of his body to bottom of the ground muddy.

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