

## I. INTRODUCTION

### 1.1. Backgrounds

There are four important ecosystems in Indonesian coastal areas, namely: estuary, mangrove, seagrass, seaweed and coral reefs. These four ecosystems are located in a coastal area where seagrass is in the middle between mangrove ecosystems that related to the land and coral reefs which related to the deep sea. Like mangrove and coral reefs, seagrass beds are also included in one of the chains for aquatic life. Damage to the seagrass ecosystem will break one chain of marine aquatic life (Kordi, 2011). In Indonesian marine waters, 13 species of seagrass spread in almost all waters with an approximate area of 30,000 km<sup>2</sup> (Nienhuis, 1993; Kuo, 2007).

Seagrasses community is defined as a group of several seagrass species that are generally form a large beds in the coastal zone. Naturally, the seagrass community interacting with the biota and the environment to form the seagrass ecosystem. The environment around the seagrass area includes the aquatic environment, the substrate at the bottom of water (sand and mud), and the air (Rahmawati et al., 2014).

The complexity of seagrass ecosystem play important functions and benefit for the coastal region. This ecosystem supporting the life of marine biota in addition to coral reefs and mangroves. One of the ecological function of the seagrass ecosystem is to serve a shelter for spawning, rearing and feeding ground of various biota. Furthermore, seagrass acts as the primary producer, sediment trap and nutrient recycling (Rustam et al., 2019). Biota such as benthic fauna is often found in this ecosystem including the echinoderms, mollusks, and crustaceans which has a high economic value (Kordi, 2011).

In ecological studies, benthic invertebrates are often used as bioindicators because they have a characteristic that is sedentary in life over a long period. The character of these invertebrates allows recording the quality of water (Barnes, 1987). Benthos is an invertebrate animal that can be a bioindicator of water, has a relatively long life cycle, and can respond to a variety of environmental changes caused by pollutants. A relatively large group of benthic fauna with a high population plays an important role in the conditions and stability of the ecosystem (Arbi and Sihaloho,2017).

Megabenthos are benthic animals that have relatively large in size of more than 1 cm and live both above the substrate (Epifauna) and inside the substrate (Infauna) such as some species of sea cucumbers and sea urchins which are food source for some predatory fish (Meyer et al.,2013; Aziz, 1980). The diversity of megabenthos is influenced by the conditions and qualities of the seagrass ecosystem, which means the better condition and quality of a seagrass ecosystem, the higher diversity of megabenthos (Riniatsih and Munasik,2017).

Bungus Coastal Teluk Kabung is geographically ordinated at 100°01'-100° 47' E and 0°29'-1°50' S. Typically, this coastal area consists of sand, gravel, rocky, steep/cliffs beach, mangroves, and coral reefs (Darlan and Kamiludin, 2008). This area extends from the coastal area of Padang to Bungus Teluk Kabung. The length of the coastal area is entirely less than 30 km. This area is the part of coastal districts in the southern city of Padang with an area around 100.78 km<sup>2</sup> and the population in 2018 estimate 25.134 people (BPS,2019).

According to the research by Purnama (2011) and Putra et al., (2016) Bungus Coastal area consists of seagrass vegetation that are found at Nirwana and Cindakir Beach. The area is covered by ± 12 ha of seagrass with the percentage around 26.77% at

Nirwana Beach (Purnama, 2011). Whereas, at Cindakir Beach the seagrass area within  $\pm$  2.56 Ha and the range of cover percentage is equal to 25-50% (Putra et al., 2016; Tanto et al., 2014).

The existence of seagrass in Bungus Coastal Padang is very important for megabenthos fauna that has function and potency in terms of ecological and economic such as the echinodermata, crustaceans, mollusks, and others. The limited information and availability of data about the megabenthos associated with seagrass, then it is necessary to learn about the ecology and its diversity, especially in the Bungus Coastal Teluk Kabung Padang to add information about the species of megabenthos associated with, so that the results can be the basic data in the management of coastal ecosystems of seagrass.

## 1.2. Problem Formulation

Based on the background above, it can be formulated with the problem in this research:

1. How are species composition and density of megabenthos found in seagrass beds at the Bungus Coastal Padang?
2. How is the correlation between density of megabenthos found in seagrass with seagrass cover conditions at the Bungus Coastal Padang?
3. What type of association between megabenthos and seagrass species at the Bungus Coastal Padang?

## 1.3. Research Objective

1. To find out the composition and density of megabenthos found in the seagrass beds at Bungus Coastal Padang.
2. To know the correlation between species density of megabenthos found in seagrass with seagrass cover condition at Bungus Coastal Padang.

3. To know the type of association between the megabenthos and seagrass species at Bungus Coastal Padang.

#### 1.4. Benefit

The results of this study are expected to provide the latest information on the diversity of megabenthos that have important values in terms of ecology and economics where these organisms are associated with seagrass. The results of this research will also be the basic data for the management of coastal ecosystems, diversity conservation of flora and fauna in the economic and tourism sectors of coastal areas.

