

# STUDY OF MANGROVE ECOSYSTEM CONDITIONS IN BOJONG SALAWE PANGANDARAN

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## ABSTRACT

Bojong Salawe has a mangrove conservation area. The mangrove conservation area is located around the coast of Bojong Salawe Beach, Parigi District or precisely around the bridge before heading to the point of Bojong Salawe Beach. . The mangrove ecosystem, which is located on the coast of Bojong Salawe Beach, covers an area of 237.59 ha, many mangrove areas grow around the waters of Bojong Salawe. This research was conducted to see the condition of the mangrove ecosystem in Bojong Salawe by using the Line Transect Plot method. This method is a method of sampling the population in an ecosystem by using a sampling approach that is on a line drawn through the ecosystem area. The results of field measurements show that the mangroves in Bojong Salawe have several sizes from seedlings to trees. At station 1, mangroves in the category of saplings were found with the type of mangrove *Rhizophora apiculata* which has tap roots and muddy substrate. the height reaches 27 m, rarely exceeds 30 m. Types of mangroves in the sapling category are *Rhizophora mucronata* and *Rhizophora stylosa* with significantly different numbers of individuals, namely *Rhizophora mucronata* there are 20 individuals and *Rhizophora stylosa* only has 1 individual. *Rhizophora stylosa* itself is a tree with one or many trunks, up to 10 m high. At station 3, three categories of mangroves were obtained, namely the category of saplings and seedlings. For the tree category, there were *Rhizophora mucronata* mangrove species with a diameter of 31.5 cm in 6 individuals and 34.3 cm in individuals. In addition, *Rhizophora mucronata* was also found in the mangrove seedling category as many as 22 individuals. The seedling category itself is a mangrove that has a height of less than 1.5 m.

**Keyword :** Mangrove , Bojong salawe, Pangandaran,,*Rhizophora*, LIT

## 1. INTRODUCTION

Indonesia is the largest archipelagic country on earth with approximately 17,508 islands and a beach length of about 81,000 km. It has enormous coastal resources, including mangroves. Mangrove forest is an ecosystem that is very productive and very meaningful, among others, as a tourist attraction, can withstand as well as protect from waves or sea currents that can gradually erode coastal areas, help balance air quality so that it remains good, and as a place to stay. live for some marine life. This also explains that mangrove forests have an important role both in terms of ecological functions and in economic functions. The edge or coastal area is a transitional area between land and sea that is still affected by land and sea inhabited by various ecosystems, one of which is the mangrove ecosystem. Mangrove forests have uses and benefits for living things either directly or indirectly. Mangroves can grow well on coral beaches or coral reefs that have little sand, or on beaches that have alluvial soil types, this can make mangroves known as coastal plants, tidal plants and brackish plants <sup>[16]</sup>.

Bojong Salawe is located in Karangjaladri Village, is one of the villages located in Parigi District, Pangandaran Regency, West Java Province where Pangandaran Regency itself is a relatively young district because it is the result of the expansion of Ciamis Regency, West Java. One of the attractions in this village is Bojong Salawe Beach which is located about 20 km and is located west of Pangandaran where the beach which has a latitude of -7.7150340 and a

longitude of 108.5010930 has a mangrove conservation area located around the coast and the estuary of Bojong Salawe. , Parigi District or more precisely around the bridge before heading to the point of Bojong Salawe Beach. The mangrove ecosystem, which is located on the coast of Bojong Salawe Beach, covers an area of 237.59 ha<sup>[3]</sup>, many mangrove areas grow around the waters of Bojong Salawe. This mangrove area was damaged by the tsunami that occurred in Pangandaran in 2006, but has since recovered. This study was conducted to determine the stratification of mangroves based on stem circumference measurements, analyze the type and diversity of mangrove vegetation using the line transect method.

## 2. METHOD

The method used to collect mangrove data is the Sample Plot method or commonly referred to as the Line Transect Plot. This method is a method of sampling the population in an ecosystem by using a sampling approach that is on a line drawn through the ecosystem area. According to<sup>[15]</sup> Line Transect Plot is a way of taking population samples from an ecosystem through a sample plot approach. Where, at each location a straight line transect was made using the help of GPS<sup>[16]</sup>. This measurement method is one of the easiest measurement methods to do and has a high level of accuracy and precision<sup>[17]</sup>.

In each study area, conceptually determined observation stations based on the representation of the study location. At each observation station, line transects were determined based on the sea-to-land direction (perpendicular to the coastline along the mangrove forest zone) in the intertidal area. In each mangrove zone along the line transect, randomly place the plots sample (plot) with a size of 10m x 10m<sup>[17]</sup>. In the sample plots (plots) that have been determined, the determination of each type of mangrove plant that exists, the number of individuals of each species is calculated, both trees, saplings, and seedlings, where the mangrove with the tree category has a trunk circumference of > 31.4 cm, while in the sapling category has a stem circumference of 6.28 – 31.4 cm, and is included in the category of seedlings if the circumference of the stem is < 6.28 cm<sup>[18]</sup>. Then measure the trunk circle of each mangrove tree at chest height (about 1.3 meters) from the ground using a meter for the tree category, while for the sapling and seedling category the trunk diameter does not need to be measured, but only analyzed by identifying and counting the number of trees in the plot<sup>[8]</sup>. Data from observations and measurements of mangrove vegetation that have been obtained are then tabulated and analyzed descriptively to explain the condition of mangrove vegetation in Bojong Salawe Village.

## 3. RESULT

The results of field measurements show that the mangroves in Bojong Salawe have several sizes from seedlings to trees. At several points of observation stations, only the type of stake was found, such as at the Mangrove 1 station, starting with the coordinates of S -7.7125230; E 108.4990521 to S -7.7126094 ; E 108.4991191 only got 1 category Mangrove is a sapling with the type of mangrove *Rhizophora apiculata* which has root support and muddy substrate. Sapling category is mangrove with a diameter of 2-10 cm with a height of 1.5 m. The type of *Rhizophora apicula* was found in 3 individuals. Generally this type of mangrove has a height of up to 30 m with a trunk diameter of up to 50 cm and has distinctive roots up to a height of 5 meters, and sometimes has aerial roots that come out of the branches.

At Mangrove 2 station with initial coordinates S07.71350 , E108.499973 and final coordinates S07.71342 , E108.499972 obtained 2 types of mangrove categories, namely trees and saplings. The tree category is individual mangrove with a diameter of 10 cm or more and a height of more than 1.5 m, while the sapling category is an individual mangrove with a diameter of 10 cm or more and a height of more than 1.5 m. In the tree category, the type of mangrove is *Rhizophora mucronata* which is a tree with a height of up to 27 m, rarely exceeding 30 m. Stems up to 70 cm in diameter with dark to black bark and horizontal fissures. Support roots and aerial roots that grow from the lower branches. The types of mangroves in the sapling category are *Rhizophora mucronota* and *Rhizophora stylosa* with significantly different numbers of individuals, namely *Rhizophora mucronata* there are 20 individuals and *Rhizophora stylose* there is only 1 individual. *Rhizophora stylose* itself is a tree with one or many trunks, up to 10 m high. The bark is smooth, fissured, gray to black. It has taproots up to 3m long, and aerial roots that grow from lower branches.

At station 3, three categories of mangroves were obtained, namely the category of saplings and seedlings. Measurements at this mangrove 3 station start from the coordinates of S 07.71238, E 108.49890 to S 07.71245 , E

108.49883 using a plot of 1 x 1 meter. For the tree category, there are *Rhizophora* mangrove species *mucronata* with a diameter of 31.5 cm in 6 individuals and 34.3 cm in individuals. Measurement of this diameter is done by circling/surrounding the mangrove trunk with a tape measure. In *Rhizophora mucronata* dominated by Silt substrate (mud) with a grain size of 0.063 mm. In the sapling category at station 3, there were 11 individuals of the same type of mangrove as the tree category, namely *Rhizophora mucronata*. In addition, *Rhizophora mucronata* was also found in the mangrove seedling category as many as 22 individuals. The seedling category itself is a mangrove that has a height of less than 1.5 m.

Bojong Salawe has a mangrove conservation area. The mangrove conservation area is located around the coast of Bojong Salawe Beach, Parigi District or precisely around the bridge before heading to the point of Bojong Salawe Beach. The river under the bridge is part of the Cialit river which flows from the north while the Cikiray River flows from the west, but both empties into Bojong Salawe Beach. The existence of the mangrove forest is certainly very influential on the surrounding ecosystem, including being able to prevent sea water intrusion, coastal abrasion and erosion, natural prevention and filtering, and to stabilize coastal areas<sup>[1]</sup>.

The mangrove ecosystem, which is located on the coast of Bojong Salawe Beach, covers an area of 237.59 ha<sup>[3]</sup>. In addition to having a mangrove ecosystem on its coast, Bojong Salawe Beach also has more complex oceanographic conditions located along the South Coast of Java, this is due to Bojong Salawe Beach which is directly adjacent to the Indian Ocean so that both currents and waves are very large<sup>[7]</sup>. The types of mangroves found were *Rhizophora apiculata*, *Rhizophora mucronata*, *Rhizophora stylosa*, *Rhizophora mangle*.

In addition, there are about ten types of plants in the mangrove forest area of Bojong Salawe including nipah, fires, coconuts, pidada, mangroves, sea hibiscus, jeruju, ketapang, sea pandanus, and horse treads. Bojong Salawe mangrove ecosystem type consists of natural forest which is dominated by mangroves (*Rhizophora*) and fires (*Avicenna*.) while the fauna found are blodog (mudskipper) and shrimp<sup>[2]</sup>. The existence of mangroves also plays an important role for fishermen around the coast of Pangandaran Regency because mangroves can be a habitat for mangrove crabs and shrimp that have economic value<sup>[3]</sup>.

#### 4. CONCLUSIONS

The results of field measurements show that the mangroves in Bojong Salawe have several sizes from seedlings to trees. At station 1, mangroves in the category of saplings were found with the type of mangrove *Rhizophora apiculata* which has tap roots and muddy substrate. the height reaches 27 m, rarely exceeds 30 m. Types of mangroves in the sapling category are *Rhizophora mucronata* and *Rhizophora stylosa* with significantly different numbers of individuals, namely *Rhizophora mucronata* there are 20 individuals and *Rhizophora stylosa* only has 1 individual. *Rhizophora stylosa* itself is a tree with one or many trunks, up to 10 m high. At station 3, three categories of mangroves were obtained, namely the category of saplings and seedlings. For the tree category, there were *Rhizophora mucronata* mangrove species with a diameter of 31.5 cm in 6 individuals and 34.3 cm in individuals. In addition, *Rhizophora mucronata* was also found in the mangrove seedling category as many as 22 individuals. The seedling category itself is a mangrove that has a height of less than 1.5 m.

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