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Analysis of the proportion of small pelagic fish species in the 713 fisheries management area using purse seine gear in South Sulawesi Indonesia

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This study aims to determine the composition of fish species based on sea waters in the Province South Sulawesi This study will also map the extent of fishing grounds. This research was carried out in the Siddo section (Barru Regency), in the southern part of Tana Beru (Bulukumba Regency), in the eastern part of South Sulawesi in Wara (Palopo City). The data analysis used descriptive analysis, to layout follow table and graphics the condition of the general capture data and oceanographic indicator. This research use to capture productivity analysis to calculate and determinant the value of effort fishing activity, the effective length of fishing (calculated from the start of the lamp until the ring has been raised to the deck of the ship) and the composition of the type of catch. The result showed the proportion of purse seine catches operating in spermonde waters shows a different proportion based on the time of capture. At the time of the first capture, it showed the type of flying fish that had the largest proportion, namely 25.3% or 3200 kg of the total catch of 12,624.5kg. At the time of catching the two types of fish that were dominant were types of anchovies, which reached 43.6% or 5,500kg of the total catch of 24,246kg. Evaluation of fish distribution is not easy because the nature of migratory small pelagic fish, thus determining the state of small pelagic fish stocks in an area of water was relatively easy.

Keywords: Catches Fish, Composition, South Sulawesi.

INTRODUCTION

Fishing activities are activities carried out to get a number of catches, namely various types of fish to meet demand as a source of food by using various types of fishing gear. The demand causes an economic cycle where profits and losses will occur, so that fishing activities will be carried out by increasing production to achieve maximum profits by fishing businesses. Small pelagic fish contribute to capture fisheries production reaching 50% of the global oceanic fisheries production, which also has a share in food security (Frèon et al, 2005). The South Sulawesi Province's Marine and Fisheries Data in 2012 showed that capture fisheries production reached 259,883 tons. Based on the capture fisheries production, there are four types of fish that are caught the most, skipjack 20,271 tons; elevated 19,542 tons; a total of 12,841 tons; and bloating 12,022 tons (KKP Data, Statistics and Information Center, 2013). The data shows that in addition to skipjack tuna, the other three fish species are small pelagic fish species. This is an indicator of the availability of fish resources for capture fisheries in the waters of South Sulawesi, which is predominantly small pelagic fish. The production performance of small pelagic fish species in the management area of South Sulawesi Province is important to know. How big is the proportion of each type of fish caught purines in the fisheries management area

of South Sulawesi Province. Differences in characteristics in the three ecosystems (Makassar Strait; Flores Sea and Bone Bay are determined by the influence of munsoon, so that the distribution and composition of fish species in the marine ecosystem will be different. Thus this study aims to determine the composition of fish species based on sea waters in the Province South Sulawesi This study will also map the extent of fishing grounds.

MATERIALS AND METHODS

This research was carried out in the Siddo section (Barru Regency), in the southern part of Tana Beru (Bulukumba Regency), in the eastern part of South Sulawesi in Wara (Palopo City). The research method used was a case study. For each sampling location, one purse seine unit is selected for data collection. Determination of one purse seine unit because the size of the ship and the fishing gear were relatively the same. The selection wass done by purposive sampling. Data collection was carried out by direct followed by fishing operations during 40 trips. The data to be recorded was the technical data of the capture and oceanographic condition data. The selection was done by purposive sampling. In addition this study also used geospatial information retrieval data to map the extent of fishing areas and the oceanographic conditions of these waters.

The data analyis used Deskriptive analysis, to layout follow table and grafic the condition of the general capture data and oceanographic indicator. This research use to capture productivity analysis to calculate and determinant the value of effort fishing activity, The effective length of fishing (calculated from the start of the lamp until the ring has been raised to the deck of the ship). The composition of the type of catch with the following equation:

$$kj = \frac{n_i}{N} x100\%$$

information:
kj = The composition kinds of fish (%)
ni = total catch of spesies i-th (kg)
N = Total number of catches (kg)

RESULTS

The results were obtained by directly following fishing operations using purse seine. The composition of fish species caught with purse seine in the Spermonde waters region, the west coast of South Sulawesi, as shown in Figure 1.

The proportion of purse seine catches operating in spermonde waters shows a different proportion based on the time of capture. At the time of the first capture, it showed the type of flying fish that had the largest proportion, namely 25.3% or 3200 kg of the total catch of 12,624.5kg. At the time of catching the two types of fish that were dominant were types of anchovies, which reached 43.6% or 5,500kg of the total catch of 24,246kg. Location of purse seine capture in spermonde waters. The proportion of purse seine catches operating in the waters of Bone Bay, the east coast of South Sulawesi as shown in Figure 3.

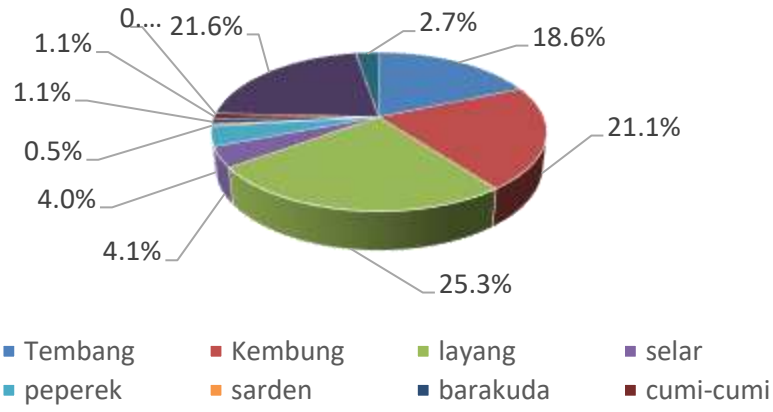

Figure 1: Proportion of fish species purse seine catches operating in Spermonde waters for the first hauling.

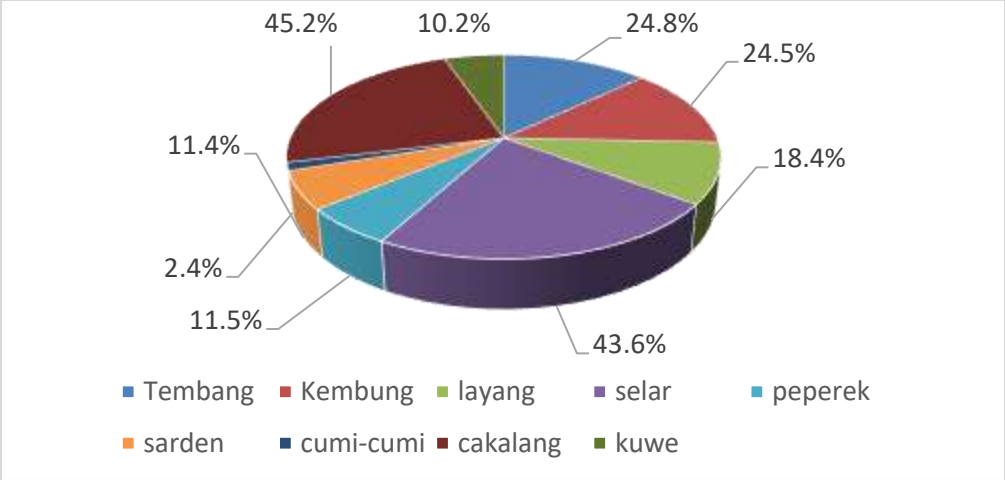

Figure 2:Proportion of fish species purse seine catches operating in Spermonde waters on the second hauling.

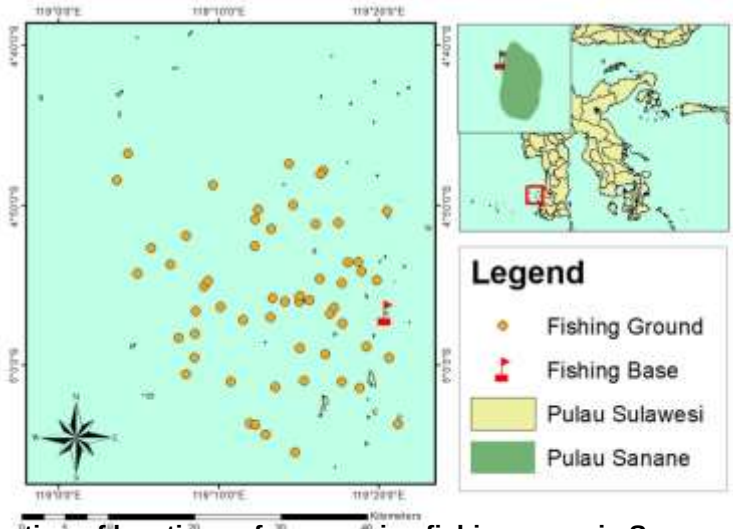

Figure 3: Distribution of locations of purse seine fishing areas in Spermonde waters

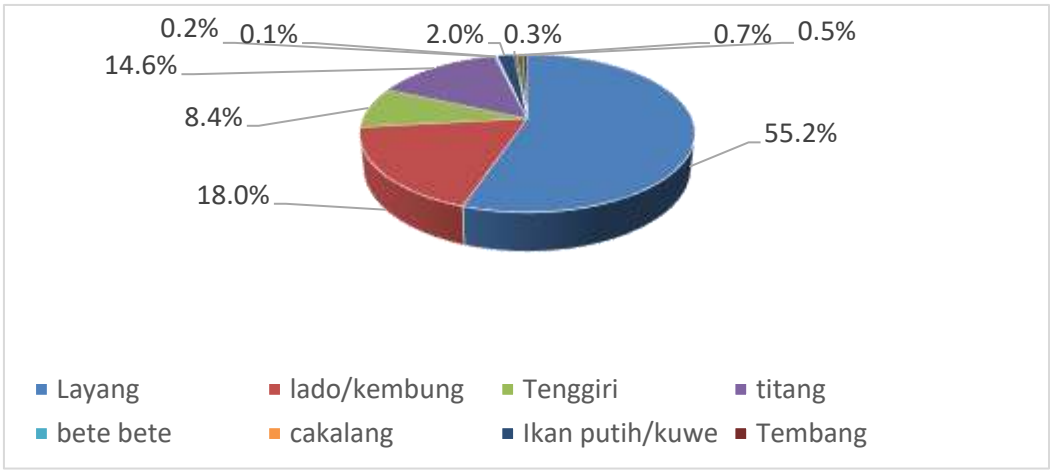

Figure 4: Proportion of fish species caught by purse seine operating in waters in Bone gulf

The distribution of purse seine fishing areas reaches an area of 812.24 km2. The location of purse seine fishing in spermonde waters shows that it is in the area of coral reefs. The proportion of purse seine catches in the waters of Bone gulf as shown in Figure 4.

The proportion of fish species caught by purse seine operating in the waters of the Gulf of Bone shows the types of flying fish reaching 55.2% or 9800 kg of the total catch of 17,739 kg. In total, there are 10 types of fish caught. The geographical position of the purse seine capture location in Palopo waters is shown in Figure 5.

The location of the purse seine capture shows that it is in the waters of the Palopo city. Extensive purse seine fishing area in the waters of the bay of Bone, Palopo City. The extent of purse seine fishing areas in the waters of the Gulf of Bone 365.45 km2 with the dominant fish species is the flying fish. *(Decapterus spp).*

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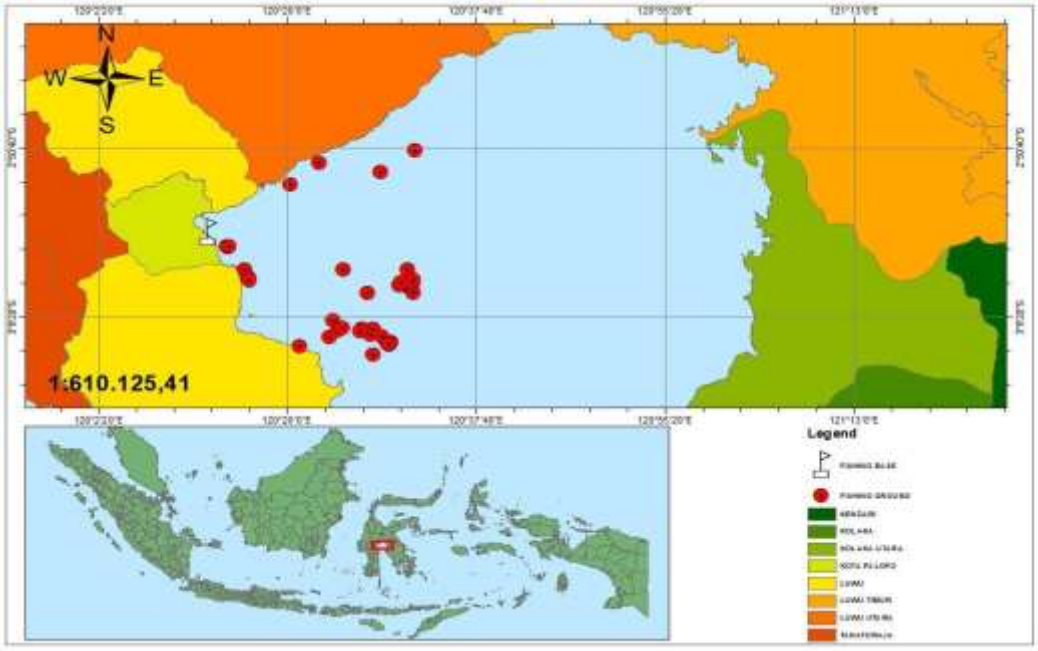

Figure 5: Distribution of locations of purse seine fishing areas in the waters of Bone Gulf

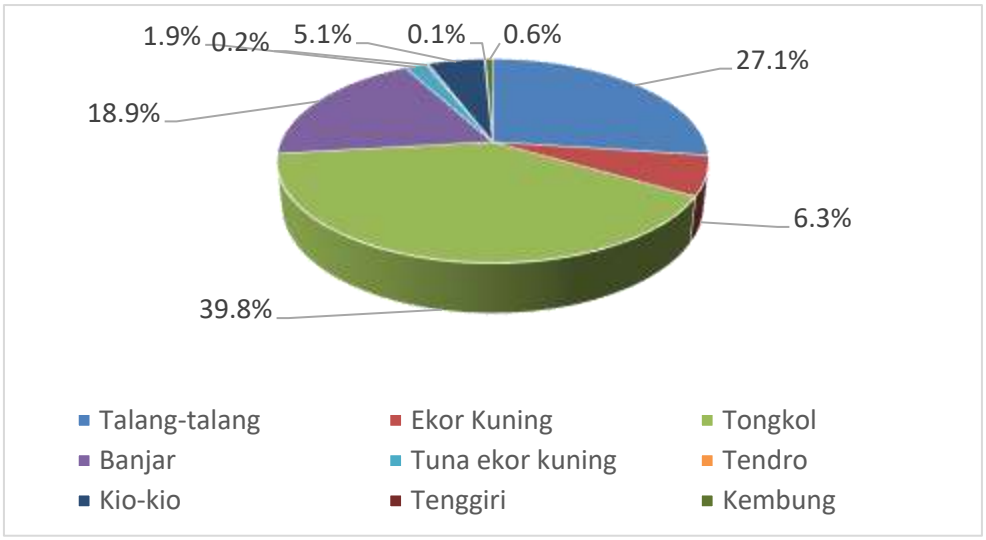

Figure 6: Proportion of fish caught by purse seine operating in the waters of the Flores Sea, Bulukumba Regency.

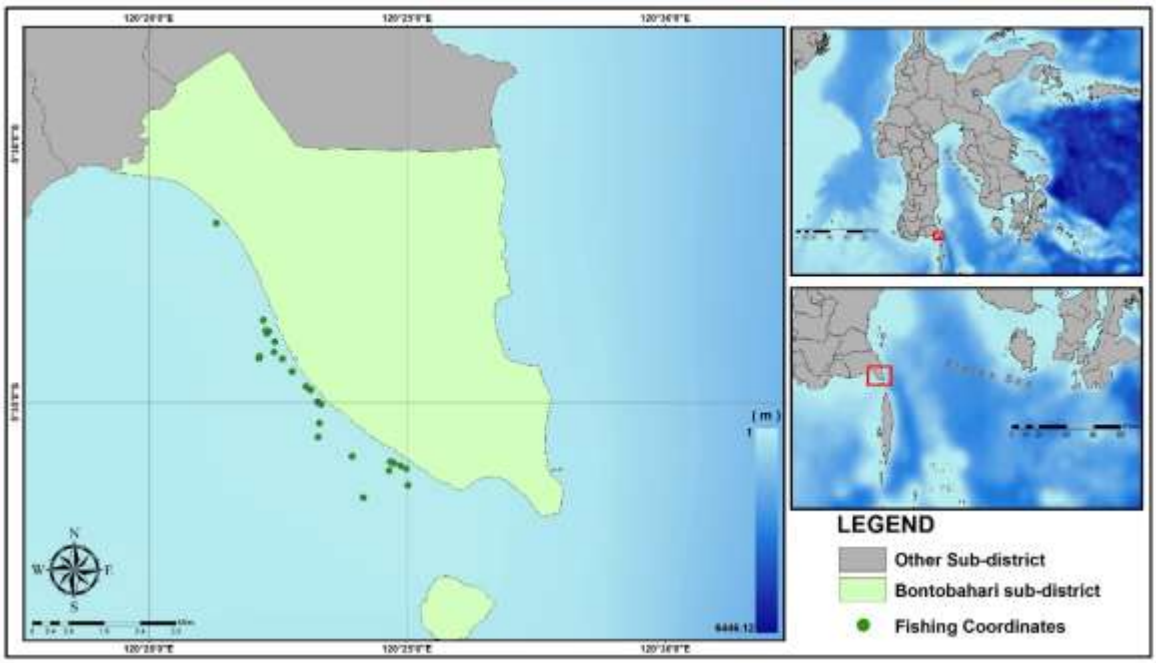

Figure 7: Map of purse seine fishing locations in Flores Sea waters, Bulukumba Regency.

Proportion of fish species purse seine catches operating in the waters of the Regency of Bulukumba, Flores Sea as shown in Figure 6. The proportion of fish purse seine species operated in Flores Sea waters, Bulukumba district, in Figure 6 shows the types of tuna fish (Euthynnus afinis) has the largest proportion, which is 39.8% or 1291 kg of the total catch of 3247 kg. The geographical position of purse seine fishing locations in the Flores Sea waters, Bulukumba Regency, as shown in Figure 7

DISCUSSION

There are 3 main components that support fishing activities, namely 1) human resources, 2) fishing fleets, 3) fish resources. Interaction between the three components will form a pattern of exploitation in capture fisheries activities, because there are no capture fisheries activities that are static. Various actions taken by the perpetrators to achieve economic benefits from capture fisheries activities, actions taken are nothing but increasing fishing capacity, technology, size of fishing gear, number of ships, number of operating days, and various other actions that lead to economic profit. These various actions will affect fish resources, so that exploitation patterns will be formed which will describe the increase or decrease in fish production in a fisheries area. On the other hand the development of capture fisheries as an economic activity must be evaluated to determine the direction of capture fisheries management policies. Evaluation of the development of capture fisheries requires time series data to determine the pattern of changes that occur. Evaluation of fish distribution is not easy because the nature of migratory small pelagic fish, thus determining the state of small pelagic fish stocks in an area of water is relatively easy. One approach that can be used is to evaluate changes in fishing effort, because an increase in overfishing effort has an impact on the ability to produce fish as an economic activity and also has an impact on the availability of fish in an area of water.

CONCLUSION

The proportion of types of fish caught in each fishing location is the basis in determining the types of fish that can be a commodity in an area as the main target of capture. the existence of small pelagic, large pelagic, or demersal fish species which can be known by the proportion of the type of catch that is dominant in each of these areas can be seen from the oceanographic conditions of these waters.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

All authors were involved in data collection, data analysis and compilation of this manuscript in accordance with their respective fields of expertise.

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