

Influence Of Purse Seine And Pole Line Capture To Body Size Of Skipjack Tuna (*Katsuwonus Pelamis Linnaeus*)

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Abstract: The aim of research investigated influence of purse seine and pole line capture to body length of skipjack tuna (*K. pelamis*). The experiment was held January to December 2016 in Bitung, North Sulawesi used three fisheries management. Fishing gear of *K. pelamis* in the experiment is purse seine and pole line. The result was showed difference *K. pelamis* body length based fishing gear. Based on the reseach, body length of *K. pelamis* affected by their habitat and food diversity in three fisheries management. The experiment used purse seine fishing gear is a non-selective fishing tool, while the pole line is a fishing tool that is very easy to apply, environmentally friendly and selective. This is great importance in fishery assessments and sustainability of *K. pelamis* in Bitung.

Index Terms: *Katsuwonus pelamis*, skipjack tuna, Bitung, purse seine, pole line

1 INTRODUCTION

Bitung as a one of city in Indonesia located in North Sulawesi. The centre of fishing ground in Bitung namely Tomini bay, Maluku sea, Seram sea, Halmahera sea, Berau bay, Sulawesi sea and North Halmahera sea that spread about 714 km² with 143.2 km of coastline including 13 large and small islands. Marine resources contained in location including skipjack tuna, mackerel and squid. This position makes Bitung as the one of centre fisheries industry in Indonesia. It is the opportunity for Bitung to be a centre of regional economic activities in Indonesian eastern area. Bitung has potential of natural sources and fisheries amount 587.000 ton. Unfortunately, only 147.000 ton was used for people prosperity. In 2009, the fisheries production value Bitung was increased from 142.362 to 145.053. The advatages from this activities increasing about 82,47 billion rupiahs in the same year. This is the achievement for Bitung fisheries development because increasing value production not affect the number of fisherman ship. This phenomenon as the indicator need another factor as catchment fish technology and fisherman capability in increasing value fisheries production (BPPS Bitung, 2010). The famous commodities from Bitung is skipjack tuna and give the higher production about 6.132 ton with value 398 billion rupiahs in 2009 (Manik, 2007 and BPPS, 2011) [7,2]. In general, skipjack tuna tackle in Bitung divided three fisheries management areas such as WPP 714 (Tolo bay and Banda sea), WPP 715 (Tomini bay, Maluku sea, Halmahera sea, Seram sea and Berau Bay);, WPP 716 (Sulawesi Sea and North Halmahera Island); and WPP 717 (waters of Cendrawasih Bay and Pacific Ocean) (BPPS, 2011) [2].

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Skipjack tuna (*Katsuwonus pelamis Linnaeus*) as the most commercial important species in the sea of the world wide beside albacore (*Thunnus alalunga*) and big eye (*Thunnus obesus*). *K. pelamis* can perform long migrations and their spatial distribution includes tropical and sub-tropical regions of all oceans. (Kalaychi et al., 2007; Andrade and Santos, 2004; Druon et al., 2016) [5,1, 3]. Their habitat around Bitung and most important as a source of foreign exchange and employment in North Sulawesi. Commonly *K. pelamis* catch season start from January, April, June, July and August. In May, October and December not suitable to fish catcher (Kekenusa, 2006) [6]. Commonly, the *K. pelamis* fishing process in Bitung used two kinds of fishing gear which is purse seine and pole line. Purse seine is a fishing gear like a pouch, equipped with net and several rings. Another fishing tool is a pole line, a famous traditional fishing gear and most commonly used by fishermen to catch *K. pelamis*. The one benefit of pole line is selective and harvesting can be done wisely. The aim of research is to investigated influence of purse seine and pole line capture to body length of skipjack tuna (*K. pelamis*). This is great importance in fishery assessments and sustainability of *K. pelamis* in Bitung.

2 METHODS

The research was conducted in January until December 2016. It was held into three location of fisheries management in Bitung. There are : A = including Tolo bay and Banda sea; B = Tomini bay, Halmahera sea, Maluku sea, Seram sea and Berau bay; and C = Sulawesi sea and northern Halmahera.

Impact of Purse Seine and Pole Line to Body Length of *K. pelamis*

We investigated influence of purse seine and pole line capture to body length of *K. pelamis* in three fisheries management in Bitung. We recorded twenty samples every months from three *K. pelamis* location. The sample of *K. pelamis* is the same number from purse seine and pole line. For body length, we measured the tip of the mouth to the end of the tail from every *K. pelamis* samples (Druon et al., 2016).

Data Analysis

The body length of *K. pelamis* samples was analyzed by T test samples to test whether the sample is interpretation of the population based two kind of fishing gear. Furthermore, we made a graphed using Microsoft Excel 2010.

3 RESULT AND DISCUSSION

Impact of Purse Seine to *K. pelamis* Body Length

Impact of purse seine to *K. pelamis* body length was showed in Figure 1.

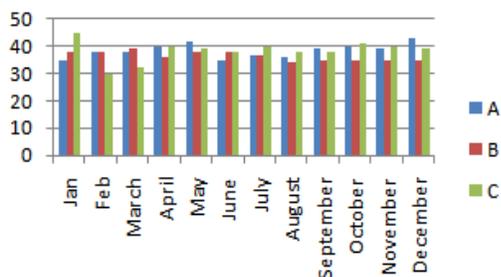


Figure 1. Difference *K. pelamis* Body Length in Three Fisheries

Management used Purse Seine

The observation at A was showed the average body length of skipjack tuna (*K. pelamis*) caught using purse seine in January to April about 40 cm, while in May the average of *K. pelamis* about 43 cm. In June, the body length of *K. pelamis* decreased to 35 cm. In August to December the average of *K. pelamis* increasing to 43 cm. In January to July at B, the average of *K. pelamis* body length was relatively fluctuating in the range 37 to 40 cm, but relatively decreased of their body length in August to December. In contrast at C, the body length of *K. pelamis* relatively long and began to decline when entering February. There was increased *K. pelamis* body length in April and fluctuated through December.

Impact of Pole Line to *K. pelamis* Body Length

Based our experiment, impact of pole line to *K. pelamis* body length was showed in Figure 2.

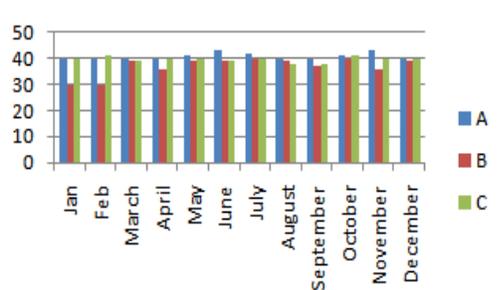


Figure 2. Difference *K. pelamis* Body Length in Three Fisheries

Management used Pole Line

The *K. pelamis* body length catches using pole line in A was showed in January to June increasing in the average about 40 cm. In July, the body length declined until December. The fishery management in B was showed a significant increasing of body length from February to March. In April, the average of *K. pelamis* body length is stable in the range of 35-39 cm. While in fishery management in C, from January to December the result is constant with the body length of *K. pelamis* ranges 40 cm. The results of the length analysis of *K. pelamis* were caught was affect by season and catch methods by fisherman.

Kekenusa (2006) [5] assumed that the sea with higher biodiversity such as Halmahera and Banda sea will attracted many *K. pelamis* or another fishes species made a new habitat. In general, based the experiment purse seine fishing gear is a non-selective fishing tool because includes various body length of *K. pelamis*. It including more important species fishes such as mackerel, albacore and big eye. Actually, the variation for a same *K. pelamis* body length could be attributed to differences in sampling, sample size or length ranges. In addition, growth increment, food, environmental conditions, such as temperature, salinity, seasonality, as well as differences in age and stage of maturity (Druon et al., 2016; Fafioye and Oluajo, 2005)[2,]. While the pole line is a fishing tool that is very easy to apply, environmentally friendly and selective because the catch is only eaten by target fish that have different sizes depending on the season.

4. CONCLUSION

Based on the reseach, body length of *K. pelamis* affected by their habitat and food diversity in three fisheries management. The experiment used purse seine fishing gear is a non-selective fishing tool, while the pole line is a fishing tool that is very easy to apply, environmentally friendly and selective.

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