Feasible Catched Analysis Of Katsuwonus Pelamis Linnaeus In Three Different Location

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Abstract: The objectives of the research is to study the condition of skipjack tuna especially feasibility of skipjack tuna (Katsuwonus pelamis Linnaeus) catched at three different locations using purse seine and pole line. The research was held January to December 2016 in Bitung, North Sulawesi at three different location as a fishing ground. Fishing gear of K. pelamis in the experiment is purse seine and pole line. The result was showed difference of feasible and unfeasible catched of K. pelamis based location and fishing gear. 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: purse seine, Katsuwonus pelamis, skipjack tuna, pole line, Bitung

1 Introduction

Indonesian fisheries sector is one of the most important that can be relied upon for the country's foreign exchange as it can fulfill daily needs. Fisheries become the main source of livelihood of some fishing communities in the coastal areas and a source of income for the country (Kekenusa, 2006 and Manik, 2007)[9,11]. Sustainable fisheries should be viewed in more way, not just catching or biomass fishing levels, but other aspects of fisheries, such as ecosystems, socio-economic structures, fishing communities and institutional management. Thus the sustainability of capture fisheries should be seen from four aspects of sustainability, i.e ecological sustainability aspects (maintaining stock / biomass sustainability and enhancing ecosystem capacity and quality), socio-economic sustainability (prosperity of fisheries at the individual level), community sustainability (sustainability of community welfare) and institutional sustainability (maintenance of healthy financial and administrative aspects) (Broomhead et al., 2003; Dempster and Taquet, 2004)[3,4]. Capture fisheries are important economic activities including catching / collecting animals and aquatic plants living in the sea and free water species. Capture fisheries meaning a system consisting of several interrelated elements or subsystems including procurement of production facilities, fishing effort (primary production process), provision of infrastructure (ports), processing, marketing and coaching units (Druon et al., 2016; Sparre et al., 1989)[5,12].

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Bitung City is an important fishing ground that produces skipjack tuna (Katsuwonus pelamis Linnaeus) in Indonesia. This region relies on fishing areas conducted in the waters of Tomini bay, many sea in eastern (Maluku, Seram, Halmahera), Berau Bay and sea of Sulawesi. It is very boiling landscape with an area of about 714 km^2 of sea, about 143.2 km^2 of coastline along with thirteen islands make Bitung a important landing center of skipjack tuna. This species is one of the big pelagis fish has been exported abroad as a non-oil commodity in formed of frozen fresh fish and canned fish because about 70% of fishing industry activity is in Bitung. BPS Bitung (2014)[2] explained that total production of marine captures 4,812,235 tons in 2009, as many as 338,034 (7.02%) are skipjack tuna. The volume and value of skipjack exports in Indonesia in 2009 amounted to 131,550 tons valued at USD 352,300,000 which was ranked second only to shrimp. In addition to skipjack and shrimp, other marine resources that are the mainstay of exports are tuna, mackerel and squid. Comparing with other marine commodities, skipjack tuna is a reliable commodity for Bitung city because in 2013 it produced 6,1324 tons worth of IDR 398,855,600 billion (BPS Bitung, 2014)[2]. Based Indonesian Ministry of Fisheries number 18 and Bitung Ocean Fisheries state that fishing ground divided into the WPP 714, WPP 715, WPP 716 and WPP 717. Description of their location is WPP 714 (Tolo bay and Banda sea), WPP 715 (Tomini bay, Maluku sea, Halmahera sea, Seram and Berau bay), WPP 716 (Sulawesi sea and northern of Halmahera), and WPP 717 (Cenderawasih bay and Pacific ocean). Each fishing ground has their own regulation about specific size of skipjack tuna for export commodity. Since long time, the fishermen in Bitung using purse seine and pole line fishing tool to catch skipjack tuna. Both types of fishing gear have different technological levels and are operated throughout the year. The existence of competition between fishermen and the decline of skipjack tuna resources in a waters causing the decline in the quality of fish caught. One indication of a waters experiencing the pressure of catching is by looking at the size of the catch one of the fish species in the waters. The phenomenon seen is the last few years skipjack catching done excessively so potentially eliminate the source of biodiversity. The aim of research is to study the condition of skipjack tuna especially feasibility of skipjack tuna catched at three different locations using purse seine and pole line. It is expected that the results of research can contribute to the government of Bitung City as one of the strategies for sustainable skipjack tuna management.

2 METHODS

A. Time and Location of Research

The study was conducted from January to December 2016 in Bitung as a fishing base. The another areas become fishing ground in three different location with codes based their biogeography is: WPP 714, WPP 715 and WPP 716.

B. Types and methods of data collection

Data collection methods used in the research are: a) primary data in the form of interviews to determine the position of fishing ground fishermen at the time of fishing, the type of fishing gear used and the size of the fish caught and b) secondary data is obtained from related institutions.

C. Data Analysis

The size of the skipjack tuna is larger than the length of the fish when first matures gonad (length at first maturity = Lm). To obtain the value of Lm is done by making a sigmoid curve between the middle grade of the grade with the proportion of skipjack tuna. The intersection between F_{50} and sigmoid curve is the value of Lm (Sparre et al., 1989) [12].

3 RESULT AND DISCUSSION

Feasible and Unfeasible Catched of Skipjack Tuna in WPP 714, WPP 715 and WPP 716 using Pole Line fishing Gear

Based on the results of Lm value analysis, it can be seen that the size of capture in WPP 714> 44.95 cm, the appropriate size of catch in WPP 715> 45.22 cm and in WPP 716> 44.29 cm.

Difference feasible and unfeasible catched of K. pelamis was showed in Figure 1.

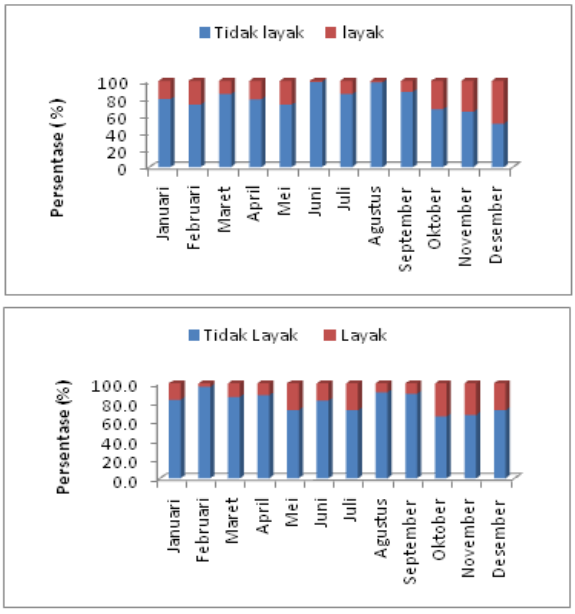

Figure 1. *Percentage of feasible and unfeasible catched of K. pelamis using pole line in WPP 714 and WPP 715.*

Figure 1 showed the highest proportion of skipjack tuna catching using the pole line fishing equipment at WPP 714 in December about 49.67%, then November 35.67%, and October 32.87%. The lowest proportion of catchable occurred in June at 1.33%, then August 1.67%, and September 12.76%. The highest proportion of skipjack catching sizes using pole line in WPP 715 in October and November was 34.8 and 33.3%, respectively. The lowest proportion of decent-catch size occurred in February at 3.7% and August at 9.5%.

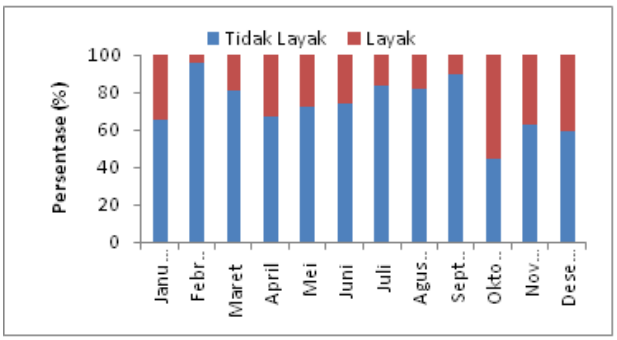

Figure 2. *Percentage of feasible and unfeasible catched of K. pelamis using pole line in WPP 716.*

Figure 2 showed the highest proportion of skipjack catch size in WPP 716 is October at 55.2% and December 40.9%. The lowest proportion of unsuitable catch size occurred in February of 4.7% and September 10.33%.

Feasible and Unfeasible Catched of Skipjack Tuna in WPP 714, WPP 715 and WPP 716 using Purse Seine

Proportion of feasicle and unfeasible catched using purse seine in WPP 714 and WPP 715 is as follows:

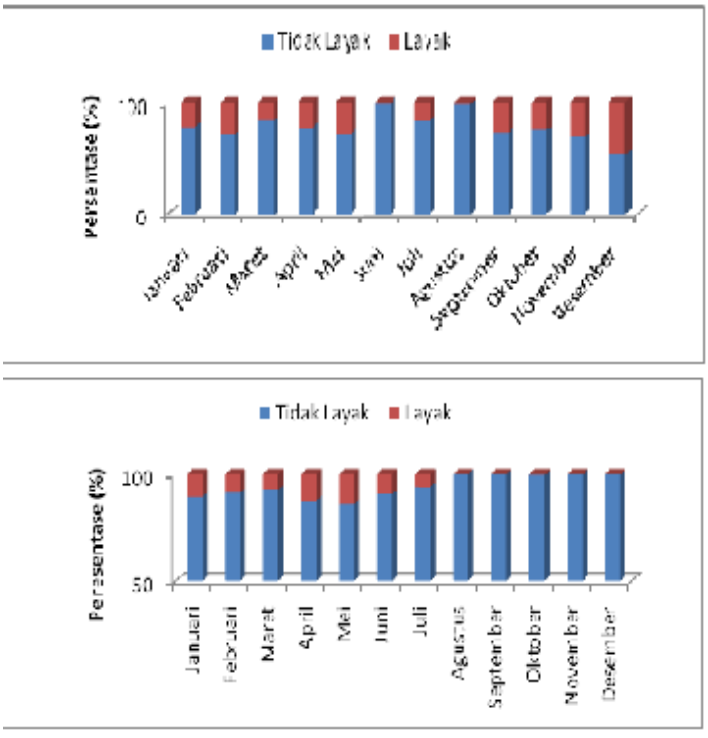

Figure 3. *Percentage of feasible and unfeasible catched of K. pelamis using purse seine in WPP 714 and WPP 715.*

Figure 3 shows the highest proportion of capture size in WPP 714 using Purse Seine fishing gear in December 47.0%,

November November 31.3%, and February, May and September at 27.7%, while the lowest proportion of decent size catch in June 1.3%, August and March respectively 1.7% and 15.6%. The highest proportion of decent-catch size in WPP 715 in May was 14.4%, April was 12.7%, June was 9.9%, while the lowest proportion of decent-catch size in August was 0.06%, in September 0.11% , and December was 0.33%.

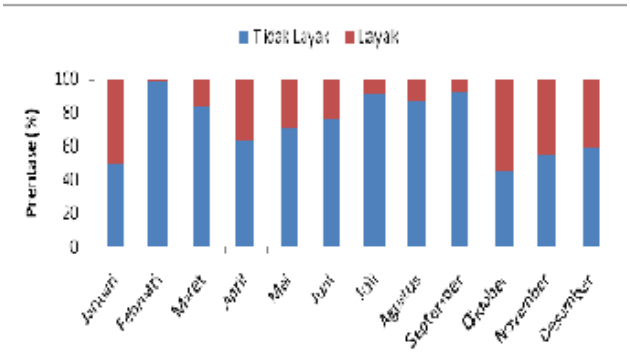

Figure 2. *Percentage of feasible and unfeasible catched of K. pelamis using purse seine in WPP 716.*

Figure 4 showes at WPP 716 the highest proportion of skipjack tuna in October of 54.19%, January 50.00%, and November of 44.67%, while the lowest proportion of feasible catched in February was 0.33%, and September 7 , 00%. Based on the analysis that in WPP 714 in December and November is the month with the largest percentage of capture-worthy size using either pole line or purse seine, whereas in August and June is the month with the lowest percentage of decent capture size either using pole and line fishing gear or purse seine. At WPP 715 in October and November is the month with the largest percentage of eligible catch size, while the largest percentage of catchable size in May and April by means of purse seine fishing gear, then the lowest percentage of decent capture size in August using both pole and line or purse seine. The largest percentage of decent-catch size in WPP 716 is in October and November using both pole line and purse seine devices, while the lowest percentage of decent catch size is in February, September, and July. Based on the above description that WPP 714 and WPP 716 have the different percentage of feasible catched in the same month using either pole line or purse seine, while WPP 715 has a unfeasible catched in different months.

4. CONCLUSION

Based on the research, the conclusion is :

1. The highest proportion of skipjack catching size using the pole line catching equipment in WPP 714 was 49.6% in December, while the lowest proportion of skipjack tuna catches used pole line in July was 1.33%.The highest proportion of skipjack catching using purse seine in WPP 714 was 47.0% in December, while the lowest proportion of skipjack catching size was purse seine in June at 1.3%.
2. The highest proportion of skipjack catching size using pole line catching equipment at WPP 715 was 34.8% in October, while the lowest proportion of skipjack catching size was pole line in February of 3.7%. The highest proportion of skipjack catching sizes using purse seine fishing gear at WPP 715 was in May at 14.4%, while the lowest proportion of skipjack catching size using purse seine was 0.06% in August.
3. The highest proportion of skipjack catching size using pole and line catching equipment at WPP 716 was 55.2% in October, while the lowest proportion of skipjack tuna catching size was 4.7% in February.

The highest proportion of skipjack catching sizes using purse seine in WPP 716 in October was 54.19%, while the lowest proportion of skipjack catching size was purse seine in February of 0.33%.

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