Global Scientific JOURNALS

GSJ: Volume 9, Issue 8, August 2021, Online: ISSN 2320-9186
www.globalscientificjournal.com

Catch Rate and Catching Season of Squid (*Loligo sp.*) by Danish Seine at PPP Mayangan Probolinggo

Nora Akbarsyah[1,2] , Pringgo Kusuma Dwi Noor Yadi Putra[1,2] , Darmawan Ockto Sutjipto[3]

[1)]*Department of Fisheries, Faculty of Fisheries and Marine Science, Padjadjaran University, Indonesia*
[2)]*Tropical Marine and Fisheries Laboratory, Faculty of Fisheries and Marine Science, PSDKU Universitas Padjadjaran*
[3)]*Faculty of Fisheries and Marine Science, Universitas Brawijaya, Indonesia*
Correspondence: noraakbarsyah@gmail.com

Abstract

Squids are demersal fish caught by trawlers. As one of the fish widely consumed by the community, long-term use of squid can lead to population decline. This study aims to determine the squid fishing season and the development of CPUE in 2014-2018. In August 2019, at the Mayangan Beach Fishing Port, Probolinggo City, East Java Province, Indonesia. The research method used is a survey method, namely, observing the squid fish that landed at the Mayangan Probolinggo fish landing site. The reduced number of fishing gear affects the reduction in the number of squids catches by 52.68%. The decrease in fishing effort affected the decrease in CPUE by 4.8%, so it can be said that the decrease in the number of fishing gear did not affect the number of catches from squid. The squid fishing season in Probolinggo is from January to May and August. From June to December, it includes in the medium season category.

Introduction

Squid are carnivorous animals because they eat shrimp, pelagic fish, and trash fish caught by their tentacles. Fishers in Indonesia mostly still use fishing gear to find squid (handline). This tool has a different shape than other fishing gear because it is simpler (Oktariza et al., 2016). High market demand for squid as an Indonesian export commodity makes squid one of the main catches besides fish and lobster (Wulandari, 2018). As a commodity belonging to the economically important category, squid is under pressure from intensive fishing activities. This tendency is feared to threaten the existence of aquatic squid (Ernaningsih et al., 2019). This requires reasonable control so that squid resources can be carried out while they can be saved.

The Danish Seine fishing gear is a fishing gear that catches demersal fish, which is very effective when used to catch small fish (Suwarso et al., 2020). Squid are demersal fish caught using the Danish Seine (Ernawati & Sumiono, 2017).

This study aims to determine the squid fishing season and the development of CPUE in 2014-2018. Analysis of the appropriate fishing season can be used to control and monitor fishing pressure on resources (Supeni et al., 2020). In addition, information regarding the latest data on the number of squids caught by the Danish Seine fishing gear can be used by the relevant government in making future capture fisheries policies.

Methods

This research was carried out in August 2019 at the Mayangan Beach Fishing Port, Probolinggo City, East Java Province, Indonesia (Figure 1). The research method used is a survey method, namely, observing the squid fish that landed at the Mayangan Probolinggo fish landing site. The data used is the data catch Danish Seine fishing gear that is recorded at the time the ship unloading at the fish landing sites Mayangan Probolinggo for five years, i.e., 2014 – 2018.

Figure 1. MapResearch Sites

Datacatches are then processed using a simple excel calculation to obtain results regarding:

a. Percentage Effect of decreasing the number of Danish Seine fishing gear with Fluctuations in the number of fish caught by Danish Seine fishing gear in 5 years (2014-2018)
b. Fluctuation of the percentage of fish caught by Danish Seine
c. Catch per unit effort of Danish Seine fishing gear in catching fish. Calculation of the catch per unit effort (CPUE) was calculated with the formula of CTF (2003):

$$CPUE = \frac{Volume\ of\ catches\ (kg)}{Total\ trip\ arrest}$$

And conjunction with the decrease in the number of fishing gear
d. Index Season Fishing by fishing gear Danish Seine per
e. index Season Fishing by Danish Seine fishing gear in general
Calculation of the fishing season using time series analysis (*moving average*) which refers to Dajan (1998) as follows:
   i. Compiling CPUE series
   ii. Compiling CPUE moving average for one year (12 months)
   iii. Compiling centralized CPUE moving average (RG)
   iv. Compile the average value in a matrix of size ixj (every month), followed by calculating the total average ratio each month, then calculating the total average ratio of the overall

Results And Discussion

Fluctuations in Catching Squid (*Loligo sp.)* .) By Danish seine

Squid catches by Danish Seine are still at 47 tons in 2014 and 49,077 tons in 2015. H squid catches decreased by 61% in 2016. The lowest catch rate was in 2016 at 19,367 tons (Figure 2). In one year, the number of squids caught by the Danish Seine fishing gear is 30.59 tons. The average percentage of squid catches per year is 1.72%.

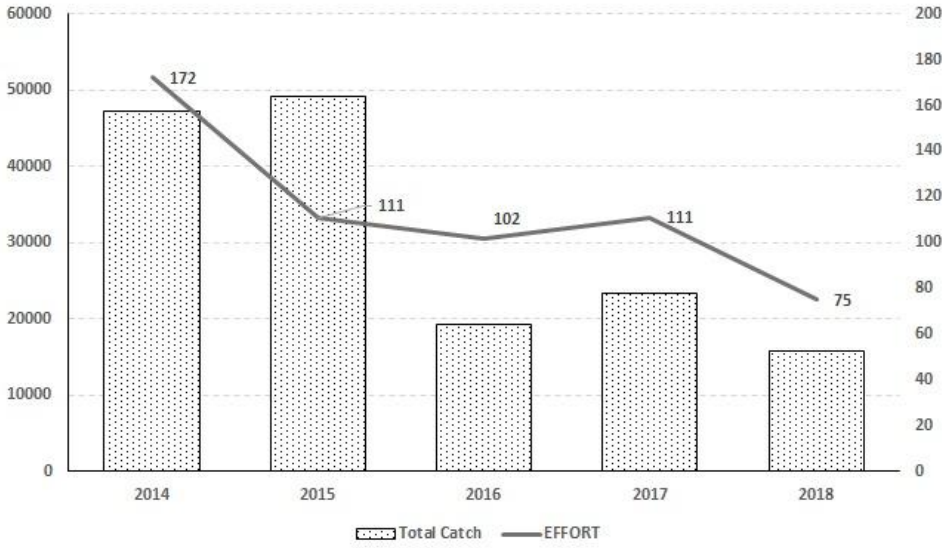

Figure 2 Fluctuations fish caught Danish squid seine for five years

Using simple regression analysis by comparing the amount of effort by the total number of fish catches squid produces R^2 of 0.5268, so it can be concluded that the decrease in the amount of fishing effort that operated had an effect of 52.68% in decreasing the number of squids caught by the Danish seine. This shows that banning the Danish seine in 2015 can reduce the number of squids caught.

CPUE and Fishing Fleets

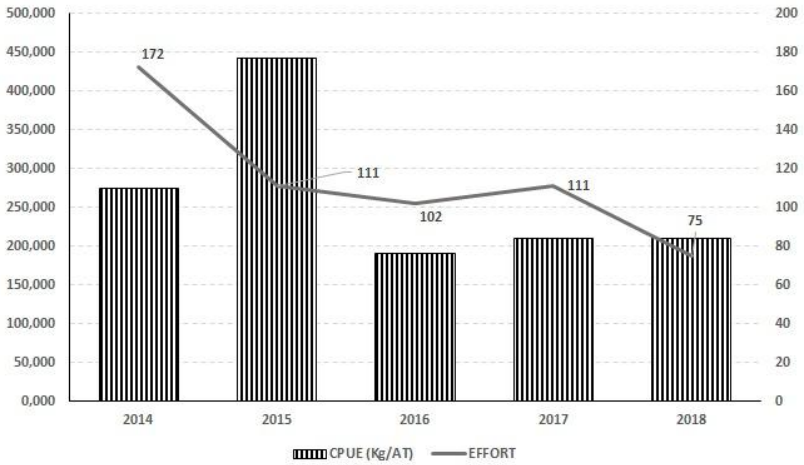

Figure 3 Fluctuations in Catch Per Unit Effort Squid caught on the Danish seine for five years

Catch per unit effort has decreased every year (Figure 3). The average decline in CPUE per year is 36.67%. The highest CPUE in 2015 was 442.135 kg/fishing gear, the lowest CPUE in 2016 was 189.873 kg/fishing gear. A simple analysis using linear regression comparing the CPUE trend with fishing attempts resulted in R^2 0.048. The decrease in fishing effort affected the decrease in CPUE by 4.8%, so it can be said that the decrease in the number of fishing gear did not affect the number of catches from squid.

Fishing Season Index

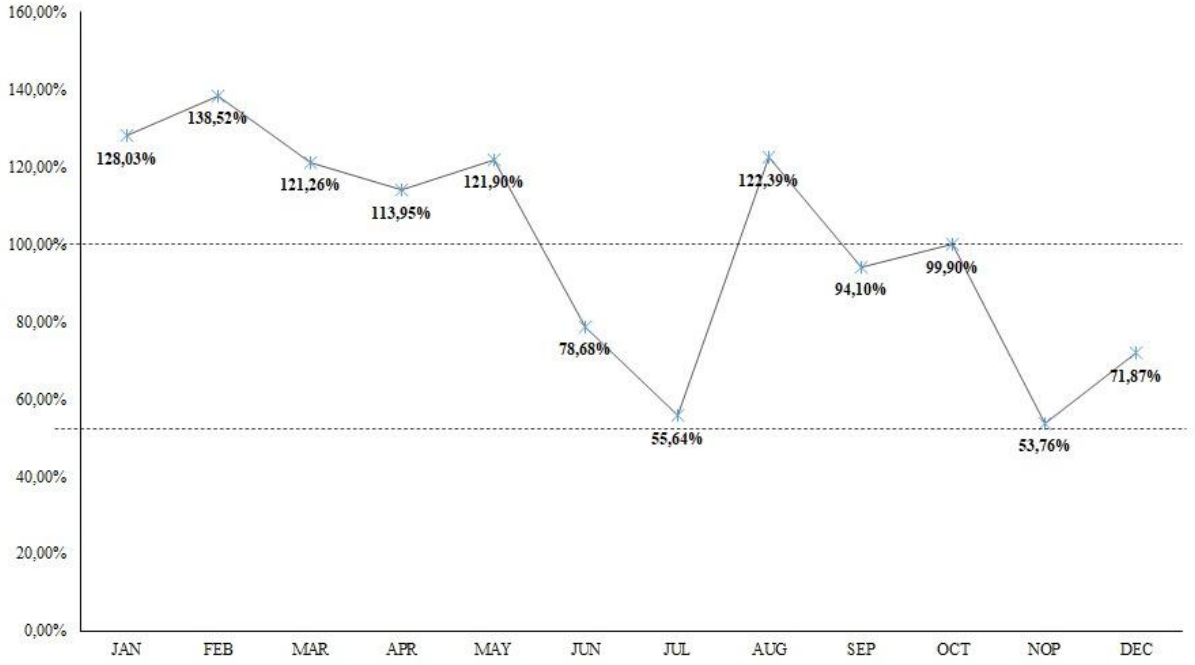

Figure 4 Squid Fishing Season Index caught by the Danish Seine in Mayangan Probolinggo

The squid (fishing season*Loligo sp.*)occurs from January to May and August. The moderate season occurs from June to December except in August (Figure 4). The highest peak of the fishing season is in February, and the lowest is in November. As for one year, there is no famine season.

Conclusion

Several analyzes from this study concluded that:

1. The reduced number of fishing gear affected the reduction in the number of squids catches by 52.68%.
2. The decrease in fishing effort affected the decrease in CPUE by 4.8%, so it can be said that the decrease in the number of fishing gear did not affect the number of catches from squid.
3. The squid fishing season in Probolinggo is from January to May and August. From June to December, it is included in the medium season category.

References

Ernawati, T., & Sumiono, B. (2017). MONTHLY FLUCTUATION OF CANTRANG CATCHING BASED AT THE FISHING PORT OF TEGAL SARI BEACH, TEGAL CITY. *Indonesian Journal of Fisheries Research*, *15*(1), 69. https://doi.org/10.15578/jppi.15.1.2009.69-77

Ernaningsih, E., Jamal, M., & Indah, N. (2019). POPULATION DYNAMICS AND EXPLOITATION RATE OF Squid (Sepioteuthis lessoniana) IN SPERMONDE ISLANDS, SOUTH SULAWESI. *JOURNAL OF INDONESIAN TROPICAL FISHERIES (JOINT-FISH): Journal of Aquaculture, Capture Fisheries Technology, and Management, Marine Science*, *2*(2), 248–259. https://doi.org/10.33096/joint-fish.v2i2.58

Oktariza, W., Wiryawan, Budy, Baskoro, MS, Kurnia, R., & Suseno, SH (2016). *Model of Increasing Squid Stock (Photololigo Chinensis) in the Waters of Bangka Regency, Bangka Belitung Islands Province* [IPB University]. https://repository.ipb.ac.id/handle/123456789/82399

Supeni, EA, Lestarina, PM, & Lesmanawati, W. (2020). SUSTAINABLE YIELD AND FISHING SEASON OF GULAMAH FISH AT LENDING IN MUARA KINTAP FISHING PORT. *Fish Scientiae*, *10*(2), 3–13.

Suwarso, S., Taufik, M., & Zamroni, A. (2020). DYNAMICS OF CANTRANG FISHERY BASED ON TEGALSARI, TEGAL: Changes in Fishing Efforts and Composition of Fish Catches. *JOURNAL OF*

FISHERIES RESEARCH INDONESIA, *26*(4), 211–220.

Wulandari, DA (2018). MORPHOLOGY, CLASSIFICATION, AND DISTRIBUTION OF SQUIDS FAMILI LOLINGINIDAE. *OSEANA*, *43*(2), 48–65. https://doi.org/10.14203/oseana.2018.vol.43no.2.21