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Catch Rate and Fishing Season of Gulamah (*Argyrosomus amoyensis*.) by Danish Seine at PPP Mayangan Probolinggo

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Abstract

Gulamah is demersal fish caught by a trawler. As one of the fish widely consumed by the community, long-term use of gulamah fish can result in a population decline. This study aims to determine the fishing season of gulamah and the development of CPUE in 2014-2018. This research was conducted in August 2019 at the Mayangan Beach Fishing Port, Probolinggo City, East Java Province, Indonesia. The research method used is a survey method, namely, directly observing the gulamah fish that landed at the Mayangan Probolinggo fish landing site. The decreasing number of fishing gear impacting the number of gulamah production up to 80.37%. The average percentage decrease in catch per unit effort from 2014 - 2018 was 36.67%. The fishing season for gulamah in Probolinggo is from January to March and July to August.

Introduction

Argyrosomus amoyensis (Sciaenidae); is one of the fish that lives in coastal waters; it moves with schooling, the total length per individual reaches 38 cm, generally 25-30 cm. Gulamah fish are included in demersal fish, caught by trawlers, marketed in fresh, salted-dried, salted-boiled form (Genisa, 1999). Gulamah fish is valuable as consumption fish at a relatively accessible price to reach the general public (Siagian et al., 2017). As one of the widely consumed fish, long-term use of gulamah fish can result in population decline (Na Separate & Machrizal, 2021).

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). Gulamah fish are demersal fish caught using the Danish Seine (Ernawati & Sumiono, 2017).

This study aims to determine the fishing season of gulamah 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 Gulamah fish caught by Danish Seine fishing gear can be used by the relevant government in making future capture fisheries policies.

Methods

This research was conducted 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, directly observing the gulamah fish that landed at the Mayangan Probolinggo fish landing site. The data used is the data catch Danish Seine fishing gear recorded at the time the ship unloads at the fish landing sites Mayangan Probolinggo for five years, i.e., 2014 – 2018.

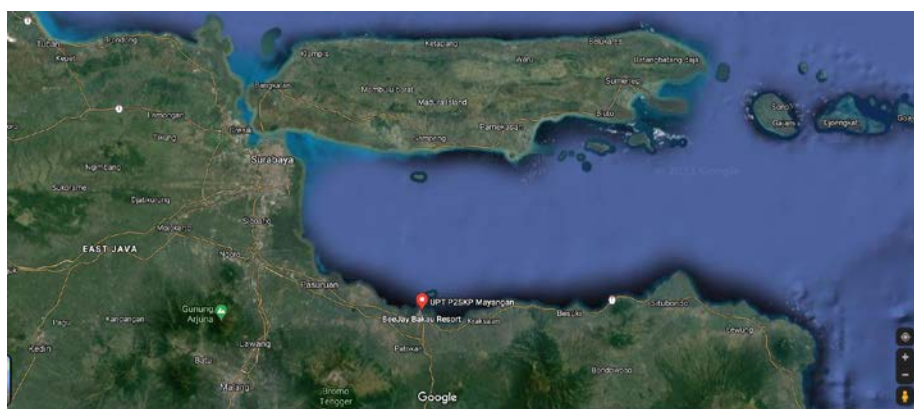


Figure 1. Map of Research Sites

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

- 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)
- Fluctuation of a percentage of fish caught by Danish Seine
- 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):

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

And conjunction with the decrease in the number of fishing gear

- Index Season Fishing by fishing gear Danish Seine per
- 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:

- Compiling CPUE series
- Compiling CPUE moving average for one year (12 months)
- Compiling centralized CPUE moving average (RG)
- Compiling 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

Number of Gulamah (*Argyrosomus amoyensis*) Caught By Danish seine

The catch of gulamah fish by Danish Seine fishing gear is still at 130.455 tons in 2014, declining up to more than 50% in 2015, followed by the same percentage decline in 2016. The lowest catch rate in 2017 was 22,383 tons (Figure 2). On average, in one year, the number of gulamah fish caught by the Danish Seine fishing gear is 54,589 tons. The average percentage of gulamah fish catches per year is 2.64%.

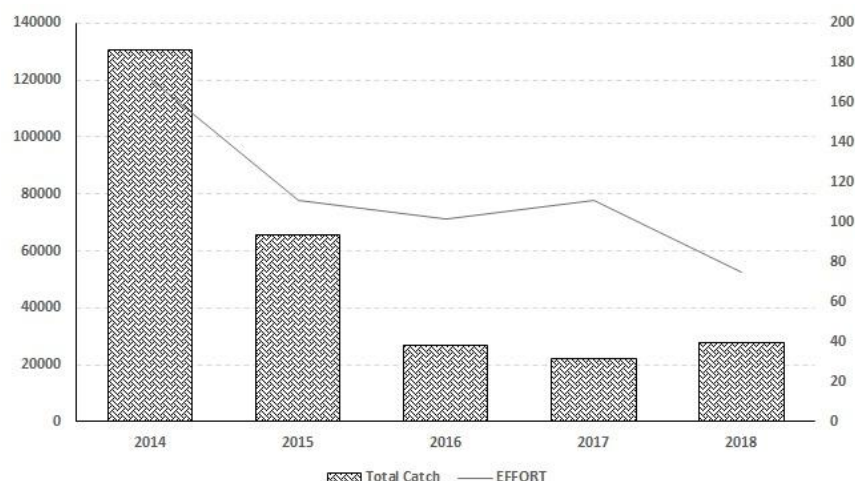


Figure 2 Number of Gulamah (*Argyrosomus amoyensis*) Caught By Danish seine

Using simple regression analysis by comparing the amount of effort by the total number of fish catches gulamah produce R^2 of 0.8036, so it can be concluded that the decrease in the amount of fishing effort influential operated by 80, 36% decrease in the number of gulamah fish caught by Danish Seine fishing gear. This shows that banning the Danish seine in 2015 can reduce the number of gulamah fish caught.

CPUE and Fishing Fleets

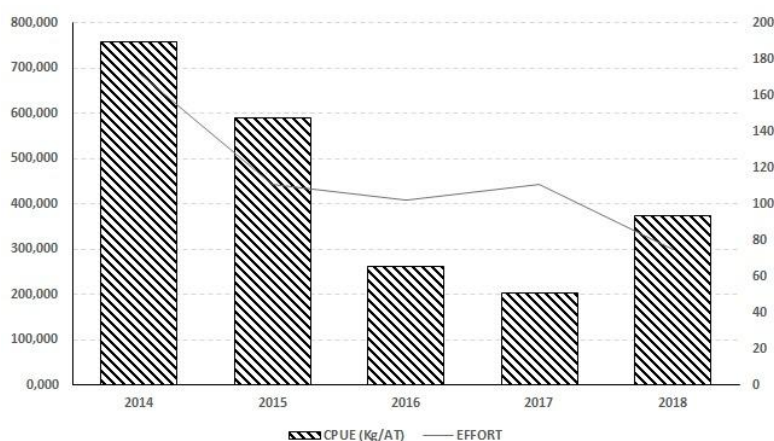


Figure 3 Fluctuations in Catch Per Unit Effort of Gulamah by Danish seine for five years

Catch per unit effort has decreased every year (Figure 3). The average decline in CPUE per year is 36.67%. The highest CPUE in 2014 was 758,459 kg/fishing gear. The lowest CPUE in 2017 was 201,649 kg/fishing gear. A simple analysis using linear regression comparing the CPUE trend with fishing attempts resulted in R^2 0.5037. The decrease in fishing effort affects the decrease in CPUE by 50.37%.

Fishing Season Index

The fishing season for gulamah (*Argyrosomus amoyensis*) occurs from January to March and July to August. The moderate season occurs in April, May, September to December (Figure 4). The highest peak of the fishing season is in July, and the lowest is in December. As for one year, there is no famine season.

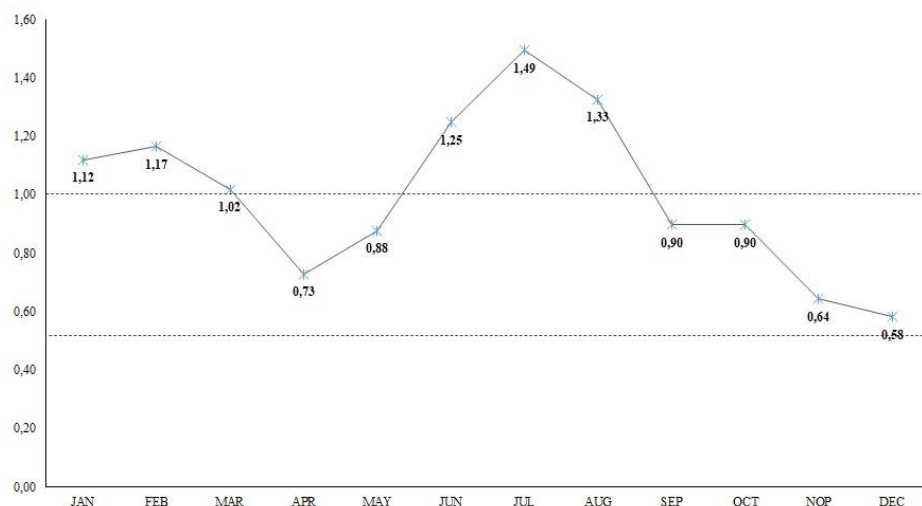


Figure 4 Gulamah Fishing Season Index caught by Danish Seine in Mayangan Probolinggo

Conclusion

Several analyzes from this study concluded that:

1. The decreasing number of fishing gear impacting the number of gulamah production up to 80.37%
2. The average percentage decrease in catch per unit effort from 2014 - 2018 was 36.67%
3. The fishing season index of gulamah in Probolinggo is from January to March and July to August.

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