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Catch Rate and Fishing Season of Hairtail Fish (*Trichiurus Sp.*) with Danish Seine at PPP Mayangan Probolinggo

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Abstract

Hairtail Fish is included in the category of demersal fish, which has significant economic value and includes Market demand for Hairtail Fish, which tends to increase throughout the year, causes fishing efforts to tend to increase. If the catch carries out excessively to exceed the maximum sustainable yield limit, it will cause overfishing. This study aims to determine the fishing season of Hairtail Fish 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, observing the Hairtail Fish that landed at the Mayangan Probolinggo fish landing site. The catch was decreasing 89.51% due to the number of fishing gear going down after 2014. The average percentage decrease in catch per unit effort from 2014 - 2018 was 28.35%. Hairtail fishing season in Probolinggo is from April to June.

INTRODUCTION

Hairtail fish included in the category of demersal fish with substantial economic value and export commodities (Sarasita et al., 2019) (Vincentius & Deepublish, 2020). Hairtail Fish are widely distributed in tropical waters and can be found in any area in Indonesia. Hairtail fish habitat includes marine waters, estuaries, swamp areas, coastal areas, mangroves, and brackish waters, mostly on shallow beaches and river mouths. Hairtail fish swim with their whole body vertical, the head is above (Harjanti et al., 2012).

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., 2021). Hairtail Fish are fish caught using fishing rods, but in many cases, the Danish Seine fishing gear also catches this fish (Ernawati et al., 2011)(Adela et al., 2016)(Cahyani, 2013). Market demand for Hairtail Fish fish tends to increase throughout the year, causing fishing efforts to increase, and if fishing carries out

excessively to exceed the maximum sustainable yield limit, it will cause overfishing (Islamiati et al., 2018).

This study aims to determine the fishing season of Hairtail Fish and the development of CPUE in 2014-2018. Analyzing the excellent fishing season can make it easier for fishers to make effective and efficient fishing (Harjanti et al., 2012). In addition, information regarding the latest data on the number of Hairtail Fish fish caught by the Danish Seine fishing gear can be used by the relevant government to make 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, observing the Hairtail Fish that landed at the Mayangan Probolinggo fish landing site. The data used is the data catch of Danish Seine fishing gear that records at the time the ship unloading at the fish landing sites Mayangan Probolinggo for five years, i.e., 2014 - 2018

Figure 1. MapResearch Sites

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

a. Percentage Effect of decreasing the number of fishing gear Danish Seine with Fluctuations in the number of Hairtail Fish caught by Danish Seine in 5 years (2014-2018)
b. Fluctuating percentage of Hairtail Fish caught by Danish Seine
c. Catch per unit effort of fishing gear Danish Seine in catching Hairtail Fish. The formula calculates of catch per unit effort (CPUE) from KKP (2003):

$$CPUE = \frac{Volume\ of\ catch\ (kg)}{Number\ of\ fishing\ trips}$$

and their relationship with the decrease in the number of fishing gear
d. Fishing Season Index Hairtail Fish by Danish Seine per year
e. Fishing Season Index Fish Hairtail Fish by fishing gear Danish Seine 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 average Centralized CPUE moving average (RG)
iv. Compiling the average value in a matrix of size ixj (every month), followed by calculating the total average ratio for each month, then calculating the total average ratio of the overall

Results and discussion of

Fluctuating Catches of Hairtail Fish (*Trichiurus Sp.*) By CantrangHairtail Fish

The catch of fish by Danish Seine fishing gear is still at 88.4 tons at t in 2014. It decreased to more than 50% in 2015, followed by the same percentage decline in 2016. The lowest catch rate in 2018 was 16.6 tons (Figure 2). On average, in one year, the number of Hairtail Fish caught by the Danish Seine fishing gear is 44,419 tons.

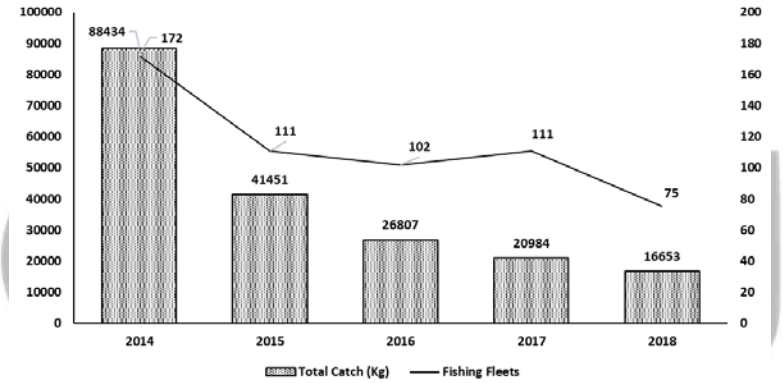

Figure 2 Fluctuationsfish hairtail Fish caught by danish seine for five years

Using simple regression analysis by comparing the amount of effort by the total number of fish catches, hairtail fish produce R^2 of 0.8951, so it can be concluded that the decrease in the amount of fishing effort influential operated by 8951%decrease in the number of fish hairtail fish caught by fishing Danish Seinegear. This shows that banning the Danish seine in 2015 can reduce the number of offish Hairtail Fish caught.
The percentage of offish hairtail fish caught by DanishSeine was highest in 2014, equal to 2,32% or 88.4 tons of the total catches (Figure 2). The average percentage of the fish catches hairtail Fish per year by 1,95%of the total catch and stands at 44.419 tons.

CPUE and Fishing Fleets

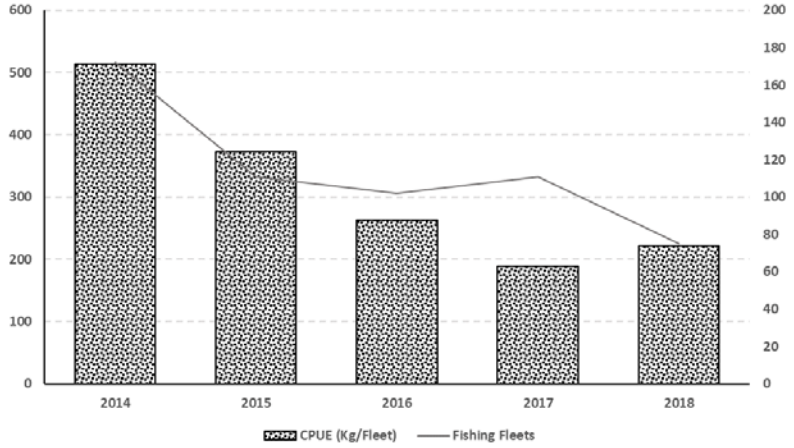

Figure 3 Fluctuations in Catch Per Unit Effortfish Hairtail Fish caught in the Danish seine for five years

Catch per unit effort has decreased every year (Figure 3). The average decline in CPUE per year is 28.35%. The highest CPUE in 2014 was 514.15 kg/fishing gear, the lowest CPUE in 2017 was 189.045 kg/fishing gear. A simple analysis using linear regression comparing the CPUE trend with fishing attempts resulted in R^2 0.7225. The decrease in fishing effort affects the decrease in CPUE by 72.25%.

Fishing Season Index

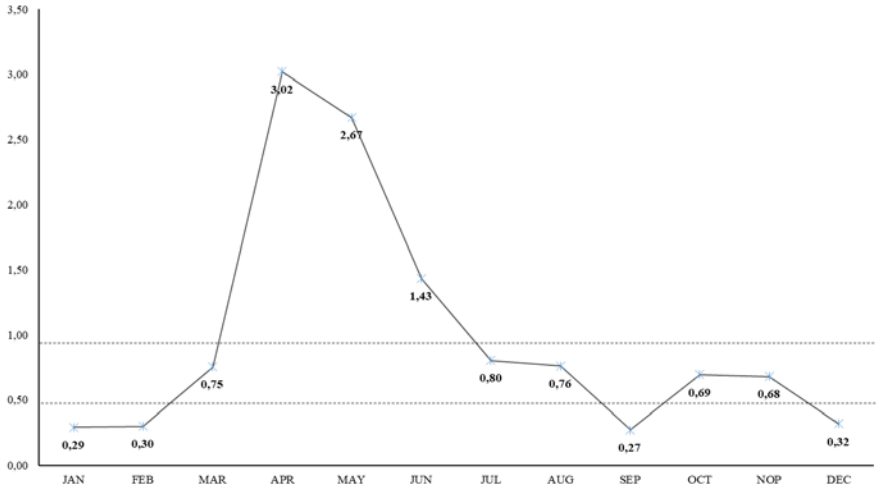

Figure 4 Fishing Season Index Hairtail Fish caught by Cantrang in Mayangan Probolinggo

The fishing season for Hairtail Fish (Trichiurus sp) occurs in April, May, and June, while the moderate season occurs in March, July, August, October, and November(Figure 4). The highest peak of the fishing season is in February, and the lowest is in September. As for one year, there is no famine season.

Fishing season Lauris unstable throughout the year.

Conclusion

Several analyzes from this study concluded that:

1. The decrease in the number of fishing gear has an effect of 89.51% on the reduction in the number of Hairtail Fish caught by danish seine
2. The average percentage decrease in catch per unit effort from 2014 - 2018 was 28.35%
3. Fishing season Hairtail Fish in Probolinggo is from April to June.

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