



SEASONAL FISHING INDEX OF *NEMIPTERUS SPP.* BY CANTRANG FISHING GEAR AT MAYANGAN, PROBOLINGGO, INDONESIA

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KeyWords

Cantrang, Fishing Season Index, Mayangan, *Nemipterus sp*, Probolinggo

ABSTRACT

Nemipterus spp. is one of many of demersal fishes caught by *cantrang* fishing gear in tropical area. Probolinggo has water areas which also produce *Nemipterus sp* as a production of fishes. Most of the *Nemipterus sp* landed in Probolinggo were captured using the *cantrang* fishing gear (Danish Seine). This type of fish has the nature of migration that is not too far, the movement activity is not too high, this results in low resistance to fishing pressure. *Cantrang* catches have decreased from 2014 to 2018. A decrease has also occurred in the catch of *Nemipterus spp.* This occurs due to the enactment of a regulation from the minister of maritime affairs and fisheries regarding the prohibition of using trawl fishing gear in Indonesian waters. The catch of *Nemipterus spp.* It looks very good when the east wind comes.

Introduction

Threadfin Bream (*Nemipterus spp.*) Is one of the important economical fish that can be found in almost all territorial waters of Indonesia. These fish belong to the group of demersal fish that do not have too high movement activity because it is a type of fish with close migration characteristics [1]. This fish is dominantly caught along with other fish species by using fishing nets, such as gillnet, *payang* and also *cantrang* (danish seine).

The abundant resources of *Nemipterus spp.* still cannot be managed optimally. *Nemipterus spp.* has a relatively cheap so that it is a big concern for fishing companies to be used as food processing ingredients such as surimi [2]. Based on the catch data collected from 2001 to 2011, the average catch of *Nemipterus spp.* increased by 5.09% [3]. Based on the results of a study conducted by [1] and [4] the capture *Nemipterus spp.* continues to increase. In addition, according to [2] *Nemipterus spp.* catches in the northern regions of Java only have a length ranging from 10-16 cm. It is considered to have a smaller length. This makes it possible that the captured fish of there are included in the category not yet feasible to catch. This indicates the presence of fishing pressure on the types of *Nemipterus spp.* in the northern regions of Java [5].

Nemipterus spp. is one of the fishermen's main commodities at the Mayangan Beach Fishery Port (PPP), Probolinggo. This fish has a high consumption value among the people so it has a high intensity of demand [4] [6]. In addition, demersal fish commodity is predominantly caught using *cantrang* fishing gear [7]. *Cantrang* is a modification of the trawl fishing gear that was previously frequently operated in Indonesian waters This fishing gear is actively operated by the method of being towed by a ship so that it is effective in sweeping the demersal fish resource [8]. Production from *cantrang* catches that are not managed optimally can certainly have a negative effect on fish resources at sea. The volume of catches that *Nemipterus spp.* has exceeded the burden of the waters can actually disturb the balance of life in the waters themselves [9]. Therefore, it is necessary to conduct research to see the condition of the catch in PPP Mayangan, Probolinggo.

This study aimed to determine the number of CPUE and *Nemipterus spp.* capture season caught by *cantrang* fishing gear at PPP Mayangan, Probolinggo. It is important to know the capture season as a basis for knowing the times when the community benefits from *Nemipterus spp.* and as a basis for local government caution in making policies regarding the capture.

METHOD

Fisheries statistical data used are the number of fishing gear *cantrang* from 2014-2018 and the catch of *cantrang* vessels from 2014-2018. This data was obtained from statistical records of the PPP Mayangan, Probolinggo fish landing sites from 2014-2018. The method used in this research is descriptive method. Data collection was assisted by direct observation in the field. The sample chosen was all data on *cantrang* vessels, both regarding the number of vessels, the number and type of catch, fluctuations in the price of each type of fish during 2014-2018. The data that has been obtained from the fish auction is processed according to the needs of the analysis as follows:

- a. Catch per unit effort for 5 years (2014-2018).
The CPUE value is calculated by dividing the total number of catches with the number of fishing fleets per year.
- b. Determining the fishing season index with the stages:
 1. Calculating the monthly cpue ratio with the monthly average cpue in a year.
 2. Calculating the fishing season index (imp) of fish resources, which refers to [10] with the following groupings:
 - Bad season if the imp is <50%;
 - Medium season if $50\% \leq \text{imp} < 100\%$;
 - Peak season if $\text{imp} > 100\%$.

RESULT AND DISCUSSION

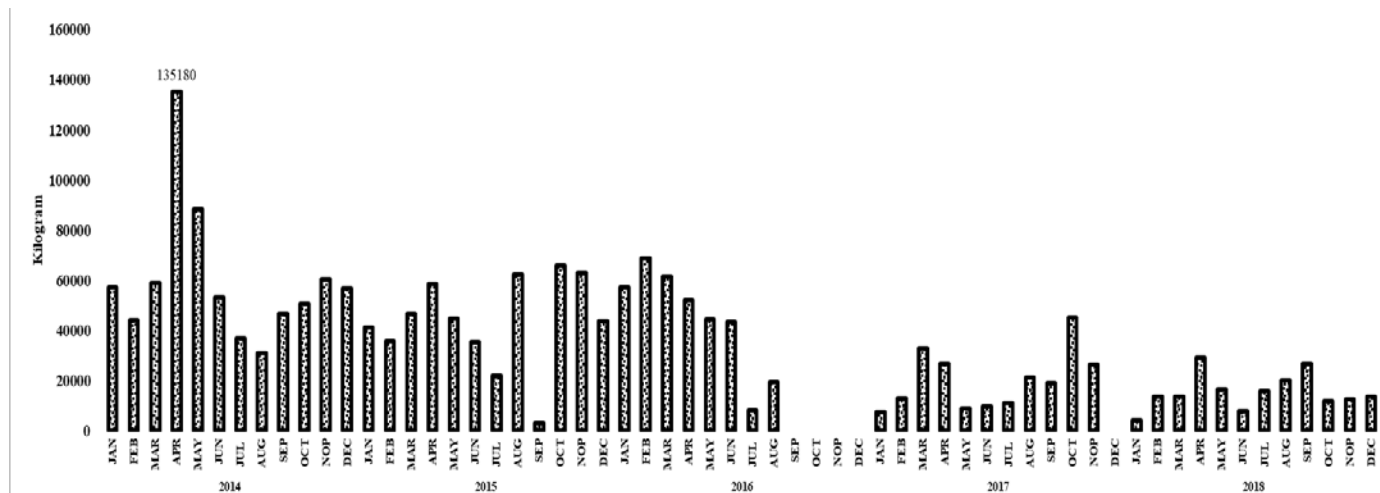


Figure 1. Fluctuation of total catch of *Nemipterus spp.* during 2014-2018 caught by *cantrang* in PPP Mayangan Probolinggo, Indonesia

Figure 1 shows that 2014 had the highest catch value compared to others. The biggest total fish catch was in April 2014 amounting to 135.18 tons. In 2014 until 2016, the catch is in the range of 40-80 tons per year. *Cantrang* is a fishing gear with quite abundant catch compared to other fishing gear [11] in September to December 2016 there were no demersal fishes that were landed at PPP Mayangan. Then followed by the decline in average catches in 2017-2018. This happens because of the prohibition of using *cantrang* fishing gear in the entire territory of the Republic of Indonesia's fisheries management based on the regulation of the Minister of Maritime Affairs and Fisheries No. 2 of 2015 and No. 71 of 2016 [12]. The large decrease in fish catch followed by a decrease in the number of *cantrang* vessels is shown in Figure 2.

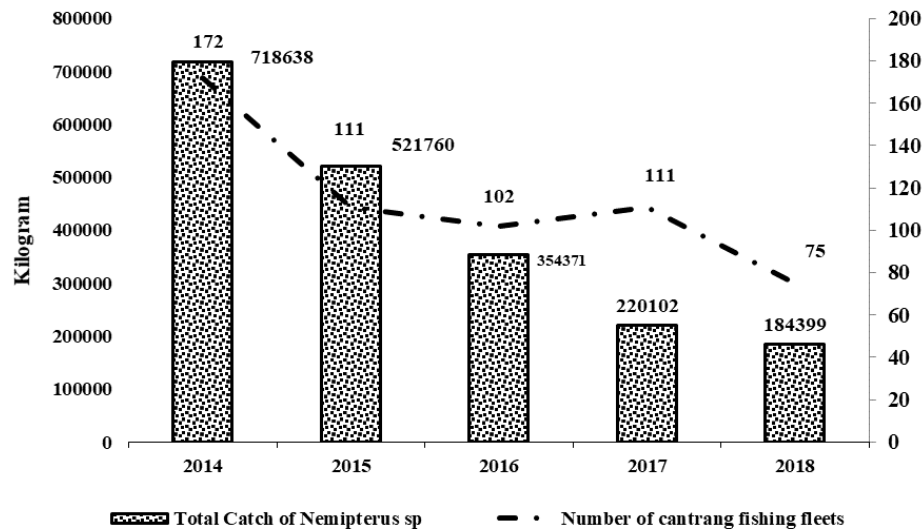


Figure 2. Number of total catch and *cantrang* fishing fleets in PPP Mayangan Probolinggo, Indonesia

The decrease in the number of fleets was clearly seen in 2015 by 64.5% from 2014. The decline continued to be the following year. This happened because of the issuance of Minister of Marine Affairs and Fisheries Regulation No.2 of 2015 concerning the prohibition of the use of trawls and seine nets on January 9, 2015 [8]. This regulation has prevented many *cantrang* vessels from leaving for sea fishing operations. The decrease in the number of fleets that depart to catch fish will of course have a direct impact on the production of *cantrang* vessels. The reduced catch of demersal fish is naturally followed by a decrease in *Nemipterus spp.* catch. The average percentage reduction in the total catch of annual *Nemipterus spp.* is 28.40%. The total catch of all fish species also decreased by 29.83% per year. This happens because *Nemipterus spp.* is one of the demersal fish catches that are often found in *cantrang* catches [13]. The graph of the number of catches of *cantrang* and *Nemipterus spp.* is presented in Figure 3.

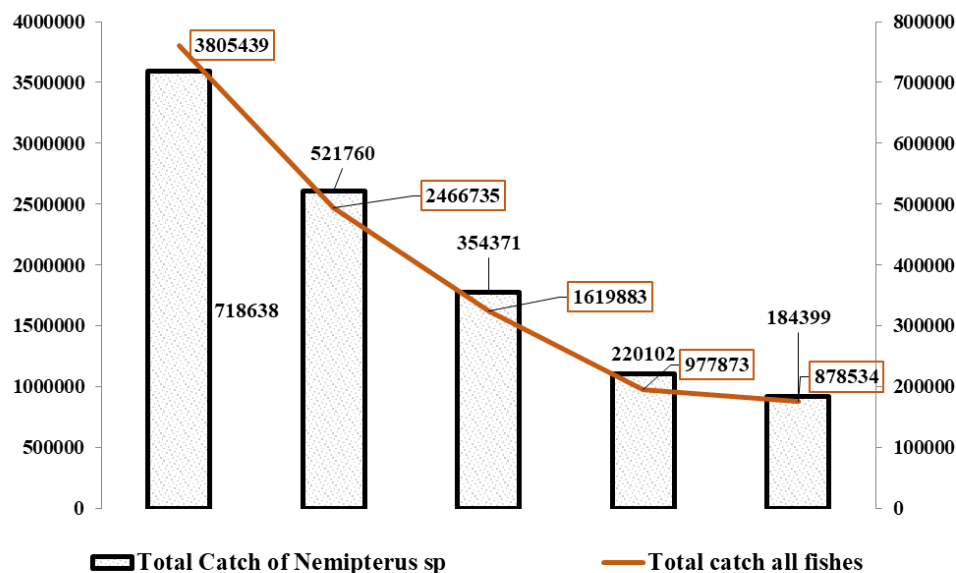


Figure 3. Number of total catch of all fishes compared to total catch of *Nemipterus spp.*

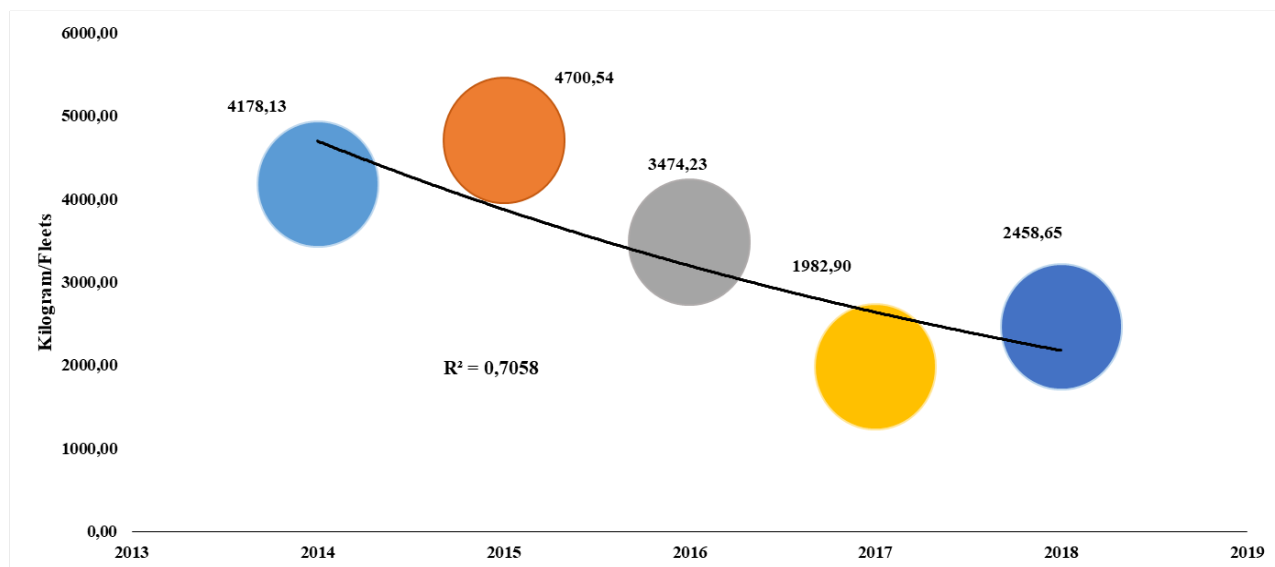


Figure 4. catch per Unit Effort of *Nemipterus spp.*

Based on Figure 4, the highest CPUE value of *Nemipterus spp.* in PPP Mayangan in 2015 was 4700 kg/fleet, and the lowest CPUE in 2017 was 1982 kg/fleet. The value of fish catches and efforts of fishing vessels continues to decrease from 2014 to 2018. The decrease in catch per unit effort of these fish is influenced by 70.58% by a decrease in the number of fishing gear operated. CPUE is influenced by the amount of effort put forth throughout the year to produce production [14]. The prohibition of using *cantrang* has a direct impact on the productivity of demersal fish catches in PPP Mayangan. In addition, the impact of the regulation also decreases the income of fishermen who usually depend on the catch of *cantrang* [15] [16].

The peak season for *Nemipterus spp.* occurs in February, March, April, May and October. This month coincides with the arrival of the eastern season. Several factors that influence fishing season patterns are the weather and climate in an area. Bad weather will usually affect the behavior of fish from *Nemipterus spp.* to deeper waters [4]. In the eight months apart the fishing season is included in the medium category. The graph Seasonal Fishing Pattern of *Nemipterus sp* caught *Nemipterus spp.* is presented in Figure 5.

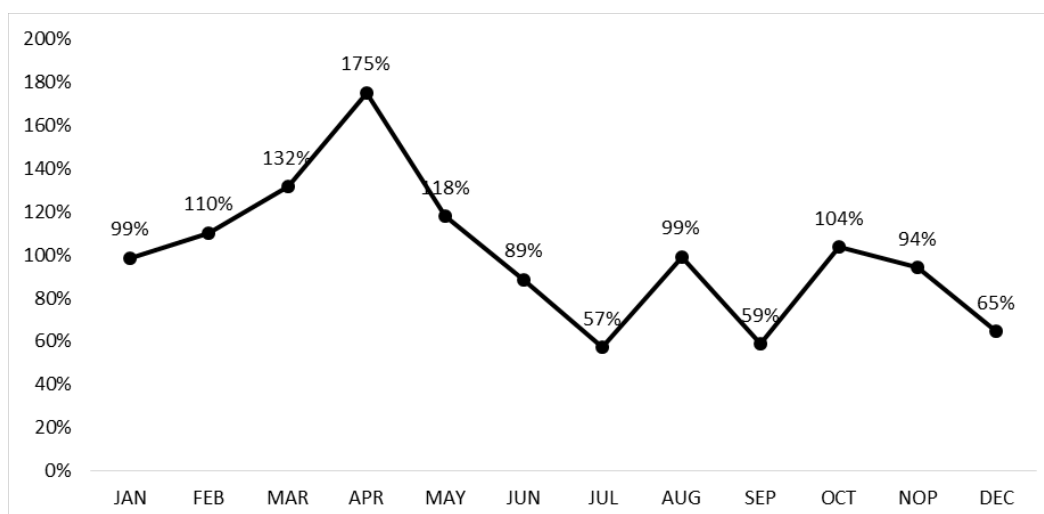


Figure 5. Seasonal fishing pattern of *Nemipterus spp.* caught by *cantrang* in PPP Mayangan, Probolinggo, Indonesia

CONCLUSION

The catches of *Nemipterus spp.* in PPP Mayangan, Probolinggo from 2014 to 2018 has decreased. This decrease also affected the catch of *Nemipterus spp.* The highest CPUE for *Nemipterus spp.* is in 2015 and the lowest in 2017. This occurs due to the impact of the ban on the use of *cantrang* in Indonesian waters. The peak fishing season for *Nemipterus spp.* is in February, March, April, and October.

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