

11TH WORKING PARTY ON NERITIC TUNAS (WPNT11)

DECLINING NERITIC TUNA LANDINGS IN PAKISTAN-CAUSES AND IMPACT ON FISHING EFFORT AND MARKETING

Muhammad Moazzam

WWF-Pakistan, D-35, PECHS, Block 6, Karachi 75400, Pakistan

ABSTRACT

Neritic tuna are important component of the tuna fisheries of Pakistan. It is estimated that neritic tuna alone have a share of about 43.28 % in the total landings of tuna in 2020. Of the five species of neritic tuna, longtail tuna (*Thunnus tonggol*) contributes 3,320 m. tons in 2020 and 3,242 m. tons in 2019 as compared to 11,985 m. tons in 2018. Landings of frigate tuna (*Auxis thazard thazard*) during 2020 was recorded to be 6,759 m. tons whereas it was 7,619 m. tons in 2019 and 10,986 m. tons in 2018. Kawakawa (*Euthynnus affinis*) landings in 2020 was 1,310 m. tons whereas it was 1,236 m. tons in 2019 and 4,123 m. tons in 2018. Other two species i.e. bullet tuna (*Auxis rochei*) and striped bonito (*Sarda orientalis*) contributed insignificantly in the total tuna landings of Pakistan.

Landings of neritic tuna were observed to have decreased in 2020 by 6.22 % as compared to 2019. This decrease in landings is attributed to many factors including early closure of the fishing season in early April 2020 and its continuation till late August 2019 because of low catches and fluctuating low prices of tuna in the market as well as annual close season (June and July).

CPUE of neritic tuna indicated that longtail tuna and kawakawa have higher catch rate during September and December whereas frigate tuna has higher CPUE during January and May. This disparity is mainly because of area of operation of tuna gillnetters which were observed to be fishing on continental shelf area during August and December. High CPUE of frigate tuna is because of contribution of artisanal fishing vessels that operate in coastal waters.

INTRODUCTION

Tuna gillnetting is an important fisheries in Pakistan which includes both neritic and tropical tuna species. A major part of the artisanal fleet is engaged in fishing of neritic species. Gillnets consisting of monofilament and multifilament are used for catching neritic tunas. Monofilament net is mainly used for catching frigate (*Auxis thazard thazard*) and bullet tunas (*Auxis rochei*) whereas multifilament nylon nets are used for catching neritic tunas including longtail tuna (*Thunnus tonggol*), kawakawa (*Euthynnus affinis*) and striped bonito (*Sarda orientalis*) as well as tropical tunas.

Information about neritic tuna fisheries of Pakistan is known through the work of Ahmed (1989), Imad (1988), Griffiths *et al.*, (2019), Kazmi *et al.*, (2019), Moazzam (2011, 2012a-c, 2014, 2018, 2020b), Moazzam and Ayub (2015, 2017), Moazzam *et al.*, (2016, 2019) and Nawaz and Moazzam (2014). These studies were based mainly on the fisheries statistical data being published by Marine Fisheries Department,

Government of Pakistan and also on the information collected through the Crew-Based Observer Programme initiated by WWF-Pakistan.

Based on the information generated through WWF-Pakistan's Crew-based Observer Programme, data of tuna and tuna like species was reconciled with the landings data available with Marine Fisheries Department, Government of Pakistan. An exercise for reconstruction of landing data for IOTC species since 1987 to 2019 was also carried out. These datasets were provided to IOTC by Marine Fisheries Department, Government of Pakistan and a part of it was presented in WPNT07 (Moazzam and Ayub, 2017).

MATERIALS AND METHODS

In 2012, WWF-Pakistan initiated a crew based observer programme to collect information about catches of tuna and tuna-like species as well as of the bycatch non-target species in the tuna gillnet fisheries of Pakistan (Moazzam and Nawaz, 2017). This programme has continued, with a growing number of participating fishing crews, each year since 2012. There were 75 observers that were engaged in data collection programme. The programme, although has completed in September 2019 but still most of the fishermen have continued to provide information.

Tuna fishing operations take place throughout the year except during June and July, which is closed season, coinciding with rough sea conditions generated by the southwest monsoon. The tuna vessels generally set 6-8 km long gillnets before sunset and retrieve them the next morning after a soak time of about 12 hours. The information about tuna species (including neritic tuna) is recorded on daily basis on log sheets especially designed for the programme.

RESULTS

It is estimated that neritic tuna have a share of about 43.28 % in the total landings of tuna in 2020. Neritic tuna landings during 2020 was observed to be slightly lower (6.22 %) than previous year (Table-I). Major decrease in the landings of neritic tuna was noticed during 2019. Of the five species of neritic tuna, longtail tuna (*Thunnus tonggol*) contributes 3,320 m. tons in 2020 as compared to 3,242 m. tons in 2019 and 11,985 m. tons in 2018. Landings of frigate tuna (*Auxis thazard thazard*) during 2020 was recorded to be 6,759 m. tons whereas it was 7,619 m. tons in 2019 and 10,986 m. tons in 2018. This the only neritic tuna species whose landings has decreased by 11.29 % in 2020 as compared to 2019. Kawakawa (*Euthynnus affinis*) landings in 2019 was 1,310 in 2020 as compared to 1,236 m. tons in 2019 and 4,123 m. tons in 2018. Other two species i.e. bullet tuna (*Auxis rochei*) and striped bonito (*Sarda orientalis*) contributed insignificantly in the total tuna landings of Pakistan.

Although there was an overall decrease of 6.22 % decrease in the landings neritic tuna during 2020 as compared to 2019 but it was observed to be 55.34 % less in 2019 as compared to 2018 landings (Fig.1). Major decrease in 2019 was noticed in cases of longtail tuna and kawakawa where the decreases of 72.95 % and 70.82 % were noticed as compared to same period of 2018 (Fig. 2; Table-I). In case of frigate tuna

this decrease in 2019 was observed to be 30.65 % less than 2018 landings whereas in 2020, only the landings of frigate tuna was observed to lower (11.29 %) as compared to 2019 whereas minor increase was noticed in case of longtail (2.41 %) and kawakawa (5.79 %) was observed.

Table-I. Landings of tuna species during 2018 and 2020 in Pakistan

Species	2018	2019	2020	% Decrease
Neritic Tuna				
Longtail tuna	11,985	3,242	3,320	2.41
Kawakawa	4,123	1,236	1,310	5.99
Frigate tuna	10,986	7,619	6,759	- 11.29
Bullet tuna	2	2	2	-
Striped Bonito	3	3	3	-
Subtotal	27,099	12,102	11,349	- 6.22
Open Sea Tuna				
Yellowfin tuna	16,541	6,721	5,219	- 22.37
Skipjack tuna	2,318	789	712	- 9.76
Subtotal	18,859	7,510	5,931	- 22.62
Tunas NEI	5,120	7,695	8,892	15.56
TOTAL	51,078	27,307	26,217	- 3.99

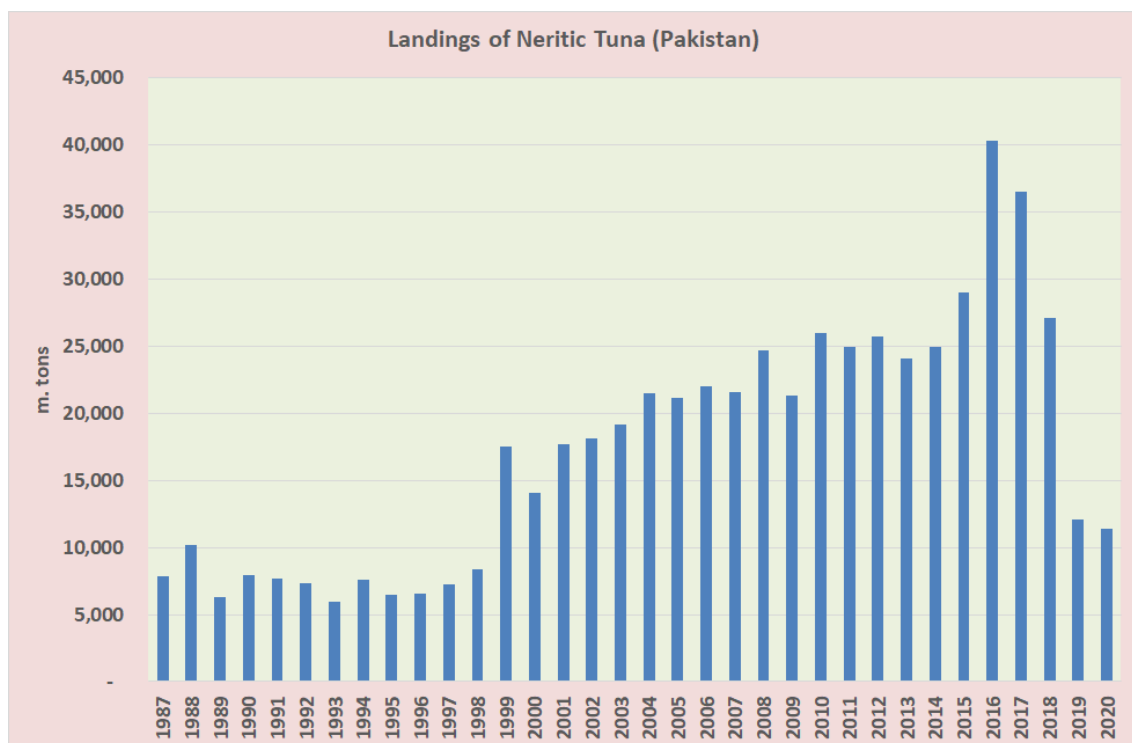


Fig. 1. Landings of neritic tuna of Pakistan (1987-2020)

In comparison, a decrease of 22.62 % was also noticed in case of tropical tunas in 2020 as compared to 2019. This decrease was 50.18 % 2019 as compared to 2018 data (Moazzam, 2020a). Landings of yellowfin tuna (*Thunnus albacores*) in 2020 decreased by 22.37% as compared to 2019 data and skipjack tuna (*Katsuwonus pelamis*) landings in 2020 is decreased by 9.76 % as compared to 2019.

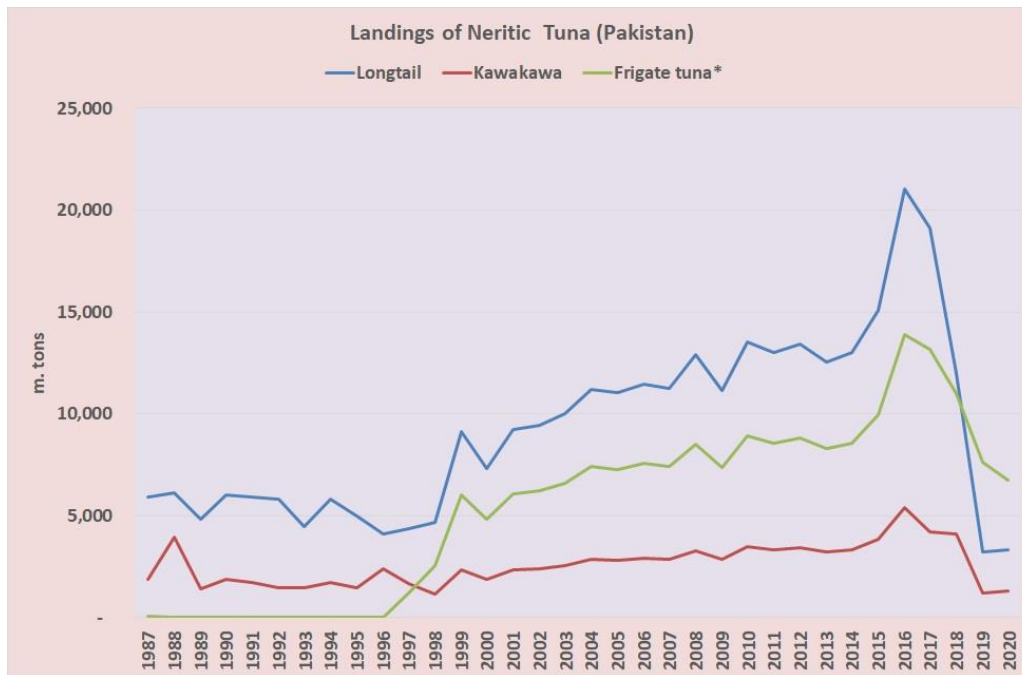


Fig. 2. Landings of neritic tunas species in Pakistan (1987-2020)

Unprecedented decrease in the landings of neritic tunas (as well as tropical tunas) was recorded during 2019 (Moazzam, 2020b). In case of category Tuna nei which mainly includes tuna caught by small scale vessels along Balochistan Coast, there was an increase in 2019 from 5,120 m. tons to 7,695 m. tons which further increased to 8,892 m. tons in 2020. The breakdown of species in Tuna nei is not available but it consists mainly of neritic tuna especially kawakawa and frigate tuna. It may be added that a major part of the tuna fleet which is normally based in Karachi (Sindh Province) has shifted to Gwadar (Balochistan Province) because of better prices offered for yellowfin, skipjack, longtail and kawakawa (large specimens) in Gwadar than in Karachi. Diesel prices are also cheaper (because of smuggling) in Gwadar than in Karachi due to proximity with Iran.

CATCH PER UNIT EFFORT (CPUE) OF NERITIC TUNA

Data collected through WWF-Pakistan's Crew Based Observer Programme was used for determining catch per unit effort (CPUE) of neritic tuna since 2013 (Fig. 3-7). CPUE analysis of neritic tuna indicates higher CPUE (kg/month) in post monsoon months (September to December) in case of longtail tuna and kawakawa (Fig. 3-6). This may be attributed to operation of the tuna fleet in comparatively shallower waters on the continental shelf.

Highest CPUE of longtail tuna was noticed in October 2017 (4,700 kg/month) whereas in November 2015 it was 2,572 kg/month (Fig. 3). During January and May, the CPUE for longtail tuna was extremely low (less than 100 kg/month) which can be attributed

to operation of tuna fleet in comparatively offshore waters where longtail tuna are of rare occurrence (Fig. 3-4).

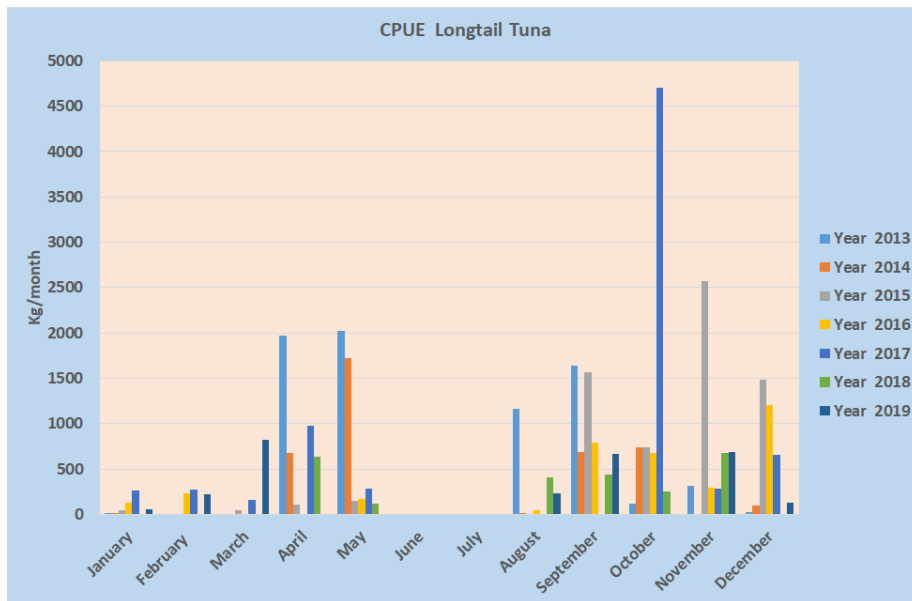


Fig. 3. Catch per unit effort (CPUE) of longtail tuna (2013-2019)

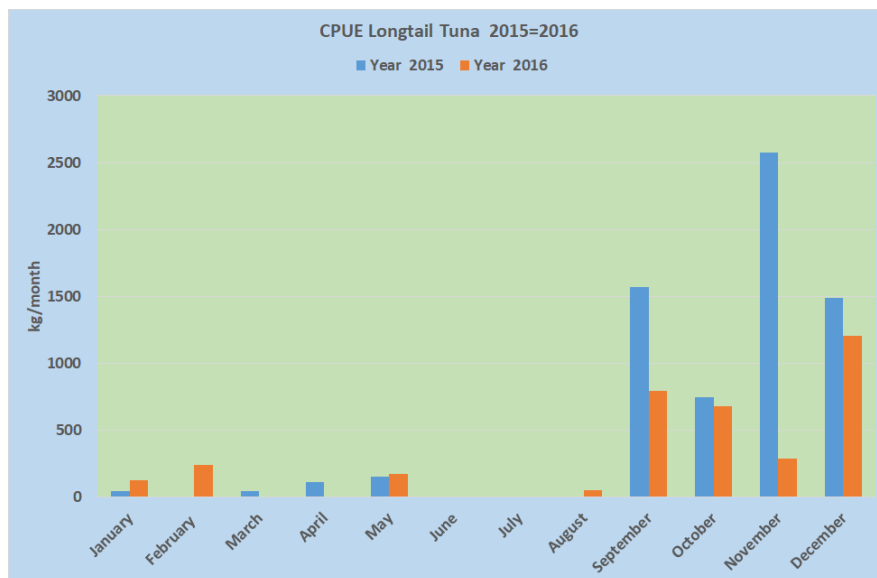


Fig. 4. Catch per unit effort (CPUE) of longtail tuna (2015-2016)

Highest CPUE of kawakawa was noticed in October 2017 (3,145 kg/month) whereas in November 2013 it was 1,776 kg/month (Fig. 5). During January and May, the CPUE for kawakawa was extremely low (less than 1,000 kg/month) which can be attributed to operation of tuna fleet in comparatively offshore waters where longtail tuna are of rare occurrence (Fig. 5-6). The CPUE pattern for both longtail and kawakawa are almost similar (Fig. 3-6).

In case of frigate tuna, CPUE during January to May (Fig. 7) which is mainly because of operation of artisanal vessels targeting frigate tuna using monofilament net. Highest value of CPUE for frigate tuna was observed in 425 kg/month in April, 2013 whereas CPUE was 417 kg/month in March, 2013 and 391 kg/month in February, 2013. It

may, however, be noted that CPUE of frigate tuna is much lower than longtail and kawakawa.

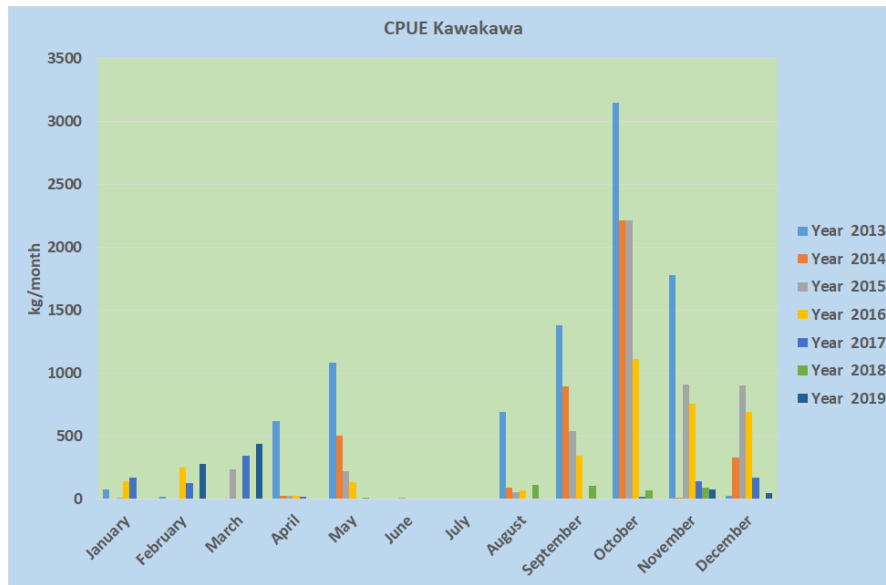


Fig. 5. Catch per unit effort (CPUE) of Kawakawa (2013-2019)

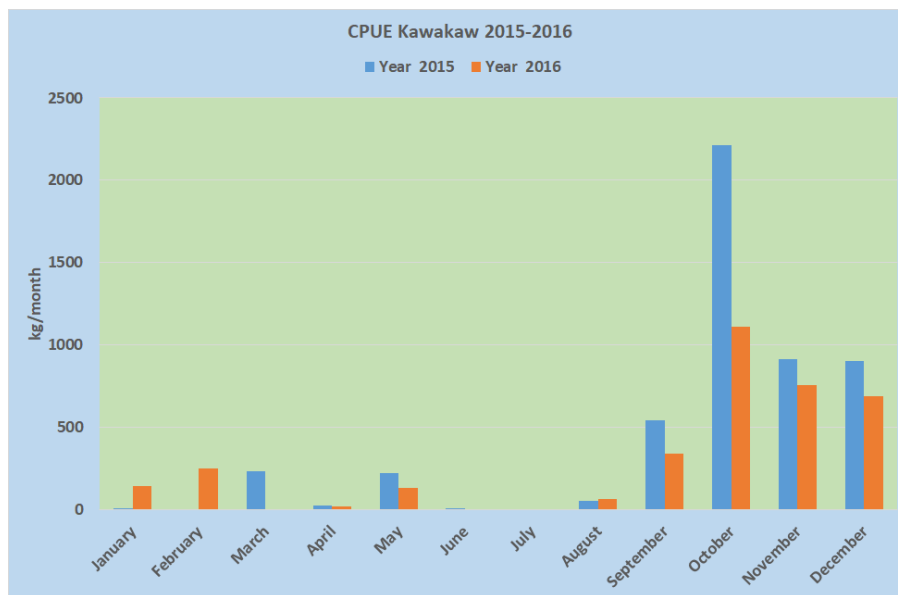


Fig. 6. Catch per unit effort (CPUE) of Kawakawa (2015-2016)

MARKETING OF NERITIC TUNA

Among the neritic tunas, longtail tuna (*Thunnus tonggol*) is considered to be most important as this species alongwith tropical tunas (yellowfin and skipjack) fetch higher prices in the market in Pakistan because of their export to neighbouring country for canning purposes. Fishermen, therefore, prefer to operate in areas where landings of longtail, yellowfin and skipjack tunas are higher. Main fishing ground of longtail tuna is located along the coastline, however, in some season especially during winter, longtail tuna is also found in the deeper part of the ocean along continental margin. In addition to longtail, yellowfin and skipjack, large specimens of kawakawa are also fetch better prices in local market due to its demand in canning in the neighbouring country.

Frigate and bullet tunas as well as striped bonitos alongwith smaller specimens of kawakawa are either consumed locally or exported to Sri Lanka. The prices of these species, thus is comparatively very low as compared to tropical tunas and longtail tuna.

DISCUSSION

During last three years, the landings of neritic and tropical tunas are decreasing, after achieving a maxima in 2017 (Fig. 1). The decrease in landings of neritic tunas (as well as other tuna species) is not because of status of their stocks or fishing intensity but it is because of issues related to fishing operations. The main causes of decline in catches of neritic tunas include:

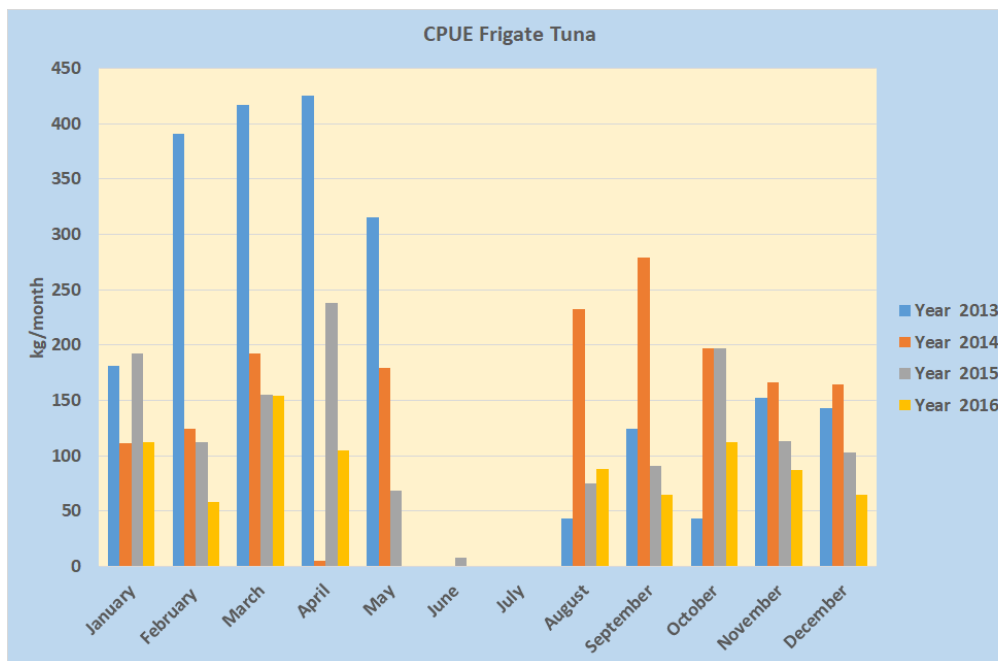


Fig. 7. Catch per unit effort (CPUE) of Frigate tuna (2013-2016)

Operation Period of Tuna Vessels

In 2018 majority of the fishermen closed their annual operation in late April because of low catches (Moazzam, 2020a-b; Moazzam *et al.*, 2019). A similar situation prevailed in 2020 due to which fishermen closed their operation in early April, 2020. Usually a voluntary two month closed season for tuna fishing is observed between June and July, however, in 2019, tuna fishing was stopped by fishermen about one and half months earlier than usual. The new fishing season was started in late August 2019. As such no tuna catches were made during the four-month which included two month summer closure.

Unreliable Prices of Longtail Tuna and Tropical Tunas

Longtail tuna (as well as tropical tunas) is transported/transhipped to neighbouring country for canning purposes. Since 2017, the prices for tunas were extremely unreliable in the neighbouring country mainly because of currency transactions (Moazzam, 2020a-b; Moazzam *et al.*, 2019). There is no local consumption of tunas in Pakistan and there is no other marketing channel that can absorb landings of longtail tuna and tropical tunas, as such, there was no incentive for fishermen to catch these species tuna with low prices prevailing in the market. As a last resort, the tuna

fishermen shifted their operation to coastal waters to target narrow barred Spanish mackerel and queenfishes which has reliable local market. After August, 2020, a major part of the tuna fleet which is normally based in Karachi (Sindh Province) has shifted to Gwadar (Balochistan Province) because of better prices offered for yellowfin, skipjack, longtail and kawakawa (large specimens) in Gwadar than in Karachi. Diesel prices are also cheaper (because of smuggling) in Gwadar than in Karachi due to proximity with Iran.

High Seas Surface Temperature (SST).

During the summer months in 2019, the sea surface temperature (SST) was observed to be unusually very high, with a possible oceanic heat wave in the Arabian Sea (Moazzam, 2020b). Fishermen reported very poor catches of tunas in late August to October, 2019 because of high seawater temperature. However, no temperature anomaly was reported in 2020.

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