22ND WORKING PARTY ON TROPICAL TUNA (WPTT22): DATA PREPARATORY MEETING

UNPRECEDENTED DECREASE IN LANDINGS OF TROPICAL TUNA IN PAKISTAN DURING 2019

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ABSTRACT

Landings of tropical tuna were observed to have decreased in 2019 by 60.18 % as compared to 2018. This decrease in landings is attributed to many factors including early closure of the fishing season in early April 2019 because of low catches and unreliable prices of tuna in the market. Usually a voluntary two month closed season is observed between June and July, however, in 2019, the new fishing season was started only in late August. The closed season, therefore, remained effective for about four months (mid April to mid August). Extremely high seawater surface temperature (SST) during September to October (possibly an oceanic heat wave) resulted in poor catches of tuna, therefore, only a few tuna boats remained operational during this period. An extremely large jellyfish bloom of *Crambionella orsini* was observed during September and December (and even onward in 2020) forced fishermen to stop fishing operations during this period.

INTRODUCTION

Tropical tunas are important component of the large pelagic fisheries of Pakistan (Khan, 2016). Yellowfin tuna (*Thunnus albacores*) and skipjack tuna (*Katsuwonus pelamis*) are two species contributing to the tropical tuna landings. Information about tropical tuna fisheries of Pakistan is known through the work of Khan (2016), Moazzam (2011, 2012a-b, 2018), Moazzam *et al.*, (2017, 2019) and Nawaz and Moazzam (2014). These studies were based mainly on the fisheries statistical data that was published by Marine Fisheries Department, Government of Pakistan. Some information collected through the Crew-based Observer Programme initiated by WWF-Pakistan since 2012 is also incorporated in these studies.

Based on the information generated through this 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 (Fig/2). These data sets were provided to IOTC by Marine Fisheries Department, Government of Pakistan since 2017 whereas a part of it was presented in WPNT07 (Moazzam and Ayub, 2017).

Contribution of tropical tuna in total tuna landings remains to be between 30 and 40 % for major part of period between 1987 and 2019 except during 1989 to 1998 (Fig.1). Government of Pakistan permitted Taiwanese tuna longlining to operate in Pakistani waters in 1991 and their operation continued (with 55 longline vessels) between 1991 and 1995. These Taiwanese vessels used to target only yellowfin

tuna, therefore, the contribution of tropical tunas can be seen higher during this period. Only a few longline vessels continued to operate till 2000 but their activities were limited after 1995, therefore, their contribution in landings of tropical tuna was limited. Small peak during 2005 and 2006 is also because of operations of a few Taiwanese tuna longliners in Pakistani waters.

Tropical tuna landings during 2017 was observed to be comparatively higher than previous years (Moazzam, 2018), however, there was a decrease in landings of tropical tuna in 2018 (Moazzam *et al.*, 2019). There was unprecedented decrease in tuna landings during the year 2019. Present paper discusses about the causes that led to decrease of tropical tuna landings in 2019.

TROPICAL TUNA LANDINGS

Landings of tropical tuna during 2017 were recorded to be 28,649 m. tons with an overall increase of 16.89 % as compared to 2016. Major increase was noticed in case of skipjack tuna where an increase of 184.25 % was noticed during the same period. In case of yellowfin tuna this increase was observed to be only 8.89 %. In 2018, landings of tropical tuna was recorded to be 18,859 m. tons with an overall decrease of 34.17 % as compared to 2017 landings.

Unprecedented decrease in the landings of tropical tunas was recorded during 2019 (Fig.2; Table-I). Only 7,510 m. tons of tropical tunas were landing recording a decrease of 59.37 % decrease as compared to 2018 data. The landings of yellowfin tuna was recorded to be 6,721 m. tons in 2019, as compared to 16,541 m. tons in 2018 whereas in case of skipjack tuna, the landing in 2019 was 789 m. tons as compared to 2,318 m. tons in 2018 (Table-I).

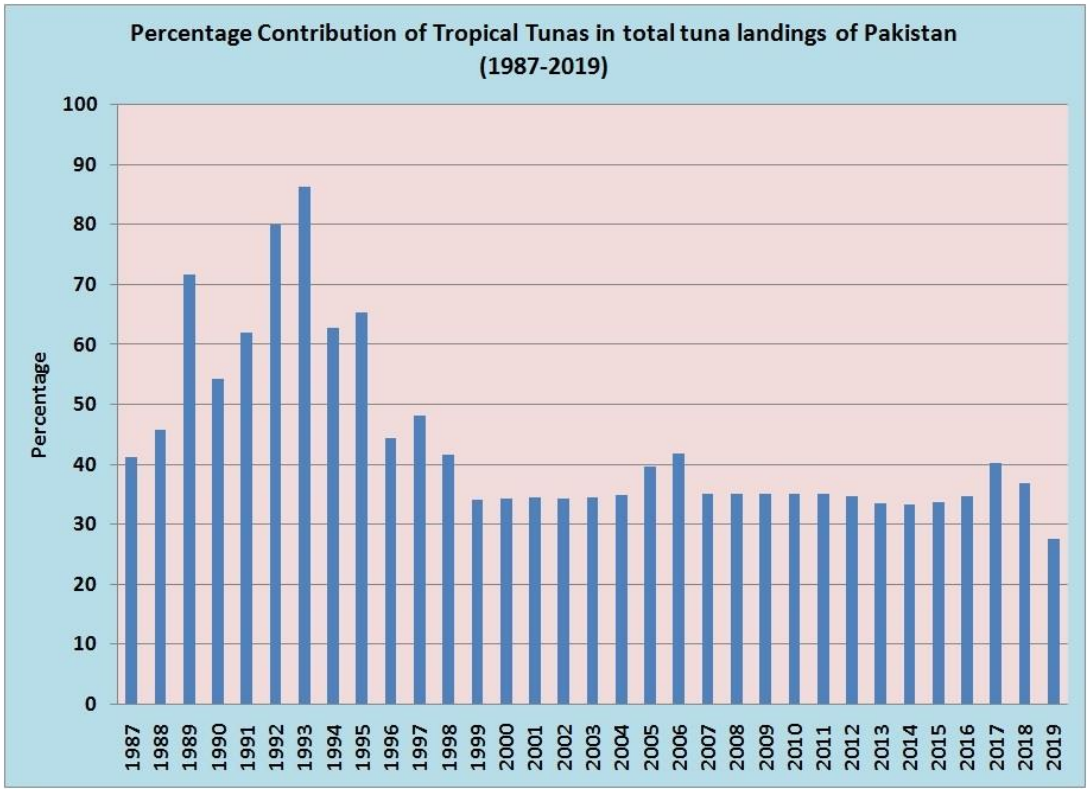

Fig. 1. Contribution of Tropical tunas in total tuna landings of Pakistan

The decrease in landings in 2019 was not limited to tropical tuna but almost all species of tuna have shown a decreasing trend (Table-I) except in case of Tuna nei which mainly includes tuna caught by small scale vessels along Balochistan Coast. The breakdown of species list in Tuna nei is not available but it consists mainly of neritic tuna especially kawakawa and frigate tuna.

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

Species	Scientific Name	2018	2019	% Decrease
Yellowfin tuna	*Thunnus albacares*	16,541	6,721	- 59.37
Skipjack	*Katsuwonus pelamis*	2,318	789	- 65.96
Longtail	*Thunnus tonggol*	11,985	3,242	- 72.95
Kawakawa	*Euthynnus affinis*	4,123	1,236	- 70.02
Frigate tuna	*Auxis thazard*	10,986	7,619	- 30.65
Bullet tuna	*Auxis rochei*	2	2	-
Striped Bonito	*Sarda orientalis*	3	3	-
Tunas NEI		5,120	7,695	50.29
TOTAL		51,078	27,307	- 46.54

DISCUSSION

As compeered to other tuna species, tropical tunas fetch higher prices in the market, therefore, fishermen prefer to operate in areas where landings of yellowfin and skipjack tunas are higher. However, during last two years, the landings of tropical tunas are decreasing, after achieving a maxima in 2017 (28,649 m. tons). The decrease in landings of tropical tunas (as well as other tuna species) is not because of their stocks or fishing intensity but it is because of issues related to fishing operations. The main causes of decline in catches of tropical tuna include:

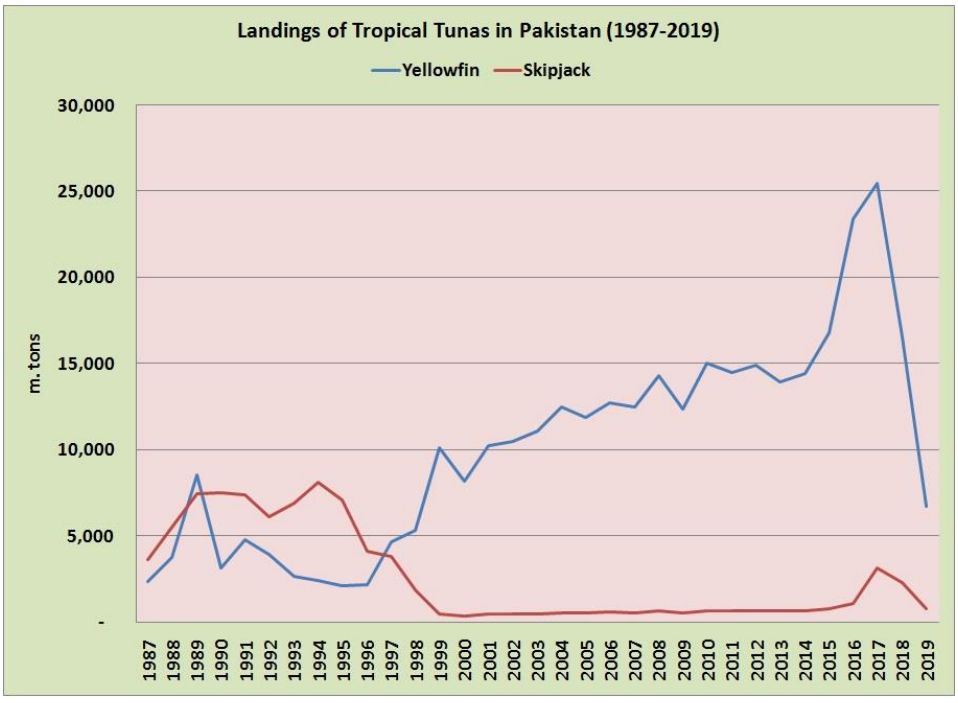

Fig. 2. Landings of tropical tunas in Pakistan (1987-2019)

Operation Period of Tuna Vessels

In 2018 majority of the fishermen closed their annual operation in late April because of low catches (Moazzam *et al.*, 2019). A similar situation prevailed in 2019 due to which fishermen closed their operation in early April, 2019. 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 Tropical Tunas

Tropical tunas (as well as longtail tuna and large specimens of kawakawa) are 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 *et al.*, 2019). There is no local consumption of tunas in Pakistan and there is no other marketing channel that can absorb landings of tropical tunas (also longtail tuna), as such, there was no incentive for fishermen to catch yellowfin and skipjack tuna. 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. However, during 2019, catches of narrow barred Spanish mackerel and queenfishes were much lower than their expectation, therefore, most of the fishermen closed their operation in early April, 2019 and restarted their operations in late August, 2019.

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 (Fig.3). The phenomenon is separately being studied, however, fishermen reported very poor catches of tunas in late August to October, 2019. A number of tuna vessels that started their operation in late August, 2019 stopped fishing after their first trip of the new season due to this reason. The impact of high sea surface temperature during the summer of 2019 on distribution and abundance of tropical tunas in the Arabian Sea is not well known and need further studies.

Bloom of Jellyfish

An unusual bloom of the jellyfish (*Crambionella orsini*) appeared in the southern part of Arabian Sea (between 17^{o}N and 19^{o}N) in September which spread to almost entire Arabian Sea by the end of October, 2019 (Gul, 2020; Moazzam, 2020). This species has previously formed massive blooms in the entire Gulf of Oman and Arabian Sea during 2002 and 2003 (Daryanabard and Dawson, 2006). Because of dense bloom in 2019 (which is still continuing in June 2020) fishermen could not operate because of fouling and choking of their gillnets as well as because of wastage of time that is spent on removing the jellyfish from the gillnets (Fig.4).

This bloom forced some of the fishermen to stop their operations whereas only a few were able to manage fishing from September 2019 onward. Fishermen also reported poor catches of tuna species due to the jellyfish bloom. Impacts of jellyfish blooms on tropical tuna distribution and abundance are also not well understood.

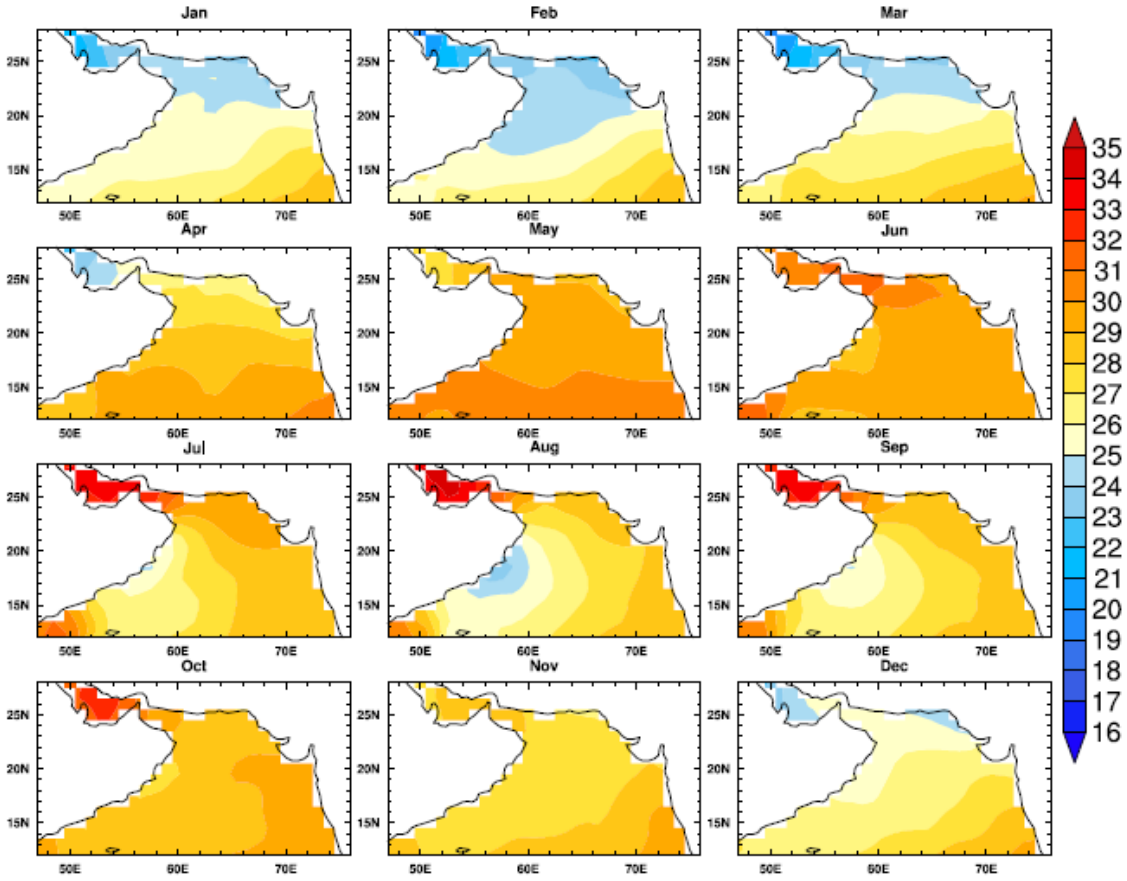

Fig. 3. Sea surface temperature in the Arabian Sea during 2019 (Source: Mr. Rashid Mahmood: Unpublished data)

Fig. 4. Bloom forming jellyfish (*Crambionella orsini*) onboard tuna vessel

The major decrease in the annual landings of tropical tuna in Pakistan, therefore, cannot be attributed to the availability of tunas in the Northern Arabian Sea but mainly because of the operational reasons which include low prices, high seawater surface temperature (SST) and massive bloom of jellyfish (*Crambionella orsini*) which forced fishermen to stop their fishing operations well before annual close season (June and July) and also intermittently to avoid jellyfish and high SST.

ACKNOWLEDGEMENTS

I am indebted to Mr. Rashid Mahmood for making available information about SST in the Arabian Sea.

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