

**PROBLEMS AND ISSUES OF CONVERSION OF GILLNETTING FLEET OF PAKISTAN TO  
LONGLINING WITH THE AIM TO REDUCE BYCATCH**

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**ABSTRACT**

WWF-Pakistan in collaboration with Government of Pakistan is in process of conversion from tuna gillnetting to longlining. Tuna gillnetting is known to have high bycatch of ETP species as well as tuna caught through this method fetches very low prices in the international market. There are a number of issues that is expected to be faced if conversion from gillnetting to longlining, however, these issues and obstacles can be addressed adequately and tuna longlining in Pakistan will be a successful operation. Experimental longlining was conducted by WWF-Pakistan which indicated adequate potential of tuna longlining in Pakistan.

**INTRODUCTION**

Tuna is commercially caught in Pakistan by about 700 vessels through gillnetting in coastal and offshore waters (Moazzam, 2011, 2012a, 2012b, 2013, 2017, 2019; Moazzam and Nawaz, 2014, Moazzam *et al.*, 2013, 2016; Nawaz and Moazzam, 2014, Nawaz *et al.*, 2012). Gillnetting is known to have high bycatch of a number of commercially important species as well a large number of non-target endangered, threatened and protected (ETP) species including sea turtles, whales, dolphins, whale sharks, mobulids, requiem sharks, sea snakes and sunfish (Moazzam, 2013). Gillnetters caught tuna caught by Pakistani gillnetters is mainly marketed in chilled form and sent to neighboring country by land routes and through carrier boats as well as transferred to vessels of the neighboring country in high seas. A major part of the neritic tuna caught by these vessels is exported to Sri Lanka in salted dried form whereas small quantities are utilized locally (Moazzam, 2012a).

Considering that gillnet caught tuna do not fetch very high prices because of their poor quality. Attempts have been made in the past (in 1990s) to convert shrimp trawlers and gillnetters into tuna longliners on an experimental basis (Hayat, 2010) Although these converted boats were able to catch reasonably good catch, but because of a number of factors which includes lack of adequate market, inadequate facilities for handling and storage for longline caught tuna as well as lack of any support from Government in

conversion, fishermen did not adopted longlining. A number of fishermen have shown interest in conversion to longlining, but there was a need to provide them technical assistance and ensure better marketing channel for longline caught tuna. There was also a need to improve fish storage facilities on board such vessels. The operators of these converted vessels were required to be trained in tuna longlining operation as well as handling of catch on board.

In order to minimize the mortality of the ETP species in the gillnet fishery of Pakistan and to access better market for tuna caught by Pakistani fishermen, WWF-Pakistan in collaboration with Government of Pakistan has initiated a programme for conversion of existing gillnetters to longliners. The programme does not include introduction of new tuna gillnet boats because this will increase additional fishing pressure on the stocks of tuna. Prime species of tuna including yellowfin tuna which will be target of the longline fisheries are already subject to overfishing (IOTC, 2018). Present paper describes rational behind conversion from gillnetting to longlining, plan and expected issues and problem that may be expected.

## **RATIONAL OF CONVERSION**

Gillnetting is known to have a number of demerits which make it not acceptable in some countries which includes:

**High bycatch:** Gillnetting, generally, is not termed as an aimed fishing method because in addition to the target species, a large number of other animals including cetaceans, sea turtles, birds and snakes are also caught. Entanglement of endangered, threatened and protected (ETP) species is considered as a serious threat to their population (Moazzam, 2013).

**Quality of Fish:** Gillnet caught tuna does not fetch good price in the international market because of its poor quality. Usually such fishes contain high concentration of histamine which is cause of scomrotoxin poisoning (Attaran and Probst, 2002). Since the soak time of gillnet is usually about 12 hour, therefore, the fishes caught during early hours after the deployment of net remained in water after death for very long period (6-12 hours), therefore, the level of histamine in tissues gets very high in at least these fishes.

**High cost of net:** Nets used in gillnetting is mostly made up of polyethylene and polyamine, therefore, are expensive as compared to other gears including longlining.

**Entanglement of gillnets:** As compared to other fishing gears, gillnets get fouled up more frequently as compared to other fishing gears, therefore, a long time is required in disentanglement and straightening of the net. In rough seas, the frequency of fouling up increases substantially. In Pakistan monsoon season is prevalent from mid May to mid

September during which events of fouling up of net are more frequent. Because of intense wave action and currents in the sea, fishermen engaged in gillnet fishing for tuna observe a voluntary close season during June and July every year.

**Length of the net:** In 1991, the United Nations through General Assembly (UNGA) Resolution 46/215, banned the use of large scale high seas driftnets over 2.5 kilometers long. Later on Indian Ocean Tuna Commission through Resolution 12/12 also prohibited the use of large-scale driftnets on the high seas in the IOTC area. Since Pakistani gillnetters are considerably large 20 to 25 m (OAL) therefore, with 2.5 km gillnet, it is not possible to even meet the operational expenses of the fishing vessels, therefore, most of the vessels use 5 to 12 km gillnet in Pakistan and other regional countries (Moazzam, 2012a).

These are some of the reasons that gillnet may not be continued for catching tuna and tuna like fishes and there are reasons to look for alternative fishing methods. Longlining may be one such option which will help in addressing the issues with gillnet fishing as well as will be financially viable operation.

## **PLAN OF CONVERSION**

Considering the demerits of use of gillnetting in fishing for tuna and tuna like species, it is planned to convert gillnet vessels so that they may use longlines. WWF-Pakistan planned to convert a few vessels which will have demonstrational effect and other will be converted to this mode of fishing. WWF-Pakistan is implementing a component of ABNJ Project (GCP/GLO/365/GFF) entitled “Sustainable Management of Tuna Fisheries and Biodiversity Conservation in the ABNJ”. Output 1.1.3. of this project is “Bycatch and catch data gaps in the northern Indian Ocean tuna-directed driftnet fisheries effectively filled through engagement of fishing communities and CSOs using co-management approaches”. This output *inter alia* envisages raising awareness of the fishing communities about the ecological impact of the gillnet gear, including trials of modified gear.

Although there are alternate gears available for catching tuna which includes pelagic trawling, purse seining, pole & line fishing, handlining, longlining and trolling, however, possibly only longlining the alternate most suitable for Pakistani vessels. In Sri Lanka many attempts have been made to initiate tuna longline fisheries by local fleets but it was only in 2002 when successful longline operation was started and by 2005, 7 vessels were operating with longline gear (Samaraweera, 2005). Longlining was promoted in Sri Lanka to scale down gillnet fisheries in accordance with international obligations (Pramod and Pitcher; Ganapathiraju and Pitcher, 2006).

Considering that longlining is a good option for conversion from gillnetting, therefore, four observers (WWF-Pakistan’s crew based observers) were taken to a visit in Sri

Lanka in 2017 to seek first hand information on the operation of longlining. These observers examined the machinery, fishing gears, installation and other engineering as well as operational aspects of longlining gears on board fishing vessels. They have also visited Department of Fisheries and Aquatic Resources in Colombo and discussed about the management of the longline fleets and other details about monitoring of the longline operation by the Department.

WWF-Pakistan initiated the procurement of the fishing gears through FAO for which specifications have been prepared and tenders have been floated. It is expected that the equipments and gears will be delivered in Pakistan by December 2019. In the meanwhile Government of Pakistan requested FAO for additional support in conversion from gillnetting to longlining. FAO therefore, increased the number of set of gears and now 13 set of gears are procured. It is expected that with conversion of 13 boats as pilot operation will motivate fishermen to convert to this mode of fishing.

## **CHALLENGES, ISSUES AND PROBLEMS**

Pilot scale tuna longlining operation were conducted in Pakistan in 1993 and 2010 (Hayat, 2010) and in Iran in 2017 (Azadi, 2018) which revealed some of the challenges and issues which needs to be addressed in case of conversion plan from gillnetting to longlining in Pakistan. The major issues that were encountered in Pakistan and Iran are:

**Fishermen Interest:** It was noticed in Iran (Azadi, 2019) as well as in Pakistan that since fishermen are engaged in tuna gillnetting for generations and one of the most popular fisheries in both Iran and Pakistan, therefore, there is a innate resistance to change to longlining operations. In case of Pakistan, the fishermen engaged in gillnetting realized that the marketing for gillnet caught tuna is a serious issue. Presently tuna is transported to neighboring country through traditional channels which is considered as “smuggling” and there is a fear that Government of Pakistan may take actions for stopping this illegal trade. Gillnet caught tuna cannot be exported to other countries because of its poor quality and high histamine levels. There is no local consumption of tuna in Pakistan. The fishermen, therefore, are always operating under fear that the trade of tuna with neighboring country may be stopped at any time.

The prices of tuna in the neighboring country is fluctuating substantially, therefore, at times, the fishermen are forced to sell tuna at unprecedented low prices to traders from neighboring country. In addition, devaluation of currency in neighboring country also affects prices of tuna transported from Pakistan. Because of these two factors, fishermen in Pakistan are excited and interested in conversion from gillnetting and longlining.

**Availability of Equipments and Gears:** Since tuna longlining is not practiced in Pakistan, therefore, local availability of these gears can be an issue that may be encountered as observed in Iran (Azadi, 2018). In Pakistan, import of fishing gears and equipments is not a serious issue, as almost all fishing gears and equipments are imported at present. Demands for gears and equipments required in longlining can be met easily by the importers already engaged in import of fishing gears etc.

**High catches of Tuna Gillnet Operations:** Azadi (2018) noted that fishermen are accustomed to gillnet operation and catches are much high if compared to longline operation. There is no two opinions that catch of the gillnets is much higher than longline, however, the prices of longline caught tuna is much higher (at times 500 % than existing prices of gillnet caught tuna) which will compensate for low catches. Fishermen are well aware of the location of the fishing grounds of the yellowfin tuna (which will be the target species for longline operations) and can efficiently operate in these fishing grounds.

**Price difference between Gillnet and Longline Caught Tuna:** Presently there is no difference between prices of tuna caught by gillnet or longline, however, WWF-Pakistan has already exported pilot shipment through a local enterprise to high bracket market in Persian Gulf countries and in USA which showed promising results. It is expected that longline caught tuna by Pakistani fishermen will not face any major difficulties as a number of exporters have shown interest in marketing of these products.

**Lack of Knowledge about Longlining:** There is limited information and knowledge available about longlining operations because this being a new activity. However, adequate information is available about longline operation in other countries especially in Sri Lanka. The information about fishing grounds, fishing seasons and abundance are already available with the fishermen. Technical information about longlining operations is limited, however, with promotion of longlining these information will be made available.

**Demand Issues of Longline Caught in International Market:** Azadi (2018) noted there is limited or no demand for longlined caught tuna in the international market. It is known fact that international demand of a product depends on the available quantities and since production of longlined caught tuna is extremely limited in Iran and in Pakistan, therefore, presently no demand for such tuna. However, once substantial quantities are available, there will be a demand of such products in the international market.

## **EXPERIENTIAL LONGLINING**

In order to develop a market of longline caught tuna, experiment on longlining was conducted by WWF-Pakistan in Bandri, a small village near Iranian Border in April,

2019. Operator of one tuna gillnet boat was asked to use longline for catching yellowfin tuna. The experiment was successful as 9 yellowfin tunas were caught in one night operation which were transported to Karachi for processing, packaging and exported to Dubai and USA.

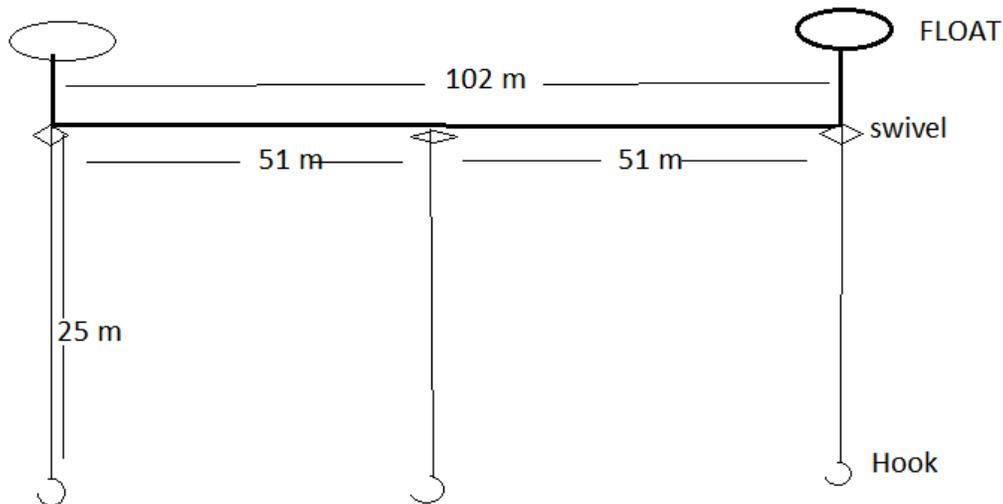


Fig. 1. General arrangements of experimental longline

General arrangement of longline operation is given in Fig. 1. All the material including mainlines (Fig. 2), branch lines (Fig. 3), swivels, snap-on-clips and hooks (Fig. 3) were procured from the local market.



Fig. 2. Mainline stored on board for experimental longline



Fig. 3. Branch line stored on board for experimental longline



Fig. 4. Swivel, snap-on-clip and hook used for experimental longline

Yellowfin tunas caught through experimental longlining (Fig. 5-6) were transported to Karachi in chilled form. Loins were prepared from tuna and vacuum packed (Fig. 7-8)

and exported by air to some companies dealing with tuna loins in Dubai (UAE) and USA who have offered attractive prices between US \$ 6 to 10 per kg. This price structure will make the fishing operation viable and successful. Following the steps of experimental longlining, a few boats (15 according to available information) conducted longlining, however, sold their product in local market. These experiments could not be continued after mid May because of rough seas due to southwest monsoon.



Fig. 5. Longline caught yellowfin tuna landed in the fishing boat.



Fig. 6. Longline caught yellowfin tuna weighed before transportation to Karachi.



Fig. 7. Loin prepared from longline caught yellowfin tuna



Fig. 8. Loins prepared from longline caught yellowfin tuna vacuum packed

## **CONCLUSIONS**

Considering demerits of the tuna gillnet operations in Pakistan especially high bycatch of ETP species and limited marketing access, it was considered necessary to convert a few gillnet vessels into tuna longliners. For this purpose, gears and equipments are being procured by WWF-Pakistan. Experiments conducted by WWF-Pakistan in April 2019 revealed high potential for tuna longlining in Pakistan. Yellowfin tuna caught through this experimental longlining was processed into tuna loin, vacuum packed and exported to Dubai and USA where reasonable prices were offered for these products.

There are a number of issues that will be faced if conversion from gillnetting to longlining is done, however, these issues and obstacles can be addressed adequately. Tuna longlining is effectively being done in Sri Lanka and many other countries, therefore, it is expected that tuna longlining in Pakistan will be a successful option in Pakistan as well. This conversion process will help in reducing bycatch of ETP species as well as will lead to fetching better prices for the produce.

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