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Estimation Iranian fishing vessels By-catch in IOTC competence of area in 2013

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By: Reza Shahifar[1], S.Khorshidi, B.J.Shabestari

r.shahifar@gmail.com

Abstract

In order to assess the level of Iranian tuna fishing vessels by-catch in the IOTC competence of area, we used the 2013 data which collected through the Iran Fishery Organization data Collection system. Base on the system outputs, about 30 different species of Tuna, Tuna like and the other species are caught by Iranian fishermen through the Tuna fishing activities. Base on 2013 information in total, 226409 tons of different species including 195360 tons Tuna and Tuna like species (target species 86.3%), 14280 tons Billfish (6.3%), 6994 tons different species of Sharks (3.1%) and 9775 tons the other species (4.3%) are caught by Iranian fishing vessels in the IOTC competence of area.

According to 2013 data, 95% of catch comes from Gill net gear, while around 2.6% of catch belong to Purse seiners and 2.2% comes from Trolling vessels. Base on official country report, target species catch composition mainly were, long tail tuna with 29.4%, Skipjack with 14.7%, yellowfin with 14.3%, Kawakawa with 12.7%, Narrow-barred Spanish mackerel with 8.4% of total catch. Also 3.3% Indo-Pacific sailfish, 1.9% Carangidae Sp., 1.8% Black Marlin, 1.2% Milk Shark, 1.1% Liza Sp. are caught as none target species.

CPUE (Vessel Catch/Day) was calculated, base on total numbers of vessels catch (C) and their navigation days (Unit Efforts), for different types of gears. According to our estimation, the calculated CPUE for Purse Seiners were 7888.5 Kg/ Vessel Catch/Day with 525 Kg by-catch, for Trolling (boats) 39.5 Kg/ Vessel Catch/Day with 2.6 Kg by-catch and all types of gillnetters 235.6 Kg/ Vessel Catch/Day with 33 Kg by-catch. Also the amount of Sharks CPUE was calculated 6.7 Kg/ Vessel Catch/Day for all type of gears, while this amount was 7.2 Kg/ Vessel Catch/Day for gillnetters, 2.6 Kg/ Vessel Catch/Day for Trolling, and 72.9 Kg/ Vessel Catch/Day for purse seiners.

Base on 9th WPEB recommendation and adaptation of scientific committee and commission in 2013, in order to capacity building and remove current weaknesses in the region, the IOTC secretariat should assist target countries by allocating funds and presenting technical assistance, such as training experts and observes, during some workshops, translation the printed species identification card and implementation some researches.

I- Introduction:

According to sustainable fisheries, through the 1995 agreement for implementation of the provisions of the United Nation convention on law of the sea (1982) relating to the conservation and management of straddling fish stocks and highly migratory fish stocks and Food and Agriculture Organization (FAO) code of conduct objectives for implementation responsible fisheries, also related resolutions of IOTC about developing and implementation of management measures for conservation ecosystem and fish stocks, such as 05/05, 10/06, 10/02, 11/04, Iran Fisheries Organization (IFO) has been trying to monitor and control all its fishing fleets through the IOTC competence of area.

Although some deficiencies and weaknesses are seen in developing and implementing of monitoring and control measures in Iranian fleets, but compliance to regulations and resolutions of IOTC have had a progressively trend and IFO intent to continue procedure up to complete implementation of all regulations. Base on IOTC evaluation in 2013 the average compliancy of IOTC members evaluated 52%, while the amount of Iran competency calculated 65%. This evidence shows, in spite of some weaknesses, there is a big progress and achievements in compliancy trend of Iran during recent years, as this evaluation has grown from 25% compliancy in 2010 to 65% in 2013. However current paper is an analysis on Iranian fishing vessels Tuna and tuna like species catch which extract from IFO statistics system and mostly concentrate on different type of Iranian Tuna fishing vessels bycatch in 2013.

II- Materials and methods:

Base on IOTC existence resolutions and in order to estimate of bycatch in different types of Iranian fishing vessels, we used official data which comes through IFO data collection system. Also we used the received information through the Port and landing places sampling, Logbooks and offline VMS.

The observers had responsibility for identification of species, survey on catch composition including tuna, tuna like species, bycatch specially Sharks, in fishing harbors and landing places. Base on collected information from data collection system and log books, the days of catch, amount of catch and CPUE was calculated. According to available information the amount of unit effort (UE) was 1/day, because most of vessels use gill net and normally only one gill net installed and investigated during 24 hours (Setting net in the Sea 4hous , waiting time 10h, and investigation fish trough the nets takes 6 hours). Because of sailing to destination, location surveys and weather conditions, there was no catches during some days so only active fishing days calculated for efforts. The positions of the vessels were obtained from offline vessel monitoring system and the additional information collected by interview with crews. The vessels fishing areas mostly were Iranian coastal waters and EEZ and western part of Indian Ocean especially eastern part of Africa continent.

III- Results and Discussion:

Base on IFO statistics system output, 30 different species of Tuna; tuna like species and some other species as bycatch are caught by Iranian fishermen in 2013. According to this information around 226409 tons of different species including 195360 tons of Tuna and Tuna like species, 14280 tons Billfish, 6994 tons different species of Sharks and 9775 tons the other species are caught by Iranian fishing vessels in the IOTC competence of area in 2013. Base on IFO statistic system, 95% of Iranian fleet catch comes from Gillnet gear, while around 2.6% of catch belongs to Purse seiner and 2.2% comes from Trolling method (Figure 1). Available data shows about 86.3% of catch comes from target species and 13.7% including 6.3% Bilfish, 3.1% different Sharks species and 4.3% belong to the other species (Figure 2).

Figure 1: The share of different type of fishing gears in Tuna and Tuna like species catch in 2013

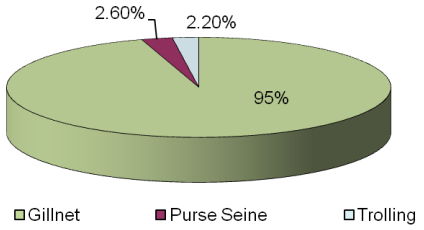
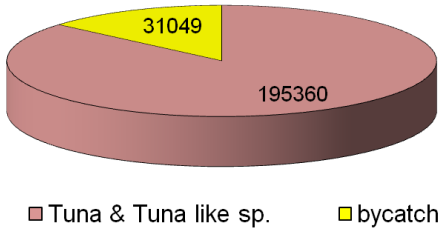


Figure 2: Iranian fishing vessele Tuna & Tuna like sp. and bycatch in 2013 (Ton)



During 2013, target species catch mainly were, long tail tuna with 29.4%, Skipjacj with 14.7%, Yellowfin tuna14.35, kawakawa with 12.75, Narrow-barred Spanish Mackrel with 8.45 of total catch (Figure 3). Also 3.3% indo-Pacific sailfish, 1.9% Carangidae sp. , 1.8% Black Marlin, 1.2% Milk shark, 1.1% Liza sp. , and some other species with 4.4% share from total catch, are caught as none target species (Figure 4).

Figure 3: The percentag of tuna & tunalike sp. from total catch in IOTC area in 2013.

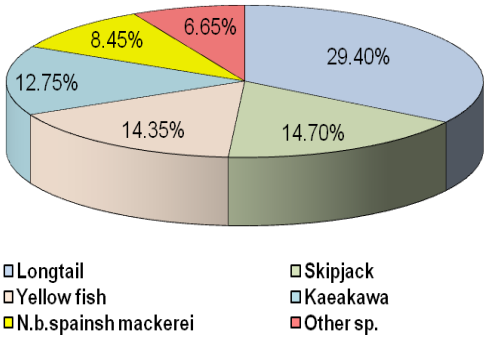
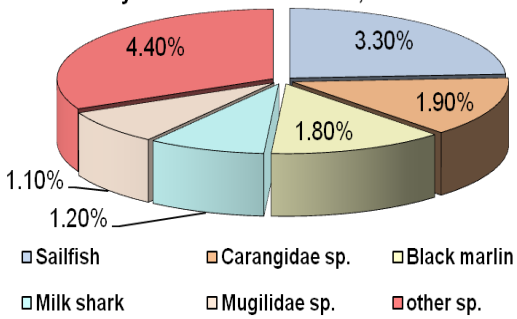


Figure 4:The percentge of some species Bycatch from total catch, in 2013



In total, the share of different group of fish which are caught as bycatch were, 14280 ton Billfish, 6994 tons different species of Sharks, 1157 tons common Dolphin fish and 14280 tons the other species such as Mugilidae sp., Carangidae sp., Rachycentridae sp. (Figure 5). Base on statistics information the amount of Billfish which are caught by Iranian fleets was 14280 tons including, Indo- pacific sailfish 7475 tons, Black Marlin 4173 tons, Swordfish 804 tons, Striped Marlin 574 tons and some other species 1254 tons (Figure 6).

Figure 5: The share of different group of fish as bycatch (Ton)

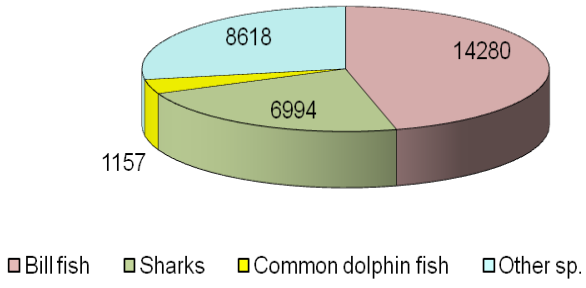
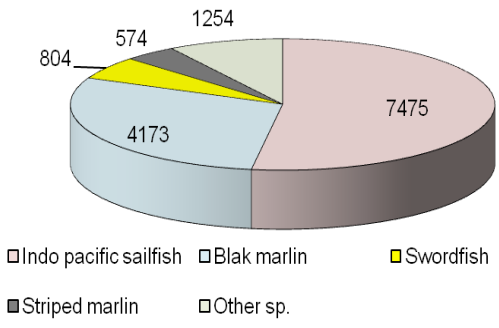
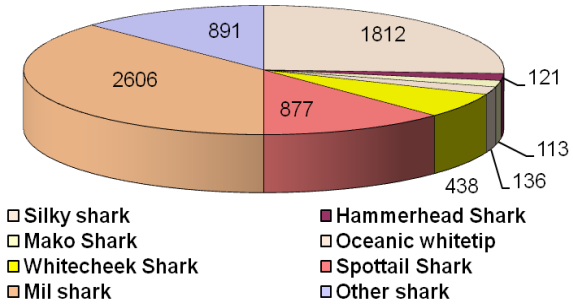


Figure 6: Composition and weight of billfish catch by Iranian Fleets in 2013 (Ton)



Base on this study seven species of Sharks were seen mainly in catch composition are, Milk Sharks 37.3%, Silky Sharks 25.9%, Spottail Shark, 12.5%, Oceanic whitecheek Shark 6.3%, Oceanic whitetip Shark 1.9%, Hammerhead Shark 1.7%, Shortfin mako Shark 1.6% and the other species of Sharks 12.7%.(Figure 7)

Figure 7: Composition and weight of Sharks in total catch in 2013 (Ton)



During the year only four purse seine vessels were active while they have had 727 days effort. In average each purse seine vessels have been active 182 days in 2013. In total, around 805 small boats by use of trolling methods, with less than 3 GRT, have been active and each boat; have been active 153 days in average during the year. But classification of gillnetters was totally different because most of them were small boats. In total, 872 vessels with more than 51 GRT have had 175 days effort in average. The other small boats have been active around 150 days during the year. Also base on tuna fishing vessels catch analysis, around 52% of total catch are happening in coastal water and 48% comes from open sea.

CPUE (Vessel Catch/Day) was calculated, base on total numbers of vessels catch (C) and their navigation days (Unit Efforts), for different types of gears. According to our estimation, the calculated CPUE for Purse Seiners were 7888.5 Kg/ Vessel Catch/Day with 525 Kg by-catch, for Trolling (boats) 39.5 Kg/ Vessel Catch/Day with 2.6 Kg by-catch and all types of gillnetters 235.6 Kg/ Vessel Catch/Day with 33 Kg by-catch (Figure 8). Also the amount of Sharks CPUE was calculated 6.7 Kg/ Vessel Catch/Day for all type of gears, while this amount was 7.2 Kg/ Vessel Catch/Day for gillnetters, 2.6 Kg/ Vessel Catch/Day for Trolling, and 72.9 Kg/ Vessel Catch/Day for purse seiners (Figure 9). This is very important and considerable that, we have never seen any mammals or marine Turtles as a bycatch in catch composition.

Figure 8: Different type of gears CPUE (catch Kg/Day) in 2013

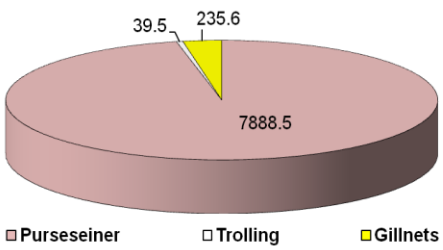
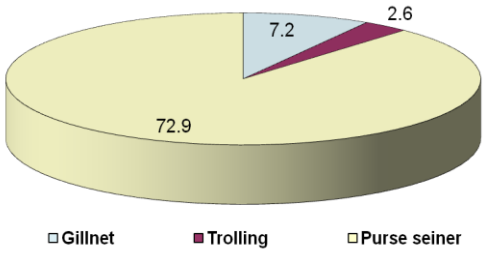


Figure 9: Sharks CPUE (Catch/ kg, per day) different type of fishing gears



A brief interview with observers who completed log books and observer reports made us aware that, problems in identification of species especially sharks is predictable.

IV- Conclusion:

Current study shows around 86.3% of Iranian fishing vessels catch in 2013 belong to Tuna and Tuna like species, where only 13.7% of catch by different type of gears are as bycatch. Also the study shows the main gear which are used by Iranian fishermen is gillnet. In fact this gear covers around 95% of tuna and tuna like fisheries in Iran. This information proves acceptable level of gill nets selectivity regarding to target species catch. This study shows only 3.1% of bycatch belong to different species of Sharks, where Milk Shark and Silky Sharks abundance is more than the others. Fortunately all of shark's species stocks that are caught as bycatch, are located in an acceptable level. Base on official information, the amount of sharks CPUE in gillnets are calculated 7.2 Kg per one day vessel effort. Base on scientific evidence there is possibility to reduce the quantity of bycatch in gillnets by some changes in nets hanging rate and this point needs some more practical study and research.

A review on past 12 years tuna fish catch information shows, some differences between amounts of catch in Iranian shorelines (up to EEZ) and open sea of the Indian Ocean. These changes are seen not only in composition of catch, but also in percentage of catch per each area. For example in 2005 around 38.5% of tuna and tuna like species are caught in Iranian coastal waters and EEZ but in 2011 this percentage intensively changed and increased to 57.2% of catch in Iranian territorial waters. According current study, around 52% of total catch comes from coastal water and 48% from open sea during 2013. This fact proves Iranian vessels mostly have been active in territorial water of the country in the year. Because most of Iranian fishing vessels are small boats and artisanal fishing vessels and do not have enough capacity to fish through the open sea.

In conclusion although the evaluation of IOTC about Iran's compliancy to the Commission rules have shown a progressively trend from 25% in 2010 to 65% in 2013, but in order to implementation better conservation and management measures, IFO should to continue its endeavors to remove existence weaknesses and on this way seriously needs technical and financial aids and supports of competence organizations such as FAO and IOTC.