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# Iranian fishing vessels By-catch in IOTC competence of area in 2014

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Abstract:

In order to assess the level of Iranian tuna fishing vessels By-catch in the IOTC competence of area, we used 2014 data which they collected through the Iran Fishery Organization data Collection system. Base on the system outputs, about 25 different species of Tuna, Tuna-like and some other species are caught by Iranian fishermen through the Tuna fishing activities. Base on 2014 information in total, 266948 tons of different species including, 227193 tons Tuna and Tuna-like species (target species 85.1%), 21470 tons Billfish (8.1%), 7551 tons different species of Sharks (2.8%) and 10734 tons 0f the other species (4%) are caught by Iranian fishing vessels in the IOTC competence of area.

| Group of Fish | | Species | Weight /T | % | Weight/T | % |
|---|---|---|---|---|---|---|
| Tuna & Tuna like | | Total | 227193 | 86.3 | 227193 | 85.1 |
| BY-CATCH | BillFish | Indo Pacific Sailfish | 11607 | 4.4 | 21470 | 8.1 |
| | | Black Marlin | 6181 | 2.3 | | |
| | | Shortbill spearfish &other | 1738 | 0.7 | | |
| | | Swordfish | 1134 | 0.4 | | |
| | | Striped Marlin | 810 | 0.3 | | |
| | Sharks | Milk Shark | 3441 | 1.3 | 7551 | 2.8 |
| | | Silky Shark | 1107 | 0.4 | | |
| | | Spottail Shark | 1153 | 0.4 | | |
| | | Whitecheek Shark | 577 | 0.2 | | |
| | | Oceanic Whitetip Shark | 83 | 0.03 | | |
| | | Hammer head Shark | 42 | 0.02 | | |
| | | Mako Shark | 68 | 0.03 | | |
| | | Other Sharks | 1080 | 0.4 | | |
| | Other Species | Carangidae species | 3974 | 1.5 | 10734 | 4 |
| | | Mujilidae species | 2617 | 1 | | |
| | | Clupeidae Species | 2309 | 0.9 | | |
| | | Common Dolphin Fish | 1834 | 0.7 | | |
| Total Catch | | Target & none Target | 266948 | 100 | 266948 | 100 |

Table 1: The amount of By-catch and percentage of them in compare with total catch By Iranian Tuna fishing vessels in 2014

According to 2014 data, 39755 tons of different species (14.9%) are caught as a bycatch which Indo Pacific Sailfish (4.4%), Black Marlin (2.3%), Carangidae species (1.5%), Milk Shark (1.3%) and Mujilidae species are most important of them. CPUE (Vessel Catch/Day) was calculated, base on total numbers of vessels catch (C) and their navigation days as a Unit Efforts, for different types of gears. Base on our estimation, CPUE for Purse Seiners was calculated 8352.5 Kg (584 Kg, 6.9% bycatch), for Trolling (Boats) 45.6 Kg (6.2 Kg, 13.5% bycatch), and for gillnetters 537.2 Kg (81.2 Kg, 15% bycatch). Also the amount of Sharks CPUE was calculated 15 Kg for all type of gears, while this amount was 15.1 Kg for gillnetters, 1.3 Kg for Trolling, and 75.2 Kg for purse seiners.

## I- Introduction:

According to sustainable fisheries manual, 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, Iran Fisheries Organization (IFO) has been trying to monitor and control all fishing fleets With under Iran flag state, through the IOTC competence of area.

Although some deficiencies and weaknesses are seen in developing and implementing of monitoring and control of 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, a big progress trend in compliancy of Iran during recent years, as this evaluation has grown from 25% compliancy in 2010 to 65% in 2013.

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 by-catch in 2014.

## II- Materials and methods:

Base on IOTC 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 and combination of them.

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. Also observers carried out identification of species, survey on catch composition including tuna, tuna like species, bycatch specially Sharks, in fishing harbors and landing places.

## III- Results and Discussion:

Base on IFO statistics system output, 25 different species of Tuna; Tuna like species and some other species were caught as bycatch, by Iranian fishermen in 2014. According to this information around 266948 tons of different species including 227193 tons of Tuna and Tuna like species, 21470 tons Billfish, 7551 tons different species of Sharks and 10734 tons the other

species are caught by Iranian fishing vessels in the IOTC competence of area in 2014. Base on IFO statistic system, 95% of Iranian fleet catches comes from Gillnet gear, while around 2.7% of catch belongs to Purse seiner and 2.3 % comes from Trolling method. Available data show about 85.1% of catch comes from target species and 14.9% belong to none target species (Figure 1). During 2014, target species which are caught by Iranian fishermen included, long tail tuna with 24.54%, Yellow-fin Tuna with 17.3%, Skipjack with 14.8%, kawakawa with 11%, Narrow-barred Spanish Mackerel with 8.9%, Frigate tuna with 5.1% , Indo Pacific king Mackerel with 2.6% and Big eye with 0.9% in compare to total catch (Figure 2).

**Figure 1- Target and None target species catch in IOTC competence area in 2014**

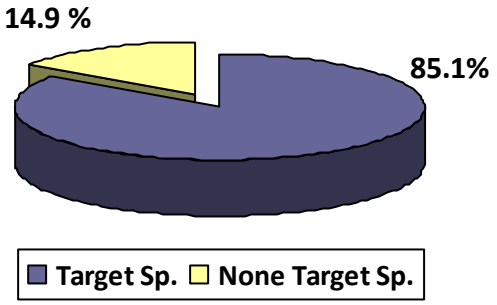
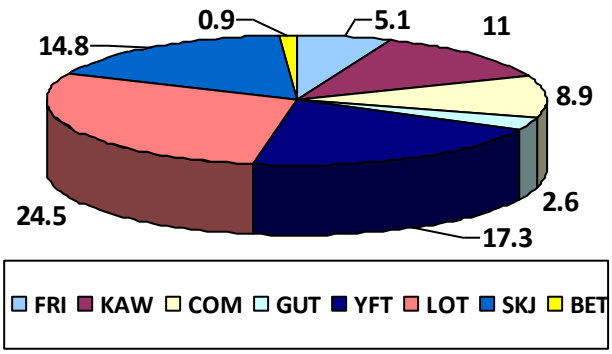



**Figure 2- Percentage of Target species (Tuna and Tuna lik) from total catch In IOTC Competence of area in 2014**




Also none target species including 8.1% (21470 tons) Bilfish, 2.8% (7551 tons) different species of Sharks, 0.7% (1834 tons) Common Dolphin fish and 3.3% (8900 tons) some other species which mainly are belong to Carangidae, Mujilidae and Clupeidae families were seen in catch composition of Iranian vessels, in IOTC competence area in 2014 (Figure 3). Base on 2014 data, in total 21470 tons Billfish including 11607 (4.4%) Indo Pacific Sailfish, 6181 tons (2.3%) Black marlin, 1738 tons (0.7%) Shortbill spearfish, 1134 tons (0.4%) Swordfish and 810 tons (0.3%) striped Marlin are caught by Iranian fleets in IOTC competence area (Figure 4).

**Figure 3- Amount of different group of none target species catch/ton in Iotc competence of area in 2014**

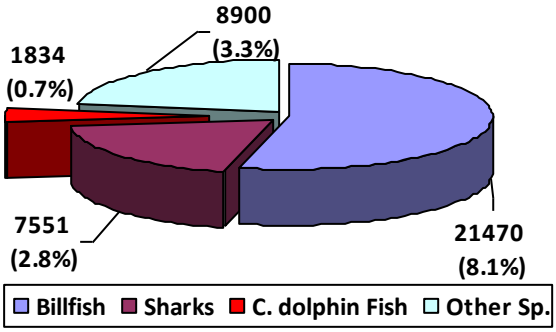
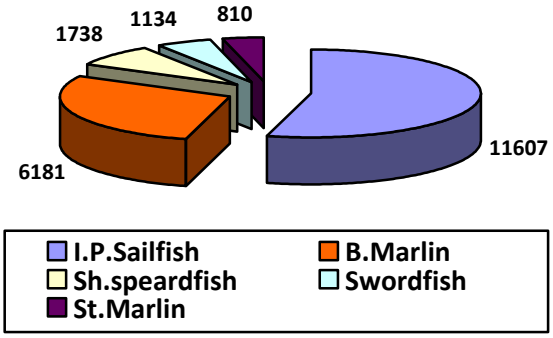


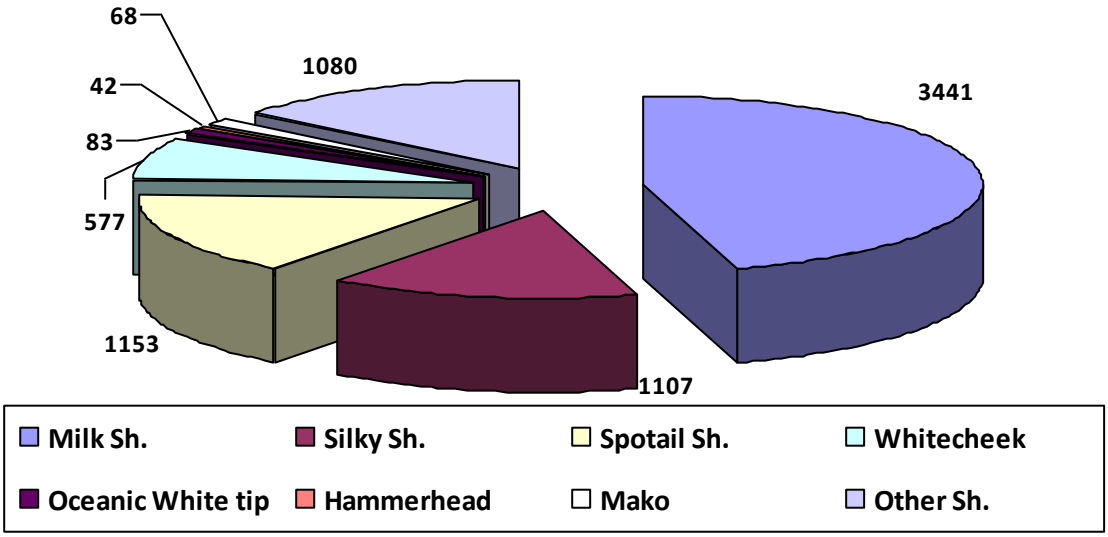

**Figure 4 - Amount of different species of Billfish catch/ton in IOTC competence area in 2014**




Base on 2014 data, in total 7551 tons different

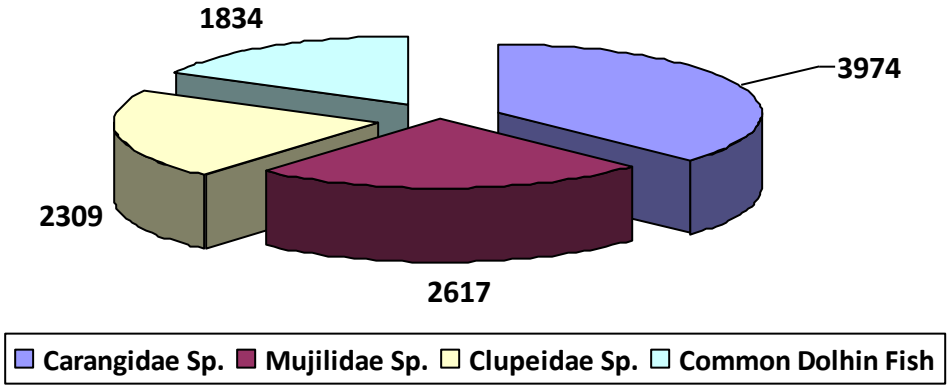
species of Sharks are caught in Tuna fishing activities as a bycatc in 2014. The species that mainly are seen in catch composition were Milk Shark with 3441 tons (1.3%), Silky Shark with 1107 tons (0.4%), Spotail Sharks with 1153 tons (0.4%), whitecheek Shark wiyh 577 tons (0.2%), Oceanic whitetip Shark with 83 tons(0.03), Mako Shark with 68 tons (0.03), Hammerhead Shark with 42 tons (0.02) and other Sharks with 1080 tons (0.4%) (Figure5). Identification of the different species especially sharks species was one of the most important difficulties in this project.

**Figure 5- Diffrent species of Sharks catch/tons by Iranian fleets in IOTC competence area in 2014**




Other species catch share from total catch was calculated 4% which mainly belong to Carangidae family with 3974 tons (1.5%), Mugilidae family with 2617 tons (1%), Clupeidae family with 2309 tons (0.9%), Common Dolphin fish with 1834 tons (0.7%) and some other species (Figure 6).

**Figure 6- some other families catch/ton by Iranianfleets in IOTC competence area in 2014**



During 2014 only four purse seine vessels were active while each purse seine vessels have been 216.5 days navigation in average. In total, around 811 small boats with less than 3 GRT, by use of trolling methods, have been active 166 days in average during the year. Although gillnet vessels have different type of power and classification but in total, 865 vessels with more than 51 GRT have had 185 days effort in average on the Indian Ocean. The other small vessels with less than 15 m long have been active around 156 days in average during the year. Also base on tuna fishing vessels catch analysis, around 51% of total catch comes from Iran's coastal water and 49% from open sea.

CPUE (Vessel Catch/Day) was calculated, base on total amount 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 8352.5, with 584 Kg by-catch (6. 9%), for trolling boats 45.6 Kg with 6.2 Kg by-catch (13.5%) and all types of gillnetters 537.2 Kg with 71.2 Kg by-catch (15%). Also the amount of Sharks CPUE was calculated 15 Kg for all type of gears, while this amount was 15.1 Kg for gillnetters, 1.3 Kg for Trolling, and 75.2 Kg for purse seiners.

This is considerable that, we have never seen mammals, marine Turtles or sea birds in catch composition as a bycatch in landing places. Also we have never received any reports about them. A brief interview with observers who completed log books and observer reports made us aware about species identification problems, especially for Sharks species.

**IV- Conclusion:**

Base on current study, around 85.1% of Iranian fishing vessels catch by different type of gears belong to Tuna and Tuna like species in 2014, where only 14.9% catch composition of different type of fishing gears are as bycatch. Also the study shows the main gear which are used by Iranian fishermen is gillnet with coverage of 95% of activities while purse seine with 2,7% and trolling with 2.3% are the other that are used by fishermen. Base on current study, only 2.8% of catch belong to different species of Sharks, where Milk Shark and Silky Sharks abundance is more than the others. Fortunately most sharks' species which were caught by Iranian fleets as a bycatch, have stable stocks. Base on official information, the amount of sharks CPUE in gillnets are calculated 15.1 Kg per day for each vessel. The amount of bycatch (14.9%) proves acceptable level of gill nets selectivity in Tuna and Tuna like species catch. Base on scientific evidence there is possibilities to reduce the amount of gillnet bycatch by some changes in nets hanging rate and this point needs some more practical research.

A review on past 12 year's tuna fish catch information shows, some differences in composition and quantity of catch in Iranian EEZ and Indian Ocean. For example in 2005 around 38.5% of tuna and tuna like species are caught in Iranian coastal waters but in 2011 this percentage intensively changed and increased to 57.2% of catch in Iranian territorial waters. According 2014 study, around 51% of total catch comes from coastal water and 49% from 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. On this way technical and financial aids and supports of authorized organizations such as FAO and IOTC are an urgently need.

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