Iranian fishing vessels By-catch in IOTC competence of area in 2015
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Abstract:

   In order to assess the level of Iranian tuna fishing vessels by-catch in the IOTC competence of area in 2015, the data which they are collected through the Iran Fishery Organization (IFO) data Collection system were used. Base on the system outputs, more than 24 different of Tuna, Tuna-like and some other species are caught by Iranian fishermen through the Tuna fishing activities. Base on 2015 information in total, 251551 tons of different species including, 212497 tons Tuna and Tuna-like species (target species 84.5%), 19532 tons Billfish (7.8%), 7135 tons of different Sharks species (2.8%) and 12388 tons of the other species (4.9%) were caught by Iranian fishing vessels in the IOTC competence of area in 2015.

Group of Fish		Species	Catch/Ton	%	Catch/Ton	%
Tuna & Tuna like		Total	212497	84.5	212497	84.5
BY-CATCH	BillFish	Indo Pacific Sailfish	9745	3.9	19532	7.8
		Black Marlin	5958	2.4		
		Striped Marlin	839	0.3		
		Swordfish	1174	0.5		
		other	1816	0.7		
	Sharks	Milk Shark	2976	1.2	7135	2.8
		Silky Shark	1567	0.6		
		Spottail Shark	997	0.4		
		Whitecheek Shark	499	0.2		
		Oceanic Whitetip Shark	118	0.05		
		Hammerhead Sharks	63	0.03		
		Mako Shark	94	0.04		
		Other Sharks	821	0.3		
	Other Species	Carangidae species	6948	2.8	12388	4.9
		Mujilidae species	821	0.3		
		Clupeidae Species	778	0.3		
		Rachycentridae	664	0.2		
		Common Dolphin Fish	3177	1.3		
Total Catch		Target & none Target	251552	100	251552	100

Table 1: The amount of Catch and By-catch, in Tuna fisheries by Iranian Tuna fishing vessels
In IOTC competence if area in 2015

According to 2015 data, 39055 tons of different species (15.4%) are caught as a bycatch, including some common species such as Carangidae, Mujilidae, Clupeidae, and etc (4.9%), different species of Bill fish (7.8%) and Sharks species (2.8%). On this survey, Iranian fishing vessels CPUE was calculated, base on different type of gears catch per day (Vessel Catch/Day). According to our estimation, Purse Seiners CPUE was calculated 8248.5 Kg/D, Trolling (Boats) 41.2 Kg/D and gillnetters 542.3 Kg/D. Also the amount of Sharks CPUE was calculated 15.1 Kg/D in average for all type of gears.

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) related with 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 the level of monitoring and control of Iranian fishing fleets need more improvement, but compliance to regulations and resolutions of IOTC have had a progressively trend and IFO intent to continue this trend, up to complete implementation of all related regulations. Base on IOTC evaluation the compliancy of Iran with IOTC regulations, has had a progressively trend from 2011and the amount of it, has improved from 11% to 75% in 2015. This evidence shows a big progress in implementation of compliancy by Iran during recent years. Current paper is a review on tuna and tuna like species catch by Iranian fishing vessels which extract from IFO statistics system and concentrate on catch composition of the vessels in 2015.

II- Materials and methods:

In order to estimate different types of Iranian fishing vessels bycatch, official data which comes through IFO data collection system are used. Also the received information through the Port and landing places sampling, Logbooks and offline VMS and combination of them are used.

Base on collected information from data collection system and log books, the days of catch, amount of catch and CPUE was calculated. According to recorded information most of Iranian fishing vessels gears are 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) so the effort of one gill net in a day accepted as unit effort (UE). 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, in fishing harbors and landing places.

III- Results and Discussion:

Base on IFO statistics system output, more than 24 different species of Tuna, Tuna like and some other species were caught, by Iranian fishermen in 2015. According to this information around 251552 tons of different species including 212497 tons of Tuna and Tuna like species, 19532 tons Billfish, 7135 tons different species of Sharks and 12388 tons the other species are caught by Iranian fishing vessels in the IOTC competence of area in 2015. Base on IFO statistic system, 95.9% of Iranian fleet catches comes from Gillnet gear, while around 2.1% of catch belongs to Purse seiner and 2 % comes from Trolling method. Available data show about 84.5% of catch comes from target species and 15.5% belong to none target species. During 2015, target species which are caught by Iranian fishermen included, long tail tuna with 23.7%, Yellow-fin

Tuna with 16.9%, Skipjack with 15.4%, kawakawa with 11.3%, Narrow-barred Spanish Mackerel with 9.1%, Frigate tuna with 4.2%, Indo Pacific king Mackerel with 2.9% and Big eye with 1% in compare to total catch (Figure 1).

On this study, none target species including 7.8% (19532 tons) Bilfish, 2.8% (7135 tons) different species of Sharks, 1.3% (3177 tons) Common Dolphin fish and 3.6% (9211 tons) some other species which mainly belonged to Carangidae, Mujilidae and Clupeidae families are seen in catch composition of Iranian fishing vessels, in IOTC competence area in 2015 (Figure 2).

Figure 1- Percentage of Target species in compare with total catch In IOTC Competence of area in 2015
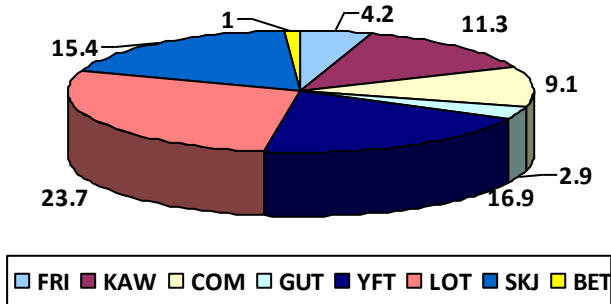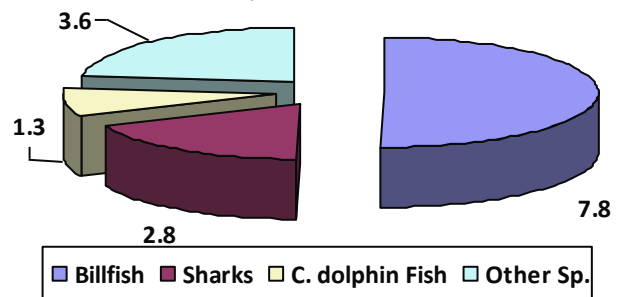
Figure 2-Percentage of None target species in compare with total catch in IOTC competence area in 2015
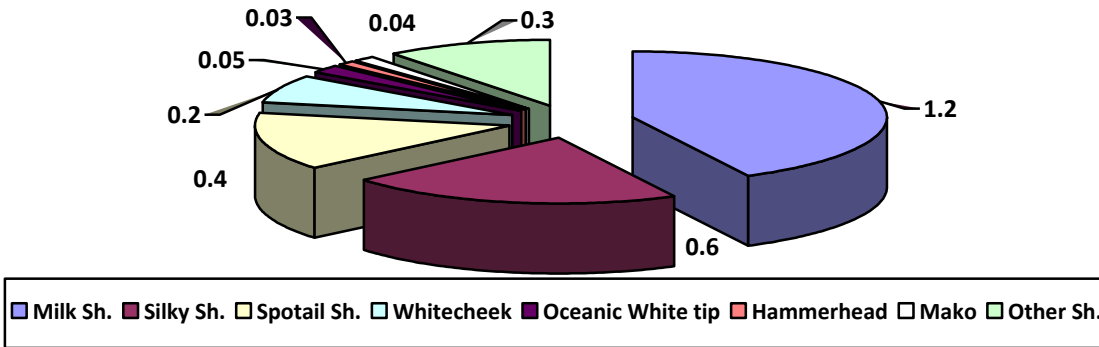
Base on 2015 data, in total 19532 tons (7.8%) Billfish including 9745 (3.9%) Indo Pacific Sailfish, 5958 tons (2.4%) Black marlin, 1174 tons (0.5%) Swordfish and 839 tons (0.3%) striped Marlin and 1816 tons (0.7%) the other species of Billfish are caught by Iranian fishing fleets in IOTC competence area (Figure 3).

Figure 3 - Percentage of different species of Billfish catch in compare with total catch in IOTC competence of area in 2015
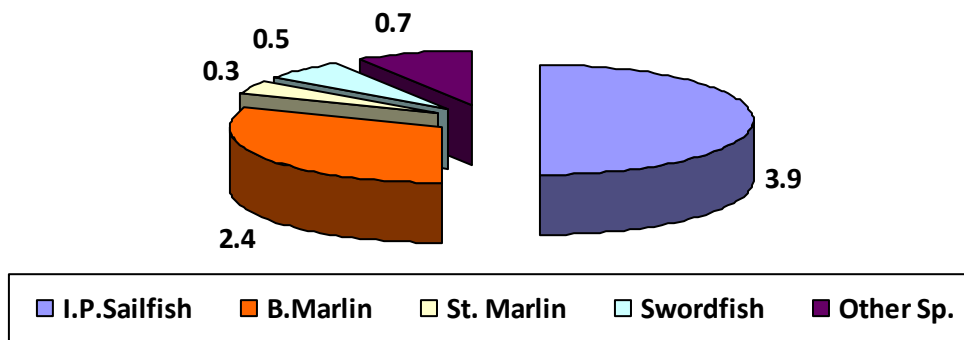
Base on 2015 data, in total 7135 tons different species of Sharks are caught in Tuna fishing activities as a by-catch. These species were included Milk Shark with 2976 tons (1.2%), Silky Shark with 1567 tons (0.6%), Spot-tail Sharks with 997 tons (0.4%), white-cheek Shark with 499 tons (0.2%), Oceanic whitetip Shark with 118 tons (0.05), Mako Shark with 94 tons (0.04), Hammerhead Shark with 63 tons (0.03) and other Sharks with 821 tons (0.3%) (Figure4).

Figure 4- Percentage of diffrent species of Sharks catch in compare with total catch in IOTC competence area in 2015

0.03 0.04 0.3
0.05
0.2
0.4
1.2
0.6

☐ Milk Sh. ☐ Silky Sh. ☐ Spotail Sh. ☐ Whitecheek ☐ Oceanic White tip ☐ Hammerhead ☐ Mako ☐ Other Sh.

   Other species which are seen in catch composition mainly belonged to Carangidae family with 6948 tons (2.8%), Mugilidae family with 821 tons (0.3%), Clupeidae family with 778 tons (0.3%), Rachycentridae with 664 tons (0.2%) and Common Dolphin fish with 3177 tons (1.3%). In total this species quantity is 4.9% in compare with total catch (Figure 5).

Figure 5- Percentage of other families catch in compare with total catch in IOTC competence area in 2015

0.2
1.3
2.8
0.3
0.3

☐ Carangidae Sp. ☐ Mujilidae Sp. ☐ Clupeidae Sp. ☐ Common Dolhin Fish ☐ Rachycentridae
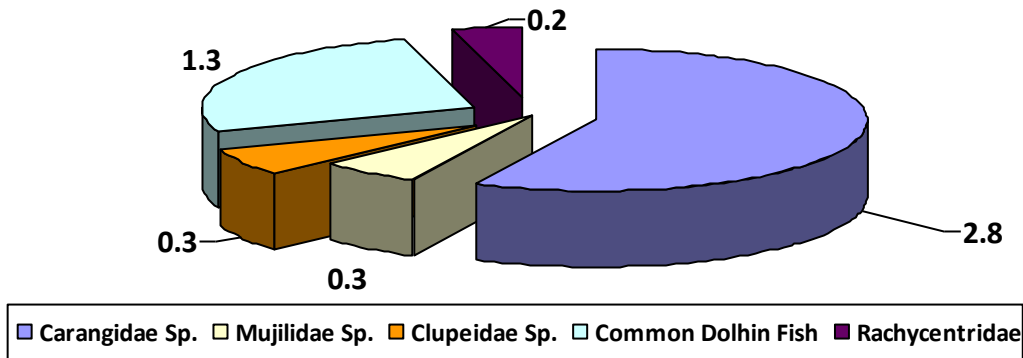
   During 2015 only five purse seine vessels were active, while the total of their navigation have been 1080 days. That means each purse seiners have been had 216 days navigation in average. Also around 820 boats with less than 3 GRT and use of trolling methods have been active 168 days in average during the year. Although gillnet vessels have different classification base on their type, size and engine power but in total, 745 vessels with more than 51 GRT have had 188 days effort in average, on the Indian Ocean. The other small vessels with less than 15 m long have been active around 155 days in average during the year.

   CPUE (Vessel Catch/Day) was calculated, base on total amount of catch for the vessels (C) and their navigation days (Unit Efforts). According to our estimation, the calculated CPUE for Purse Seiners was 8280.5 Kg with 571.4 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 83.3 Kg by-catch (15.5%). Also the

amount of Sharks CPUE was calculated 15 Kg for all type of gears, while this amount was 15.1 Kg for gillnetters, 1.6 Kg for Trolling, and 74.6 Kg for purse seiners.

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

IV- Conclusion:

  Base on current study, around 84.5% of Iranian fishing vessels catch by different type of gears belonged to Tuna and Tuna like species in 2015, where only 15.5% of different type of fishing gears catch, belonged to other species as a by-catch. The study shows the main gear which are used by Iranian fishermen is gillnet with 95.9% of fishing activities coverage, while purse seine with 2.1% and trolling with 2% are the other gear types that are used by fishermen. Considering to, gillnet fishery which are used as main type of gears by Iranian fishermen, 15.5% by-catch is an acceptable level. Also 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 are 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. This amount shows acceptable level of gill nets selectivity for Tuna and Tuna like fisheries. Base on scientific evidence there is possibility to reduce the amount of gillnets bycatch by some changes in nets hanging rate and this point needs some more practical research.

   In conclusion, the evaluation of IOTC about Iran's compliancy to the Commission rules have shown a progressively trend from 11% in 2010 to 75% in 2015, but in order to implementation of better conservation and management measures, IFO needs to continue its endeavors to remove existence weaknesses. On this way technical and financial supports of authorized organizations such as FAO and IOTC are necessary and useful.

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