

Iran tuna fisheries Sharks by-catch in IOTC area of competence in 2017  
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**Abstract:**

In order to assess the level of Iranian tuna fishing vessels By-catch in the IOTC area of competence in 2017, tuna fisheries data which are collected through the Iran Fishery Organization data Collection system are used. Base on the information, around 30 different species of Tuna, Tuna-like and some others are caught by Iranian fishermen through the Tuna fishing activities. Base on the information in total, 297251 tons of different species including, 255793 tons Tuna and Tuna-like species, 19976 tons Billfish, 3623 tons of Sharks and 17859 tons the other species, are caught by Iranian fishing vessels in the IOTC area of competence. According to IOTC target species list (16 species covered by IOTC agreement) 92.8% of Iran catch belong to target species and 7.2% of catch belong to non-target species, in the 2017.

Group of Fish		Species	Weight / T	%	Weight/ T	%
Target Species 92.8%	Tuna & Tuna like	Frigate Tuna	10265	3.5	255793	86.1
		Kawakawa	38774	12.9		
		Longtail Tuna	60214	20.3		
		Skipjack	53300	17.9		
		Yellowfin	56121	18.9		
		Bigeeye	3606	1.3		
		Narrow-barred Spanish mackerel	24067	8.1		
		Indo-pacific king mackerel	9447	3.2		
	BillFish	Indo Pacific Sailfish	11634	3.9	19976	6.7
		Black Marlin	4974	1.7		
		Striped Marlin	753	0.3		
		Swordfish	1054	0.4		
		other	1561	0.5		
	None Target Species 7.2%	Sharks	Silky Shark	586	0.2	3623
Spottail Shark			544	0.2		
Whitecheek Shark			272	0.1		
Oceanic Whitetip Shark			44	0.02		
Hammerhead Sharks			22	0.01		
Mako Shark			37	0.01		
Milk Shark			1623	0.5		
Other Sharks			496	0.2		
Other Species		Carangidae Species	7991	2.8	17859	6
		Mujilidae Species	310	0.1		
		Rachycentridae	2167	0.7		
		Common Dolphin Fish	7391	2.5		
Total Catch		Target & none Target	297251	100	297251	100

According to 2017 information, non target species which are caught as by-catch (7.2%) included 1.2% different species of sharks and some other species with 6%, in compare with total catch. The vessels CPUEs were calculated, base on different gears catch per day (Vessel Catch/Day). According to our estimation, Purse Seiners CPUE is calculated 5719.8 Kg/D, Trolling (Boats) 28.3 Kg/D, gillnetters 423.7 Kg/D and long line 317.7 kg per a day. Also the amount of Sharks CPUE was calculated 5.2 Kg/D for gill nets.

**I- Introduction:**

In order to better Tuna fisheries management and integrate ecosystem considerations, based on IOTC data collection requirements and scientific advices by the Scientific Committee and IOTC Resolutions, Iran Fisheries Organization (IFO) has been following the purposes through its fisheries monitoring system by different methods. Although the level of monitoring and control of Iranian fishing fleets need more improvement, in quality but compliance to regulations and resolutions of IOTC has had a progressively trend and IFO intent to continue this trend, up to complete implementation of all related resolutions. Base on IOTC evaluation the compliancy of Iran with IOTC regulations, has had a progressively trend from 2011 and it has increased from 11% to 72% in 2018. This evidence indicates a big progress on implementation of compliancy of Iran with IOTC regulation during recent years. Also prepared identification cards by IOTC translated in Persian and are available for observers and fishermen physically and they are available in IOTC web site now, which help us in better data collection and implementation of observer scheme in fishing harbors. Current paper is going to review on Iran tuna fisheries by-catch in IOTC competence of area in 2017. The information extracted from IFO statistics system and concentrate on catch composition of the vessels in 2017.

**II- Materials and methods:**

In order to estimate different types of Iranian fishing vessels by-catch in 2017, the data are collected through IFO data collection system in fishing harbors, landing places, through the Logbooks and offline VMS information and analysis of them. Base on collected information through the Iran data collection system, a day of catch are supposed as a unit effort and the CPUE was calculated base on amount of catch for a day. According to recorded information majority of Iran fishing vessels gears are gill net and normally the nets investigated during 24 hours (Setting net at the Sea 4 hours, waiting time 10 hours, separation of fish from the net mesh 6 hours and maintenance and preparing for next setting takes 4 hours time). So an active day was accepted as a unit effort for a gill-net vessel. Because of sailing from ports to fishing areas, weather condition and finding fish concentration area, normally there is no catches during some days of sailing, so only active fishing days calculated as efforts days. In fact one active day for gill netters accepted as an effort.

Some other information collected from offline vessel monitoring system, logbooks also by interview with some crews. The vessels fishing areas mostly were Iranian coastal waters and EEZ and western part of Indian Ocean especially eastern part of Africa continent. In order to identification of species and survey on catch composition, port state observers carried out in fishing harbors and landing places.

**III- Results and Discussion:**

Base on IFO statistics system around 30 different species of Tuna, Tuna like, Billfish, Sharks, turtles and some other species were caught, by Iranian fishermen in 2017. According to the

information around 297251 tons of different species including 255793 tons of Tuna and Tuna like species (86.1%), 19976 tons Billfish (6.7%), 3623 tons different species of Sharks (1.2%) and 17859 tons some other species (6%) are caught by Iranian fishing vessels in the IOTC competence of area in 2017.

Also in 2017 about 92.8% catch belong to IOTC target species included Tuna, Tuna like and Billfish and 7.2% of the catch belong to none target species which are caught as by-catch. Base on IFO statistic system, more than 93.2% of Iranian catch comes from Gillnet gear, while around 2.1% of catch belongs to Purse seiner, 1.9% Trolling and 2.8% are caught by artisanal long-line vessels. During 2017, Tuna and Tuna-like species which are caught by Iranian fishermen are included, longtail tuna with 20.3%, Yellow-fin Tuna with 18.9%, Skipjack with 17.9%, kawakawa with 12.9%, Narrow-barred Spanish mackerel with 8.1%, Frigate tuna with 3.5%, Indo Pacific king Mackerel with 3.2% and big-eye with 1.3% in compare with total catch.

During the year, Bill fish with 19976 tons which assigned 6.7% of total catch included Indo-pacific Sailfish with 3.9%, Black Marlin with 1.7%, Swordfish with 0.4%, Striped marlin with 0.3% and other Billfish 0.5%, in compare with total catch.

Base on collected data, the other by-catch species which are identify in catch composition mainly belonged to Carangidae family with 7991 tons (2.8%), Common Dolphin fish with 7391 tons (2.5%), Rachycentridae family with 2167 tons (0.7%) and Mugilidae family with 310 tons (0.1%). In total this species catch's quantities have been 6% in compare with total catch.

Also base on 2017 data, in total 3623 tons (1.2%) of different species of Sharks are caught in Iran Tuna fishing activities as a by-catch. These species are included Silky sharks with 586 tons (0.2%), Spot-tail Sharks with 544 tons (0.2%), white-cheek Shark with 272 tons (0.1%), Oceanic white-tip Shark with 44 tons (0.02), Mako Shark with 37 tons (0.01), Hammerhead Shark with 22 tons (0.01), Milk Shark with 1623 tons (0.5) and other Sharks with 496 tons (0.2%).

#### **IV- Conclusion:**

As mentioned above, CPUE (Vessel Catch/Day) was calculated, base on total amount of catch for each vessels (C) and their navigation days (Unit Efforts). Also the fleet has had different type of vessels with varied GT that gives them different ability to catch. In order to calculate CPUE for Gill net by vessel class, we have faced with lack of information because the amounts of catch are not recorded for each trip. So, we normally use sampling methods or receive self declaration of fishermen and the system needs some improvement and corrective measures. Also the amount of Sharks CPUE was calculated only for gill nets, while there are no reports for other gear types. In conclusion the condition of catch base on gear types are as a below.

During 2017 seven purse seiners were active in Iran tuna fisheries, while their total active fishing days have been 1085. Base on available information in total Iran purse seiners are caught 6206

tons different species of fish in 2017. So the amount of CPUE for Iran purse seiners are calculated 5719.8 Kg fish per a day. Also around 2.1% of Iran tuna and tuna like species come from purse seine fisheries while the amount of their effort has been 0.12% of total efforts of Iran tuna fisheries. These vessels are mechanized industrial ships and normally are operated in open sea and out of Iranian coastal waters.

Second type of Iran tuna fisheries are gill net which assigned majority of catch for itself. The length and power engine of the vessels are varied from small boated with less than 3 GT up to more than 100 GT and 30 m lengths. While there are about 4000 different type of gillnet vessels but it is difficult to talk about their CPUE because there is limited information about amount of catch for each group. In total Iran gill net active vessels have caught 277035 tons of different fish by 653815 days efforts. So the amount of CPUE for all types of gill-nets is 423.7 kg per a day. But this CPUE does not show a clear evaluation about catch quantity and need to calculate separately for each group of vessels. Base on current information around 93.2% of tuna and tuna like fisheries catch comes from gill net fisheries while the 74.5% of total efforts belong to these vessels. On this way around 3957 vessels equal to 69% are active in tuna fisheries by use of gill net gears.

Trolling gear is third type of tuna fisheries where majority of small boats are active by use of this method. Around 2019 small boats with less than 3 GT engine power were caught 5558 tons of different species of tuna through the 196440 days efforts by use trolling gears have been active in 2017. So, the amount of CPUE for Iran tuna trolling gear is calculated 28.3 Kg fish per day. Also around 1.9% of Iran tuna catch comes from the trolling gears fisheries while the amount of these vessels efforts have been 22.4% of total efforts of Iran tuna fisheries. Around 1820 vessels (31.7%) are active in tuna fisheries by use of trolling gear. That means, in spite of high level of efforts of these boats their catch have been very low. They are none mechanized small boats and normally are operated by 1-2 fishermen as small scale fisheries in Iranian coastal waters.

Also only some long line vessel has been active in 2017, which the total catches of them have been 8452 ton, while the vessels efforts have been 26600 days. So long line vessel CPUE is calculated 317.7 kg per a day. According to 2017 information the amount of Sharks CPUE for all types of gill net vessels was calculated 5.2 Kg/D in total.

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