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Fishery in Iran and analysis of billfish landings made by industrial gillnet fishery during 20012–2018

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Abstract

Fishery for tuna and tuna-like species is a major component in large pelagic fisheries in Iran and one of the most important activities in the Persian Gulf & Oman Sea are located between the longitude of 48° 30' North to 61° 25' East. The long Iranian coastline there are arournd193 port and landing places with over 143 thousand fishermen which are involved is fishing activities and more than 11 thousand vessels consist of fishing boat, dhows and vessel which are engaged in fishing in the coastal and offshore waters. There are four fishing gear types which targeting large pelagic species in the IOTC area of competence, included gillnet, purse seine, long line (by traditional boats) and also some of small trolling boats in coastal fisheries. Gillnet is the dominant fishing gear in the IOTC area competency, Majority of the production comes from the gillnet vessels operating within EEZ of Iran as well as offshore fishery.

The total production of large pelagic species (including by-catch) was 314000 Mt in 2018, which 275000 Mt belongs to tuna and tuna-like fishes in the Indian Ocean. This amount of catch contains 70% (220000 Mt) of Tunas, 11.1% (35000 Mt) of Seerfish, 6.5% (21000Mt) of Billfish, 0.9% (2900 Mt) different species of shark and 11.5% (36000 Mt) other species. Also around 92.2% of tuna and tuna like species catch comes from gillnet gear, while around 1.9% of catch belong to purse seiners and 1.6% comes from trolling vessels and 4.3% comes from small artisanal gillnetter as a seasonal and temporal long-liner where they are fish in coastal waters.

Introduction:

There are three categories of fisheries activities in Iran consist of the southern fishery, the northern fishery and inland fishery and aquaculture. Total aquatics production in 2018 was 1262000 Mt, which can be distributed as 58% (731000 Mt) of the total catch and production contributed to the country fishing activities in the southern water, about 3.3%(42000) of production from northern water (Caspian Sea) and 38.7%(489000) through inland water and aquaculture.
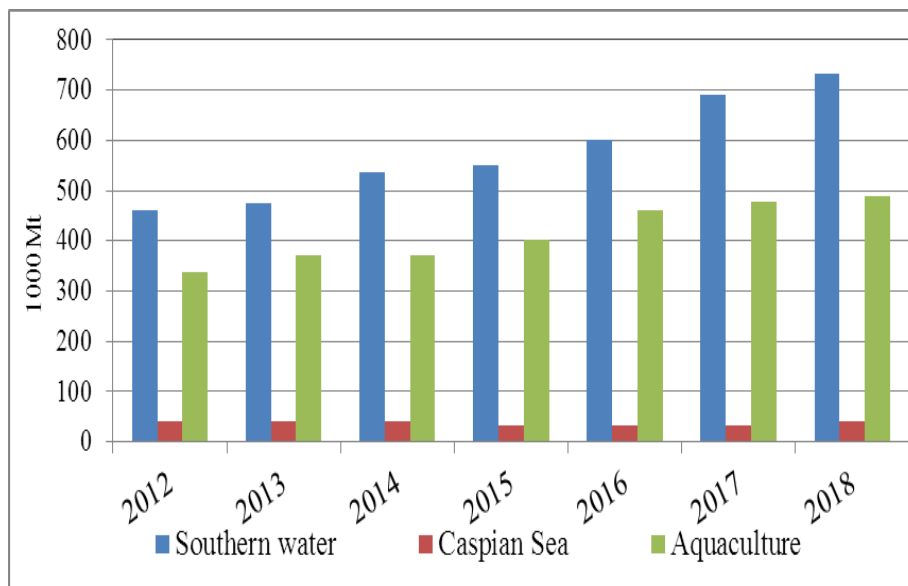

Figure1.Total Catch & production in the country

Total catch production in the southern waters in 2018 is equal to 731000 Mt which include large pelagic, small pelagic, demersal, shrimp and lantern fishes (Myctophids). Major catch is allocated to large pelagic with 314000Mt (43 % of total catch) in the coastal and offshore waters. Figure 2 Shows catch quantity of different aquatic species groups.
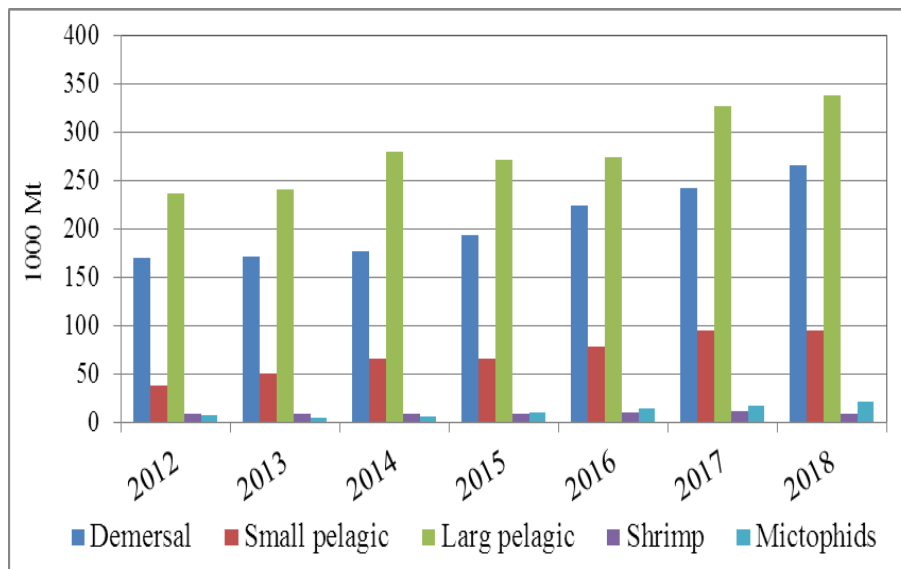
Figure2. Total catch quantity of different aquatic species groups in the southern waters

Fishing gear and fleet structure:

Iran industrial and semi-industrial fishing fleets owned by private enterprises carry out almost all fisheries in the coastal and offshore water. The main fishing gears used include gillnet, purse seine, wire traps (local name: gargoor), coastal artisanal longline, shrimp trawl, angling and beach seine and some other traditional forms, such as set nets. But there are four fishing gear types which targeting large pelagic species in the IOTC area of competence, included gillnet, purse seine, coastal artisanal long line (by traditional boats) and small trolling boats. Gillnet is the dominant fishing gear in the IOTC area competency, Majority of the production comes from the gillnet vessels operating within EEZ of Iran as well as offshore fishery.

Iran Fisheries and exploitation of aquatic animals in the southern waters by around 6495 fishing crafts are engaged in large pelagic species in 2018, Of this total volume of vessels, about 1221 are active in Tuna and Tuna like fishing in the Oman Sea and offshore waters and rest of them are active in the coastal water. Those fishing crafts consist of 3168 were gillnet boats (less than 3 GT), 479 gillnet Dhows of less than 50 GT, 297 gillnet Dhows of 51-100 GT, 377 gillnet Dhows of more than 100 GT, 1645 Trolling boats of less than 3 GT, 324 coastal artisanal long-line boats of less than 3 GT, 165 traditional long-line Dhows of less than 50 GT, 14 traditional long-line Dhows of 51-100 GT and 5 industrial Purse seiners. Table 2.1 shows the fishing fleet is disaggregated into the following (GT) categories.

GEAR GROUP	Capacity GT	No. Crafts by year						
		2012	2013	2014	2015	2016	2017	2018
Purse seine	1000 - 2000	4	4	5	5	5	5	5

Traditional Longline	< 3	0	0	0	0	300	324	324
	21 - 50	0	0	0	0	80	165	165
	101 up	0	0	0	0	14	14	14
Gillnet	< 3	3741	3741	3155	3630	3319	2758	3168
	3 - 20	270	270	271	266	258	239	226
	21 - 50	1060	1060	825	364	391	318	271
	51 - 100	534	534	480	181	171	316	297
	101 - up	338	338	275	293	283	326	377
Trolling	< 3	805	805	1914	2019	2190	1820	1645

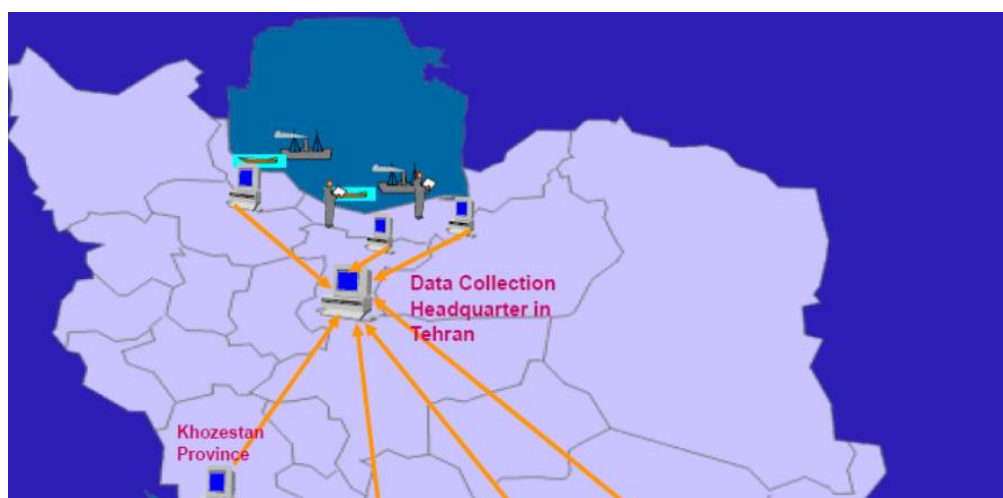*Table 1.Number of fishing crafts operating in the southern waters, by gear type and size*

Catch and Effort (By Gear and Species):

Port sampling program:

Catch and effort and biological data of the coastal and offshore large pelagic fishery are collected at the 43 out of 63 fish landing centers scattered along the coast in southern coastal waters consist of 10 landing sites in KHOZESTAN Province, 8 landing in BUSHEHR Province, 21 landing sites in HORMOZGAN Province and 5 landing sites SISTAN-BLUCHESTAN Province in the alongside the Persian Gulf and Oman sea coastlines, and port samplers stay on landing centres during disembarkation time of fish and they collect the data and fill out the forms. Also Biometry of fish for collecting length/weight frequency data is done during landing time.

Following Map shows of landing centers distribution in the southern coastlines. Catch and Effort data were collected in all the above landing centers by stratified random sampling by the port samplers, in this way, 10% of total fishing crafts for different vessel classes of fishing dhows and boats are picked out randomly and their fishing data will be registered. Tuna and Tuna-like species are mainly comprised of Tropical tuna, neritic tuna, billfish and sharks which are identified in the large pelagic categories.

Catch quantity:

The Catch quantity of large pelagic in Iran was 314000 Mt in 2018 and around 275000 Mt belongs to tuna and tuna-like species in the coastal and offshore waters. Total amount of catch mainly consist comprised of neritic tuna 45% (143000Mt), tropical tuna with 36% (112000Mt), and billfish species with 6.5% (20000Mt), 1% (3000Mt) different species of shark and around 11.5% (36000Mt) other species. Figure.3 and 4 shows the amount of catch for different group of species during 2012 to 2018. Neritic tuna species are very important and have special ranking in coastal waters of Iran. There is no doubt that neritic tuna catch on lives and livelihood of a lot of people's in coastal waters of Iran.
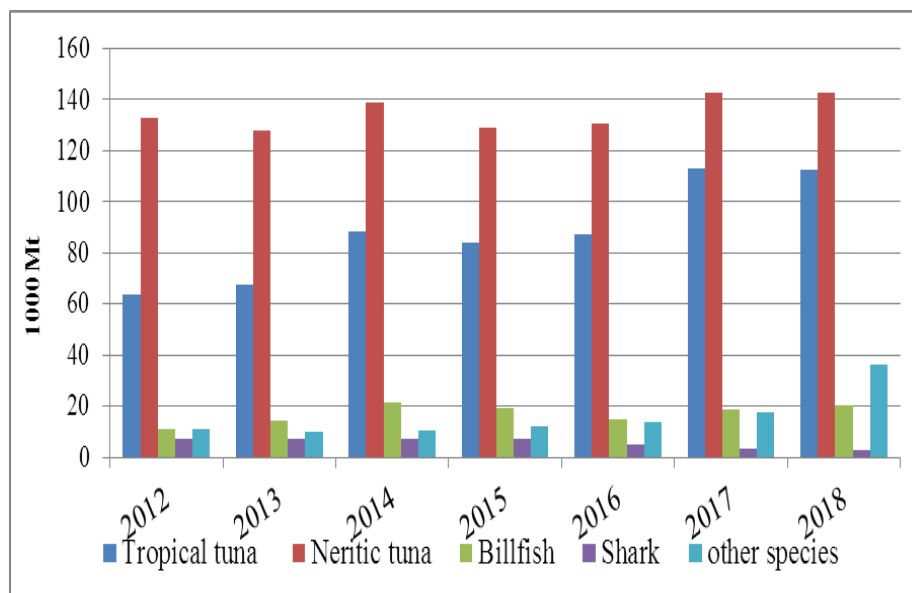

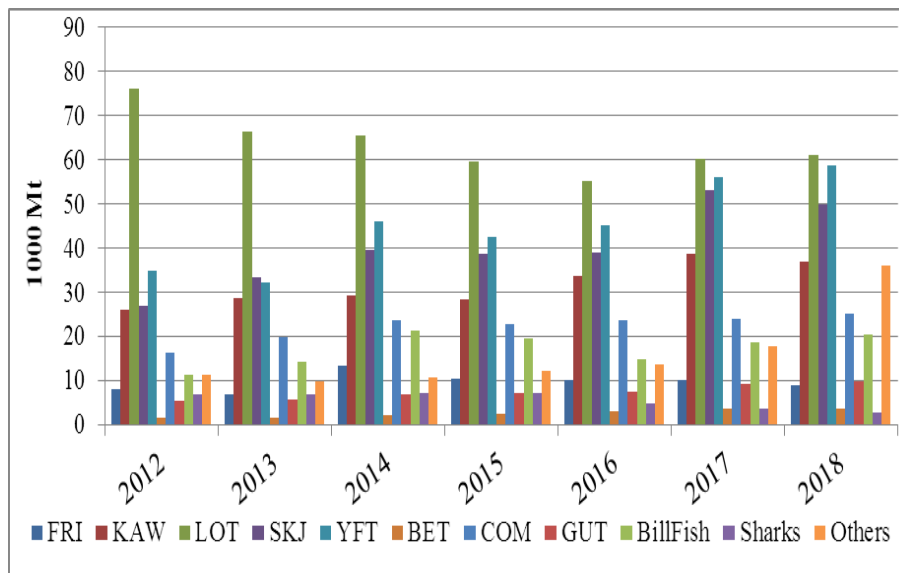*Figure3. IOTC group of species reported for the all fleet*

Figure4. Nominal catch by species reported for the all fleet

Figure.3 shows the total annual Catch by gear type reported for the all fleet. In 2018 annual catch for purse seine, gillnet, coastal artisanal longline and trolling was estimated 5200 Mt, 292000 Mt, 12000 Mt and 4700 Mt respectively. Gillnet with 92.2% of Catch is the dominant fishing gear followed by Traditional longline 4.3%, Purse seiners 1.9%, and around 1.6% comes from Trolling vessels.
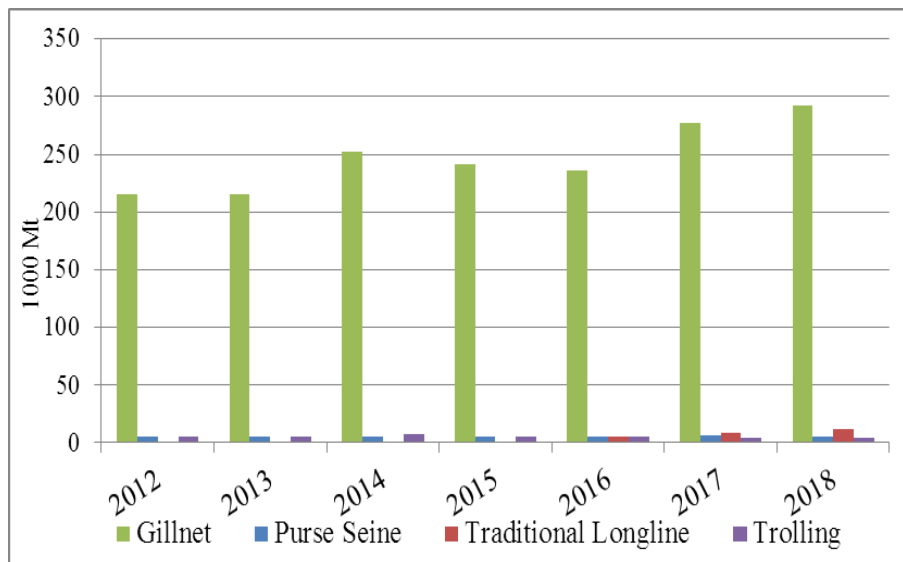

Figure5. Annual Catch by gear type during 2012-2018

Fishing effort:

In 2018, fishing effort for large pelagic species around one million days was carried out by all fishing craft (Table.2), of which 734 thousand days was operated by Gillnet, 39 thousand days by seasonal and temporal longline and 224 thousand days done by trolling fisheries. This figure.6

show that the highest gillnet fishing pressure occurs within the Islamic Republic of Iran's coastal water.

GEAR GROUP	Capacity GT	Fishing effort by gear(days)						
		2012	2013	2014	2015	2016	2017	2018
Purse Seiners	1000 - 2000	981	727	1080	1005	1164	1085	715
Coastal Artisanal Longline	< 3	0	0	0	0	18000	19440	24300
	21 to 50	0	0	0	0	3200	6600	14025
	101 up	0	0	0	0	560	560	1190
Gillnet	< 3	557434	538550	476632	552367	487646	438046	516149
	3 - 20	43303	40985	44679	44374	41682	43035	44779
	21 - 50	195643	184070	137860	72121	74870	58114	51045
	51 - 100	91293	91790	84658	33749	30337	54873	52410
	101 - up	57662	60400	53020	51260	50530	59746	69535
Trolling	< 3	125446	123450	226770	254934	229190	229190	224708
Total all Gear fishing effort		1071762	1039972	1024699	1009810	937178	877940	998856

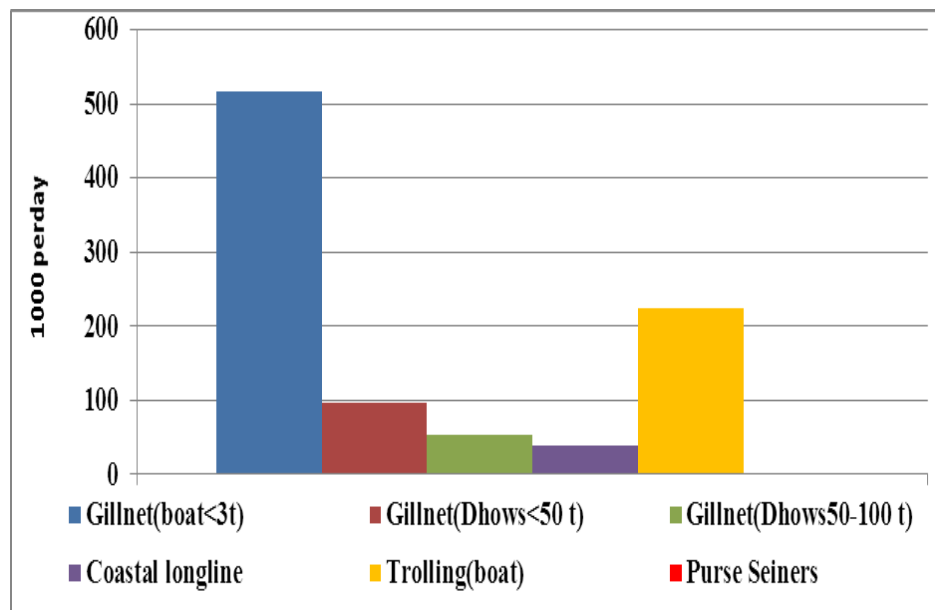*Table2. Fishing effort for large pelagic species by different vessel categories*

Figure 6. large pelagic fishing effort by all fleet in 2018(fishing day)

Billfish catches:

Billfish are not normally targeted species in Iranian fishing craft, but they are very common in offshore gillnet catch are considered as by-catch species. Total catch for billfish in 2018 was

estimated about 20468 Mt, and this is around 6.5% of the total large pelagic species production and around 88% from offshore waters and around 12% belongs to Persian Gulf and Oman Sea. Figure.7showing a trend of landing of billfish are steadily increasing in the previous years. This increasing shows 8% compared to the same period last year .Reason for increased catch is not clear, could be due to increased statistical recordings, species misidentification by port simpler.

The Indo-Pacific sailfish catch with 10605 Mt is the most dominating species of billfish found followed by black marlin with 5859Mt, striped marlin 898 Mt, Swordfish 1258 Mt and other marlin is the rarest of all the billfishes which is seldom caught by large pelagic gillnetters(figure.8)
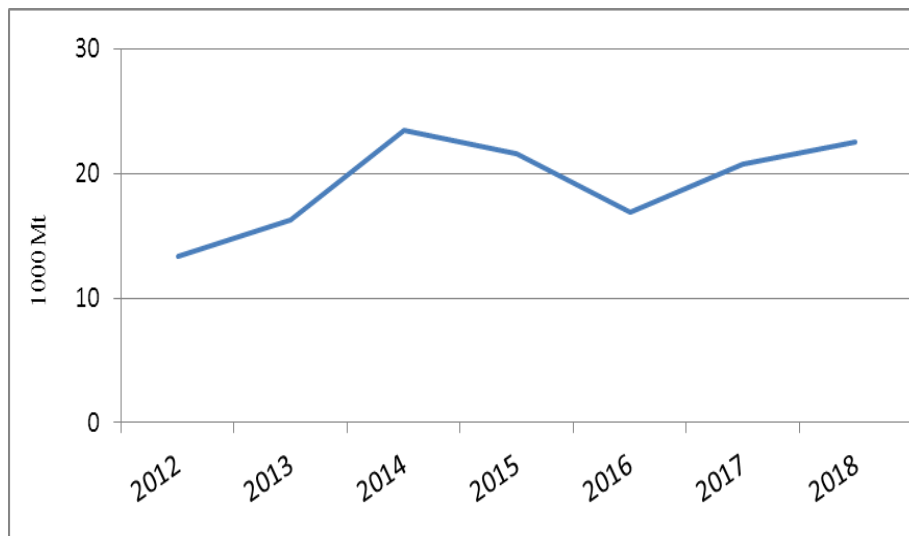

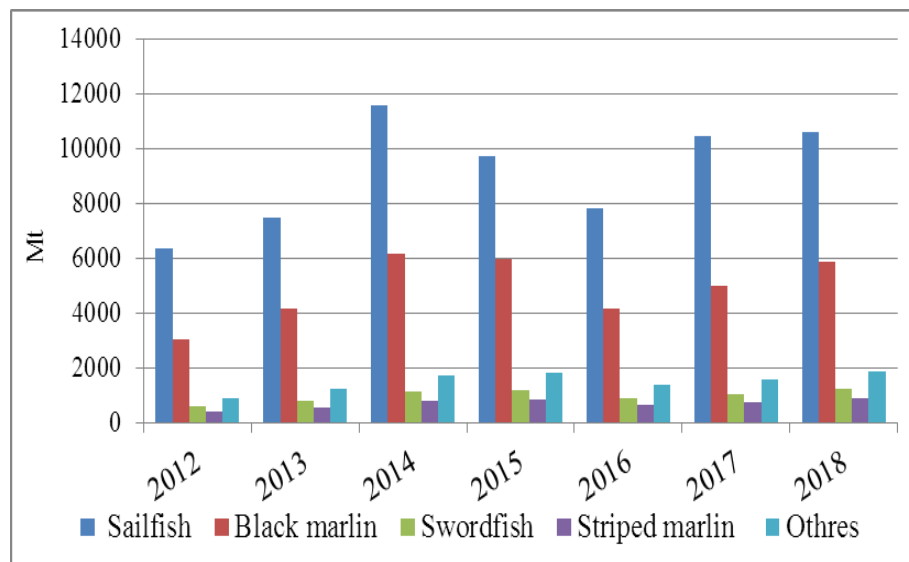*Figure7. Nominal catch of billfish in 2012-2018*

Figure8. landing billfish during 2012-2018

The billfish landings at Sistan &Bluchestan 17159 Mt and 1750Mt landings centers at Hormozgan province during 2018(figure.7)
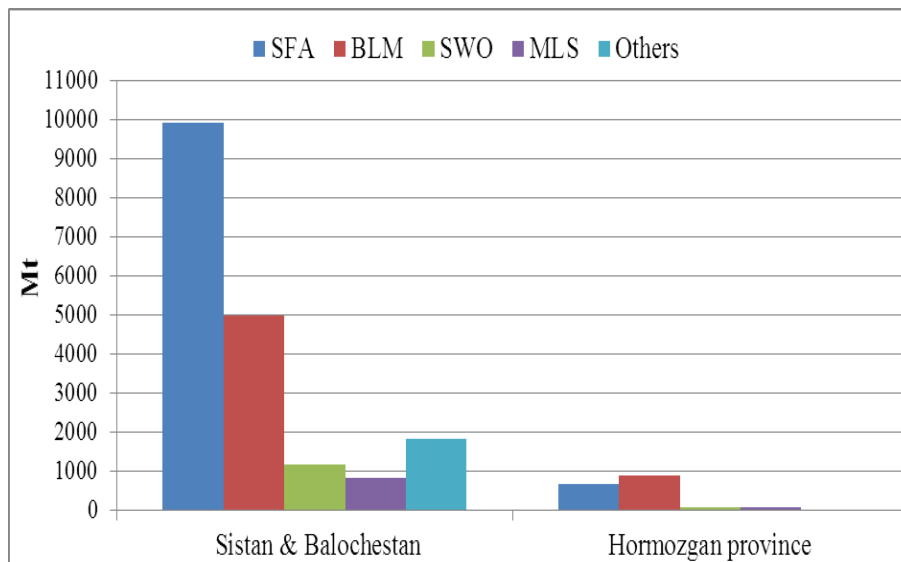
Figure 9. Billfish landed in Baluchestan and Hormozgan province in 2018

Actions taken for improvements of working party on Billfish:

Iran Fisheries Organization(IFO) during recent years many efforts have been made in the field of tuna fishery, which how to fulfill the IOTC regulations and adapting it with national implementing condition and complying with the IOTC approvals,which lead to enhancement of compliance to provision and regulations. Iran fishery is improving data collection system by completing of AMAR software to meet IOTC demanded outputs with a suitable reporting for by-catch composition for gillnet fishery. IFO implemented the training courses for port samplers and Identification cards for billfish has been translated to Persian and distributed among port samplers and fishing vessels Captains to enhance the validity of identifying the billfish and reported to the IOTC secretariat.

During an extension services program, IFO has prepared some training courses and extension brochures and posters regarding to by catch. Also we have tried to train some crews of fishing vessels to prepare our information requirements base on IOTC regulations via observer reports.